146. A seven-year-old boy with two 5 mm renal pelvis stones undergoes ureteroscopy and basket extraction of one stone. During reinsertion of the ureteroscope, a small ureteral perforation is identified. The next step is:

A. remove ureteroscope and stop operation.
B. placement of a ureteral stent.
C. basket extraction of remaining stone and stent placement.
D. fragment stone into 1 mm fragments and stent placement.
E. stent and percutaneous nephrostomy tube placement.

147. A 22-year-old woman with ESRD and spina bifida undergoes pre-op transplant evaluation. Renal bladder ultrasound reveals moderate bilateral hydroureteronephrosis associated with a full bladder. Videourodynamics reveals a total fill poorly-compliant bladder with detrusor pressures of 50 cm H_2O at 100 ml, associated with bilateral grade 2 VUR, and end fill detrusor pressure of 85 cm H_2O at 280 ml with overflow incontinence. She leaks urine several times a day despite CIC four times daily and obtains 250-300 ml/catheterization. The next step is:

A. proceed with kidney transplant, then re-evaluate bladder.
B. bladder augmentation after kidney transplant.
C. bladder augmentation prior to kidney transplant.
D. bilateral native nephrectomies and augment prior to kidney transplant.
E. recommend against kidney transplant.

148. A healthy 55-year-old woman with rheumatic heart disease and a systolic murmur is about to undergo urodynamic testing. Urinalysis is negative. Appropriate antimicrobial prophylaxis includes:

A. no antimicrobials.
B. amoxicillin.
C. fluoroquinolone.
D. trimethoprim-sulfamethoxazole.
E. gentamicin.

149. A 67-year-old man with a history of radical prostatectomy, cardiovascular disease, osteoporosis, and diabetes is planning to initiate testosterone therapy. Prior to initiating testosterone therapy, he should be counseled about an increased risk of:

A. myocardial infarction and stroke.
B. prostate cancer recurrence.
C. insulin resistance.
D. anemia.
E. osteoporosis progression.

150. The use of fluorescence ("bluelight") cystoscopy has been shown to:

A. decrease utilization of intravesical therapies.
B. decrease progression rates.
C. decrease cystectomy rates.
D. increase detection of CIS.
E. increase tumor detection after BCG.

Question #1 **ANSWER=B**

ACTH and serum potassium may increase aldosterone secretion but the effect is much less pronounced than that achieved by renin. The primary mechanism for control of aldosterone production resides in a feedback system involving the kidney and its juxtaglomerular apparatus. In the presence of appropriate stimuli (i.e., decreased renal perfusion pressure), juxtaglomerular cells release renin which results in the increased production of angiotensin II. Angiotensin II is a potent stimulator of aldosterone output from the zona glomerulosa of the adrenal cortex. Sodium concentration in the thick ascending Loop of Henle (not the proximal tubule or collecting duct) can also be sensed by the macula densa which can stimulate the release of renin.

Kutikov A, Crispen PL, Uzzo RG: Pathophysiology, evaluation, and medical management of adrenal disorders, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 57, pp 1697-1698.

Question #2 **ANSWER=D**

Complications of partial nephrectomy include hemorrhage, urinary fistula formation, ureteral obstruction, renal insufficiency, and infection. Significant intraoperative bleeding can occur in patients who are undergoing partial nephrectomy. The need for early control and ready access to the renal artery is emphasized. Postoperative hemorrhage may be self-limiting if confined to the retroperitoneum with or without associated gross hematuria. The initial management of postoperative hemorrhage is expectant with bed rest, serial hemoglobin and hematocrit determinations, frequent monitoring of vital signs, and blood transfusions as needed. Angiography may be helpful if bleeding persists, to localize actively bleeding segmental arteries, which may be controlled by angioinfarction. Severe intractable hemorrhage may necessitate re-exploration with early control of the renal vessels and ligation of the active bleeding points. Ureteral stent is not indicated.

Kenney PA, Wotkowicz C, Libertino JA: Contemporary open surgery of the kidney, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 54, p 1624.

Weizer A, Wolf JS: Complications of laparoscopic renal surgery. Taneja SS (ed): COMPLICATIONS OF UROLOGIC SURGERY, ed 4. Philadelphia, Elsevier Saunders, 2010, chap 29, p 349.

Question #3 **ANSWER=C**

Despite improvement in surgical techniques, stomal stenosis is still the most likely cause of the elongated dilated conduit with hydronephrosis and hyperchloremic acidosis. Therefore, the most appropriate treatment is revision of the stoma and shortening of the conduit.

Administration of electrolytes is symptomatic treatment only and does not address the anatomic cause of the acidosis. Conversion to a non-refluxing colon conduit is not required in this setting where a simpler procedure, shortening of the ileal conduit and stomal revision, will suffice. Treatment of high grade vesicoureteral reflux by a bulking agent in an ileal conduit is not indicated; the high grade reflux is a direct sign of distal obstruction and is usually due to either stomal or mid-ileal loop stenosis. Although this patient may eventually need a renal transplant, a functional loop is necessary for transplantation, therefore, revision of the loop is indicated. No indications are currently present for proceeding with bilateral nephrectomy.

Dahl DM, McDougal WS: Use of intestinal segments in urinary diversion, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 85, pp 2425-2426.

Question #4 **ANSWER=A**

Dysfunctional voiding syndrome is frequently manifested by worsening diurnal incontinence, posturing when voiding, with or without primary nocturnal enuresis, recurrent UTIs, and encopresis. Classically, urodynamic studies will reveal poor cerebral appreciation of sudden detrusor contractions. Voluntary sphincter contraction is thought to be a response to sudden detrusor contraction. This can arise from either delayed neurourologic maturation or inappropriately learned voiding behavior. Initial treatment should be with maintenance of a voiding and stooling diary, timed voiding every two hours while awake, and treatment of constipation issues if present. Approximately 80-85% of patients will resolve their symptoms on this treatment. Individuals failing the conservative management outlined above may be treated by either the addition of antimuscarinics, such as oxybutynin or alternatively, behavior modification with biofeedback pelvic floor muscle retraining. Use of a sacral neuromodulator should only be considered after the patient has failed the more conservative treatment modalities outlined above. Prazosin, an alpha-1- receptor blocker, is potentially useful in the setting of bladder neck dysfunction, but not in the patient described above.

Yeung CK, Sihoe JDY: Non-neuropathic dysfunction of the lower urinary tract in children, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 127, p 3419.

Question #5 **ANSWER=B**

Approximately 10-20% of dietary ascorbate is metabolized into oxalic acid that is then excreted into the urine. Ascorbic acid in doses of 2 grams daily was shown to increase urinary oxalate by 20-30%, but had no effect on urinary pH, citrate, calcium, or magnesium.

Ferrandino MN, Pietrow PK, Preminger GM : Evaluation and medical management of urinary lithiasis, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 46, p 1309.

Pearle MS, Goldfarb DS, Assimos DG, et al: Medical management of kidney stones: AUA Guideline: AUA Guideline. American Urological Association Education and Research, Inc, 2014. http://www.auanet.org/education/guidelines/management-kidney-stones.cfm

Question #6 **ANSWER=C**

Ureteral duplication is one of the most common renal abnormalities with approximately 1% of the population diagnosed as having a duplication anomaly during their lifetime with 10% of the affected individuals will have a bilateral duplication anomaly. In individuals with a duplication anomaly, 10% are diagnosed following an evaluation for a UTI, another 10% are discovered during an evaluation for prenatal hydronephrosis, and the remainders are incidentally discovered during radiographic evaluations. Severe upper pole hydronephrosis of a duplicated moiety is commonly associated with either a ureterocele or ureteral ectopy, while lower pole hydronephrosis is commonly associated with vesicoureteral reflux or a UPJ obstruction. In this patient, the ultrasound (US) images are classic for obstruction of the upper pole due to a ureterocele. Differentiation of a ureterocele from an ectopic ureter can at times be problematic. Indeed, the term "pseudoureterocele" has been coined for enlarged ectopic ureter that protrudes into the bladder. Classically, a tip off that it is an ectopic ureter and not a ureterocele is found in the thickness of the ureterocele membrane. Presence of a thin-wall membrane is almost invariably associated with a ureterocele. In contrast, a thick-walled "ureterocele" or cystic structure may indicate a ectopic ureter with the thick wall being attenuated detrusor muscle. Inadvertent endoscopic incision of a pseudoureterocele has led to the creation of detrusor-ureteral-vaginal fistulas that may be highly problematic to repair in a neonate. To differentiate an ectopic ureter (pseudoureterocele) from a ureterocele, a VCUG may be helpful. If the ectopic ureter inserts into the bladder neck or urethra, reflux into the upper system may be found confirming the diagnosis of an ectopic ureter. If no reflux is noted and the physician has a high degree of suspicion that the diagnosis is truly an ectopic ureter, a pelvic MRI or CT scan may be of benefit.

Peters CA, Schlussel RN, Mendelsohn C: Ectopic ureter, ureterocele, and ureteral anomalies, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 121, p 3247.

Question #7 **ANSWER=B**

It is not uncommon for children with prenatally recognized hydronephrosis to have normal renal ultrasounds after birth. Many of these represent patients with insignificant prenatal physiologic dilation. Specifically, in patients with a history of mild to moderate fetal hydronephrosis and a normal postnatal ultrasound, the latter obtained one to two months post-partum; additional evaluations are deemed unnecessary. The exception to this rule is the finding of moderate to severe hydroureteronephrosis found on the prenatal evaluation with a normal post-partum ultrasound. The presence of ureteral dilation on the prenatal ultrasound has been found to be associated with a significant increased risk for neonatal UTIs and high grade vesicoureteral reflux despite a normal postpartal renal ultrasound. Documentation of ureteral dilation on the fetal ultrasound, therefore, results in the recommendation that a neonatal VCUG be obtained. Observation alone may miss the opportunity to diagnose high

grade VUR and place this infant at significant risk. Repeat ultrasound at such a short interval is not indicated and, if normal, would not obviate the need for a VCUG. MAG-3 renal scan should be considered if the neonatal follow-up ultrasound evaluations demonstrate persistent hydroureteronephrosis and the VCUG reveals absence of reflux. Antibiotic prophylaxis is recommended for infants found on neonatal ultrasound to have a dilated ureter and/or VUR. Unless the renal ultrasound reveals a structural abnormality, i.e., poorly defined duplication anomaly, magnetic resonance urogram would not be indicated. Serial observation without the need for antibiotic prophylaxis would be indicated in the presence of hydronephrosis alone without evidence of prenatal ureteral dilation. In these latter infants, a MAG-3 renal scan with a diuretic washout phase would be indicated at two to three months of age.

Khoury AE, Bagli DJ: Vesicoureteral reflux, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 122, p 3279.

Question #8 **ANSWER=C**

Cystinuria is the result of inadequate renal tubular resorption of cystine, ornithine, lysine, and arginine, and is also associated with inadequate intestinal absorption of these amino acids. Stones result from increased concentrations of cystine in the urine which precipitate in acidic urine. The other amino acids do not crystallize to form stones.

Pearle MS, Lotan Y: Urinary lithiasis: Etiology, epidemiology, and pathogenesis, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 45, pp 1279-1280.

Question #9 **ANSWER=E**

Semen parameters improve to a greater extent after bilateral varicocelectomy as compared to just repairing the dominant varicocele in patients with a grade II-III varicocele and a contralateral grade I varicocele. This approach does not extend to patients with a "subclinical" varicocele (those only detected by Doppler ultrasound). Transrectal ultrasonography and clomiphene citrate (Clomid) are not indicated in this setting. Intrauterine insemination is another alternative but varicocelectomy is more cost effective. Intrauterine insemination is not indicated because sperm concentration is too low. Age of the female partner is also an important consideration; if partner is older, in vitro fertilization should be considered as a treatment option.

Sabanegh E, Agarwal A: Male infertility, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 21, pp 636-637.

Scherr D, Goldstein M: Comparison of bilateral versus unilateral varicocelectomy in men with palpable bilateral varicoceles. J UROL 1999;162:85-88.

Question #10 **ANSWER=B**

It is noteworthy that up to 50% of cystogram studies in cases of a ruptured augmented bladder may be negative for the injury; therefore, a negative cystogram does not rule out a bladder rupture. With this patient having clear clinical signs of acute peritoneal inflammation, the differential diagnosis is cystitis with peritoneal irritation (treated by antibiotic therapy and continuous bladder drainage and not requiring surgery), a loculated infected ventriculo-peritoneal shunt (requiring a neurosurgical consultation), or a missed bladder rupture (requiring emergent surgery). Confirmation of suspected perforation of an augmented bladder is best achieved by performing a CT cystogram with a minimum of 300 ml of contrast placed in the bladder with a CT phase taken with the bladder distended and emptied. An abdominal CT without a cystogram may show a significant increase in peritoneal fluid if an infected ventriculoperitoneal shunt is present (false positive for bladder rupture) or, alternatively, a high false negative rate for rupture if a small bladder perforation is present and occluded by either small bowel or omentum. The performance of a CT cystogram with a minimum of 300 ml of contrast has been shown to dislodge the omentum or small bowel that would be plugging the bladder laceration and diagnosis of extravasated contrast is more readily found on the CT evaluation than the plain cystogram. Placement of a large bore suprapubic tube will not sufficiently divert urine or drain infected urine from the peritoneal cavity if a bladder rupture is present. Continuous catheter drainage along with I.V. antibiotics may be of benefit for severe cystitis but should only be pursued after documentation of the absence of a bladder perforation. Exploratory laparotomy would be indicated without a CT cystogram if the patient was clinically unstable and not responsive to fluid resuscitation.

Adams MC, Joseph DB: Urinary tract reconstruction in children, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 129, pp 3484-3485.

Question #11 **ANSWER=C**

Gynecomastia occurs in the male when there is an alteration of the testosterone-estradiol ratio which may be due to either reduced testosterone or elevated estradiol. The differential diagnosis of gynecomastia in an adult includes prolactin-secreting pituitary tumor, estrogenic drugs, exogenous testosterone, testicular tumors, and idiopathic. The elevated testosterone level with low gonadotropin levels in this patient is most suggestive of either exogenous testosterone or a testicular tumor. Exogenous testosterone will usually result in a reduction in the size and softening of the consistency of the testes. The most likely etiology is a testicular tumor despite his normal testicular physical examination. Leydig cell tumors are one of the more common nonpalpable testicular tumors and with their inherent ability to secret testosterone is the most likely diagnosis. If it had been a prolactin secreting tumor, the LH and the testosterone would be low. The MRI scan is not needed since the pituitary is responding normally and prolactinoma is not suspected. Gynecomastia in these patients is caused by the conversion of excess (unregulated) testosterone to estradiol by aromatase.

Sabanegh E, Agarwal A: Male infertility, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 21, p 639.

Question #12 **ANSWER=E**

Thiazides are frequently used to treat hypercalciuric calcium nephrolithiasis. Following initiation of the thiazides, up to 30% of patients will develop hypokalemia and 3-5% will develop new onset of hyperglycemia. The mechanism traditionally associated with this increased risk of thiazide-associated diabetes mellitus is a reduction in serum potassium. A meta-analysis of 59 studies involving thiazide treatment found a significant correlation between the degree of diuretic-induced hypokalemia and an increase in plasma glucose. The increase in plasma glucose levels are significantly increased if the serum potassium levels fall below 3.5 mEq/l. The mechanism of this glucose increase is related to the fact that low plasma potassium levels impair insulin secretion, thereby increasing plasma glucose. In addition to the hypokalemia induced by hyperglycemia, hydrochlorothiazide can also induce hyperuricemia and hyperlipidemia (hypertriglyceridemia). It is noteworthy that if hyperlipidemia develops, the increase in free fatty acids will cause damage to the pancreatic beta-cells secretion of insulin and will further impair glucose metabolism. There is substantial clinical evidence that prevention of hypokalemia with K+ supplementation (potassium citrate), potassium-sparing agents (triamterene), or with dietary supplements such as a banana per day, either prevents or significantly lessens the degree of glucose intolerance, and, therefore, should be initiated at either the onset of thiazide therapy or upon the discovery of glucose intolerance.

Pearle M, Goldfarb DS, Assimos DG, et al: Medical management of kidney stones: AUA Guideline: AUA Guideline. American Urological Association Education and Research, Inc., 2014. http://www.auanet.org/education/guidelines/management-kidney-stones.cfm

Question #13 **ANSWER=C**

Since the amino acids of ACTH are identical to the terminal amino acids of melanocyte stimulating hormone (MSH), over-production of ACTH results in cutaneous hyperpigmentation. Adrenal loss results in lack of negative feedback and over-production of ACTH. Pituitary failure, on the other hand, results in a lack of ACTH. Vitiligo may also be seen in these patients. Primary hypoadrenalism (or Addison's disease) is notable for hyponatremia (not hypernatremia) and hyperkalemia (not hypokalemia). Hypotension can be present in primary or secondary hypoadrenalism.

Kutikov A, Crispen PL, Uzzo RG: Pathophysiology, evaluation, and medical management of adrenal disorders, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 57, pp 1711-1713.

Question #14 **ANSWER=A**

There is a high probability that this two-year-old girl has bilateral Wilms' tumor. The current Children's Oncology Group Wilms' Tumor protocol recommends six weeks of initial

chemotherapy without the need for renal biopsy in patients with highly probable bilateral Wilms' tumor. The response to the chemotherapy is assessed after six weeks of chemotherapy by CT or MRI scans. Imaging at this time will quantify any reduction in tumor volume and allow the surgeon to assess the feasibility of renal sparing surgery. Tumors responding to chemotherapy may receive a second round of medications in an attempt to further reduce the size of the tumor allowing the surgeon to maximally salvage non-involved renal parenchyma. Tumors not responding to therapy will require bilateral open renal biopsy and lymph node sampling in order to both determine histopathology and guide further treatment. Although right nephrectomy and partial left nephrectomy may eventually be the ultimate outcome for this patient, chemotherapy is the initial step in management with renal preservation the primary goal.

Ritchey ML, Shamberger RC: Pediatric urologic oncology, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 137, p 3721.

Question #15 **ANSWER=A**

Infection transmitted from a cadaver donor to an immunocompromised recipient can be rapidly fatal. Gross bacterial contamination of the operative site gives the surgeon only one single safe option which is to abandon the procedure.

Barry JM, Conlin MJ: Renal transplantation, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 44, pp 1236-1237.

Question #16 **ANSWER=B**

The patient has a delayed urine leak following high velocity penetrating renal trauma. CT scan and retrograde pyelogram reveal a urine leak. The next step is ureteral stent and urethral catheter drainage to prevent reflux of urine retrograde into the stent which may potentiate the leak and result in infection of the retroperitoneal hematoma. Ureteral stent placement may allow for resolution of the leak without operative intervention. The patient's recent history of shattered kidney along with liver and bowel injury placement of a percutaneous nephrostomy tube would result in increased risk for infection of the perinephric hematoma and maybe difficult to place and maintain in the proper position due to the renal injury. Exploration of the right kidney is not indicated at this time.

Santucci RA, Doumanian LR: Upper urinary tract trauma, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 42, p 1178.

Question #17 **ANSWER=B**

In this setting, one must determine if the hydronephrosis is causing significant obstruction and, if so, at what level in the urinary tract. The ultrasound may show ureteral dilation which suggests obstruction at the ureterovesical junction, but the MAG-3 renal scan will determine the differential function and the degree of obstruction. The ideal timing for performing this study is during the second month of life when the GFR has increased several fold. DMSA scan would not provide information regarding degree or level of obstruction. The magnetic resonance urogram may be useful after the first week of life, but does not provide differential renal function. Antegrade studies are not needed at this point and should not be performed prior to the less invasive MAG-3 renal scan. CT urogram does not provide quantitative data and exposes the infant to unnecessary radiation and anesthesia.

Lee RS, Borer JG: Perinatal urology, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 114, p 3064.

Palmer LS, Trachtman H: Renal functional development and diseases in children, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 112, p 3002.

Question #18 **ANSWER=C**

The center for integration and coordination of bladder and urethral activity is in the pons (pontine micturition center). Suprasacral spinal cord injury disrupts the necessary communication between the pontine micturition center and the sacral cord. This results in detrusor overactivity and detrusor external sphincter dyssynergia. Patients with this issue may have urinary incontinence, incomplete bladder emptying, and their upper tracts may be at risk.

Yoshimura N, Chancellor MB: Physiology and pharmacology of the bladder and urethra, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 60, p 1810.

Question #19 **ANSWER=D**

Nephrocalcinosis of infancy has been found in up to 64% of low birth weight (< 1500 g) or premature infants (gestational age of 32 weeks or less). Specifically, neonates who require oxygen for greater than four weeks of life, undergo dietary supplementation with high caloric formula (increased calcium and phosphate), and infants receiving loop diuretics are at the highest risk. The largest risk factor for nephrocalcinosis is in infants who have received loop diuretics (furosemide) to treat fluid overload, improve pulmonary oxygenation, and increase cardiac output. Indeed, 70% of the patients with nephrocalcinosis will have a history of prolonged loop diuretic exposure. The normal hypercalciuric effect of furosemide found in adults is enhanced in infants by the reduced glomerular filtration rate and the decrease hepatic function associated with infancy. The reduction in GFR and decreased systemic clearance of

loop diuretics by the liver will significantly prolong the half-life of this drug, resulting in excessive hypercalciuria. In infants with clinically documented nephrocalcinosis, approximately 15% will develop renal calculi by five years of age. The calculi isolated from these patients are composed exclusively of calcium oxalate. The vast majority of these infants (85%) will completely resolve their nephrocalcinosis following stopping the use of loop diuretics. Although neonatologists will frequently replace the use of loop diuretics by using thiazides for fluid management issues in these critically ill infants, it is noteworthy that resolution of nephrocalcinosis has not been found to be significantly enhanced by the use of thiazides. Treatment of infants diagnosed with nephrocalcinosis should be with stoppage of the loop diuretics and interval follow-up with renal ultrasound until the nephrocalcinosis has resolved or alternatively renal calculi have been documented to develop and necessary treatment has been accomplished. There is no association of nephrocalcinosis of infancy to renal tubular acidosis. Increased dietary calcium and phosphate in the diet routinely found in infant high caloric formula supplements may at times actually be a cause of nephrocalcinosis of infancy and is, therefore, not indicated as treatment.

Karlowitz MG, Adelman RD: Renal calcification in the first year of life. PED CLIN N AM 1995;42:1397-1413.

Ferrandino MN, Pietrow PK, Preminger GM: Evaluation and medical management of urinary lithiasis, in Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 46, p 1321.

Question #20 **ANSWER=A**

Horseshoe kidneys may develop renal calculi, possibly as a result of high insertion of the ureter and relative stasis of urine. Patients with small, nonobstructing calculi in nondependent locations may be treated with SWL. However, obstructing calculi or those that are large or in dependent locations, are best treated with percutaneous techniques. The initial puncture is more medial than that for normally positioned kidneys and should be placed through a posterior calyx.

Matlaga BR, Lingeman JE: Surgical management of upper urinary tract calculi, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 48, p 1368.

Question #21 **ANSWER=E**

This disease process is most likely a congenital mesoblastic nephroma (CMN) and should be distinguished from a Wilms' tumor by the patient's age and the fact that CMN is typically infiltrative on imaging, whereas Wilms' tumors displace and compress renal architecture. CMNs are the most common tumor in infants greater than four months of age, with a median age at the time of diagnosis of three months. In contrast, the median age for diagnosis of a Wilms' tumor is 3.5 years. Two types of mesoblastic nephroma exist, the classic type which is far more common, and, provided surgical margins are negative, rarely recur and the cellular variant. The cellular variant consists of atypical spindle cells with frequent mitotic figures (25-

30/10 hpf) and necrosis and is considered a variant of a fibrosarcoma. This variant is associated with both local recurrence and widespread metastasis. Surveillance by interval six month abdominal ultrasounds for the first two years is usually recommended for the classic variant and more aggressive follow-up with interval CT or MRI scans of the lungs and abdomen are recommended at three to six month intervals for the first two years for the cellular variant. Normal newborn kidneys are slightly echogenic, hence, the right kidney is normal in the boy presented here.

Ritchey ML, Shamberger RC: Pediatric urologic oncology, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 137, p 3723.

Question #22 **ANSWER=A**

Preoperative hypertension, especially uncontrolled hypertension, and bilateral application of SWL are risk factors for the development of perirenal bleeding. Patient size or weight, or stone size, location, and number do not correlate with this complication. Clinically significant perirenal hematomas occur in approximately 0.2-0.4 % of patients undergoing SWL. Most such patients can be managed with surveillance, although a third may require transfusion.

Matlaga BR, Lingeman JE: Surgical management of upper urinary tract calculi, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 48, p 1395.

Question #23 **ANSWER=D**

Uncomplicated vesicovaginal fistulas can be closed using meticulous technique and a multi-layer closure. Repair of more complex fistulae often requires the use of well-vascularized tissue flaps positioned between the bladder and vaginal repair sites. The use of Martius (fibrofatty tissue), myocutaneous labial (skin and fibrofatty tissue) or, more rarely, gluteal skin flaps can be used to repair low fistulas. Such flaps may not be of sufficient length to reach high fistulae. Peritoneal flaps can be harvested through the vaginal incision and are in close proximity to such fistulas. Use of peritoneum obviates the morbidity of an abdominal incision (necessary for harvesting the omentum) or an incision along the inner thigh (necessary for harvesting the gracilis muscle).

Rovner ES: Urinary tract fistulae, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 77, p 2240.

Question #24 **ANSWER=D**

The standard of care for decades in a patient with clinical stage I seminoma (negative CT scan and negative tumor markers) was retroperitoneal XRT. In patients receiving XRT for stage I

seminoma, the risk of overall relapse is 5% or less and it would be extremely uncommon for such a patient to relapse with nonseminomatous elements. The major concern regarding the routine use of XRT in these patients was the risk of secondary malignancy, usually leukemias and lymphomas found in approximately 18% of patients 25 years after radiation therapy. To reduce the risk of secondary malignancy, surveillance may be a reasonable option. In a patient with stage one seminoma, there is an approximately 15% risk of relapse of the tumor to retroperitoneal lymph nodes; almost all are salvaged provided they were reliable candidates for serial surveillance and were not lost to follow-up. Visceral and pulmonary relapse of seminoma or alteration to non-seminomatous elements is extremely uncommon in patients with stage I seminoma. Single agent carboplatin is the other option in place of either XRT or observation for clinical stage I seminoma and is associated with a 3-5% relapse rate in reported series.

Stephenson AJ, Gilligan TD: Neoplasms of the testis, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 31, pp 862-864.

Question #25 **ANSWER=A**

This is a typical presentation of pediatric benign urinary frequency syndrome and is best managed expectantly. Reassurance is all that is necessary with the expectation that the symptoms will resolve in one to three months. It is important to confirm that both the physical examination and urinalysis are normal with no evidence of neurologic abnormalities such as a spinal dimple or lower extremity weakness or UTIs. In most instances, pharmacological therapy and invasive investigation or therapy have proven to be unsuccessful and may actually worsen symptoms. In almost all cases, these symptoms resolve spontaneously within a few months and the family should be reassured.

Canning DA, Lambert SM: Evaluation of the pediatric urology patient, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 115, p 3070.

Yeung CK, Sihoe JDY: Non-neuropathic dysfunction of the lower urinary tract in children, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 127, pp 3412-3414.

Zoubeck J, Bloom DA, Sedman AB: Extraordinary urinary frequency. PED 1990;85:1112-1114.

Question #26 **ANSWER=E**

Urethral recurrence after neobladder is an uncommon but troublesome complication best treated with urethrectomy and some form of urinary diversion. The Studer neobladder affords a reasonable solution to this problem since the non-intussuscepted afferent limb may be detached from the neobladder and converted to a standard ileal loop. A transverse colon conduit would require ureteral reimplantation and continent cutaneous diversion and while an option, would have a greater complication rate in an older and previously operated upon

patient. Local therapies, such as BCG and laser fulguration, are inadequate for this invasive tumor.

Skinner EC, Skinner DG, Stein JP: Orthotopic urinary diversion, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 87, pp 2503-2504.

Question #27 **ANSWER=B**

The radiograph demonstrates the typical "bunches of grapes" or "bouquet of flowers" appearance of medullary sponge kidney. The characteristic anatomic feature of medullary sponge kidney is dilation of the distal portion of the collecting ducts associated with numerous cysts and diverticula. If symptomatic, most patients (60%) present with flank pain, followed by UTI (25%) and gross hematuria (15%). For patients with renal lithiasis and hypercalciuria, thiazides should be administered as they arrest stone growth and prevent new stone formation. Parathyroidectomy is not indicated in this patient with normal serum calcium and no measurement of serum parathormone. In the absence of an obstructing stone, PCNL is not indicated.

Pearle MS, Lotan Y: Urinary lithiasis: Etiology, epidemiology, and pathogenesis, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 45, p 1285.

Question #28 **ANSWER=A**

The syndrome of complete androgen insensitivity (CAIS), previously known as testicular feminization syndrome, is due to absence of a functional androgen receptor. All affected individuals will have a 46 XY genotype and approximately 80% will have "normal" appearing external female genitalia. These patients currently present by one of five different means: fetal karyotype (46 XY) incongruent with newborn infant's phenotype (5% of patients), relative or family member with CAIS with patient diagnosed due to recommendation for genetic screening (15% of patients), ambiguous genitalia at birth, i.e., female phenotype with palpable gonads or mild to moderate clitorimegaly (20% of patients), primary amenorrhea (30% of patients), and testicle found within a inguinal hernia at the time of surgical repair (30% of patients). Patients with complete androgen insensitivity syndrome will have a substantial increased risk of developing a testicular seminoma and if the testis is left in situ, approximately 20% of the patients will have developed a testicular malignancy by the age of 30. Removal of the testicles are, therefore, strongly recommended either prior to or immediately following pubescence. Gonadoblastoma is a tumor that is associated with disorders of sex development. Specifically, it is found in infants noted to have partial or pure gonadal dysgenesis (46 XY or 46 XY/XO genotypes) and is not associated with complete androgen insensitivity syndrome. Individuals with complete androgen insensitivity syndrome are at no higher risk of Leydig cell tumors, embryonal cell carcinoma, and teratomas than the normal population.

Diamond DA, Yu RN: Sexual differentiation: Normal and abnormal, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 133, p 3621.

Ritchey ML, Shamberger RC: Pediatric urologic oncology, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 137, p 3725.

Question #29 **ANSWER=C**

Persistent azoospermia following resection of the ejaculatory ducts may be due to persistent obstruction, concomitant epididymal obstruction, or testicular failure. The restoration of normal ejaculate volume rules out persistent ejaculatory duct obstruction, therefore, neither a repeat TUR-ejaculatory duct nor a TRUS is indicated. Scrotal exploration is necessary to differentiate between epididymal obstruction and testicular failure. Donor insemination is not necessary with obstructive azoospermia unless the obstruction is uncorrectable and the couple refuses ICSI. Varicocelectomy may be indicated in some instances of non-obstructive azoospermia but it is not helpful with obstructive azoospermia.

Sabanegh E, Agarwal A: Male infertility, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 21, pp 629-633, 634.

Question #30 **ANSWER=C**

The differential diagnosis of cystic testicular lesions includes: epidermoid cyst, dermoid cyst, prepubertal teratoma, juvenile granulosa cell tumor, cystic dysplasia of the rete testis, lymphangioma, simple cyst, and cyst degeneration after torsion. The patient's age, physical examination, and ultrasound findings suggest an epidermoid cyst or simple cyst. Since these lesions are clinically indistinguishable from neoplasms, preoperative tumor markers should be drawn. In this age group, if preoperative tumor markers are negative and a benign lesion is suspected on imaging, testicular sparing surgery via an inguinal incision with the use of frozen section histopathology for confirmation, should be attempted when possible. Cyst aspiration for cytopathology is neither diagnostic nor indicated, and worst, would upstage a malignant tumor and potentially seed the needle tract. Placement of a prosthesis is usually delayed until adolescence when an appropriate size prosthesis can be used, as well as involve the adolescent or young adult patient in preoperative discussion as to their desire for a prosthesis.

Ritchey ML, Shamberger RC: Pediatric urologic oncology, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 137, p 3725.

Garrett JE, Cartwright PC, Snow BW, Coffin CM: Cystic testicular lesions in the pediatric population. J UROL 2000;163:928-936.

Question #31 **ANSWER=B**

This patient has hemolytic uremic syndrome. This is most frequently due to E. coli infection, 70% due to the O157:H7 serotype. In recent years, many large outbreaks have occurred due to eating uncooked hamburger meat, cheese made from unpasteurized dairy products, and unpasteurized apple cider. With aggressive management of the acute renal failure, the majority of patients will recover normal renal function. The presentation is classic, with a prodrome of enterocolitis with bloody diarrhea, fever, gross hematuria, and oliguric renal failure. Treatment is supportive. Although hemolytic uremic syndrome classically arises following an E. coli enterocolitis, it can develop as a consequence of streptococcus pneumonia, post-bone marrow transplant, and Vitamin B12 metabolic disorders.

Palmer LS, Trachtman H: Renal functional development and diseases in children, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 112, pp 3012-3013.

Question #32 **ANSWER=C**

Patients with fibrosis/necrosis, only in the post-chemotherapy specimens, have a favorable prognosis with relapse rates of 10% or less in most series. Investigators have sought to identify factors that reliably predict for a high probability of fibrosis/necrosis in a post-chemotherapy residual mass. The absence of teratoma in the primary tumor, the percentage reduction in the retroperitoneal mass with chemotherapy (usually cited as 90% or greater), and the size of the post-chemotherapy residual mass have consistently been identified as predictors of fibrosis/necrosis in the post-chemotherapy specimens. In this question, pure embryonal carcinoma would be the best predictor of fibrosis only in the retroperitoneum. Neither pre-chemotherapy lymph node size nor pre-chemotherapy serum tumor marker levels are predictive for fibrosis and the percent reduction has been cited as 90% or greater to predict fibrosis. The absence of teratoma in the primary would predict for fibrosis, not the presence of teratoma.

Stephenson AJ, Gilligan TD: Neoplasms of the testis, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 31, pp 857-858.

Question #33 **ANSWER=E**

This child has an obstructing lower ureteral calculus. His immune status is depressed due to his recent chemotherapy, including a low platelet and WBC count. He is symptomatic and requires decompression of his kidney before he becomes septic. Considering his hematologic state, the best option is ureteral stent placement. Although observation, antibiotics, and/or alkalinization with a distal uric acid stone may be appropriate in an asymptomatic patient, in this scenario, immediate decompression is necessary. Ureteral stent is a better option than percutaneous nephrostomy due to the thrombocytopenia. SWL is not appropriate for a distal ureteral stone in a child.

Ost MC, Schneck FX: Surgical management of pediatric stone disease, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 135, pp 3669-3676.

Question #34 **ANSWER=C**

Approximately 50% of patients with multi-organ metastases from RCC exhibit evidence of skeletal involvement. It has been estimated that between 15% and 30% of such skeletal lesions are solitary. Eighty percent of skeletal metastases occur in the axial skeleton, thoracic/lumbar spine, and pelvis. When long bones are involved, only the proximal portions are characteristic targets for metastatic disease. Surgical treatment of bony metastases is indicated for weight-bearing bones with lytic lesions > 3 cm. Internal stabilization or replacement of the destroyed periarticular segment often results in significant pain relief and tremendously improves the patient's quality of life. For a lesion this large, XRT or strontium are likely to be ineffective. This patient needs surgery to prevent fracture as a priority over systematic treatments or pain management alone.

Laitinen M, Parry M, Ratasvuori M, et al: Survival and complications of skeletal reconstructions after surgical treatment of bony metastatic renal cell carcinoma. EUR J SUR ONCOL 2015;41:886-892.

D'Amico AV, Crook JM, Beard CJ: Radiation therapy for prostate cancer, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 104, p 2870.

Question #35 **ANSWER=C**

This boy has findings consistent with a neurogenic bladder associated with high storage pressures, detrusor overactivity, and tonic sphincter activity. In this scenario, if the physician is seeking to gain both urinary continence and provide safe storage pressures, treatment of the detrusor to improve compliance, decrease overactivity, and CIC to empty the bladder must be the mainstay of treatment. Injection of onabotulinumtoxinA into the external urinary sphincter would decrease detrusor LPP but would not aid in urinary continence. Although the combination of onabotulinumtoxinA into the detrusor and CIC would work, this would require general anesthesia to accomplish in a pediatric-aged patient and should not be pursued unless the patient has failed more conservative measures such as oral antimuscarinics and CIC. Enterocystoplasty could be considered as an option if medical therapy fails.

MacLellan DL, Bauer SB: Neuropathic dysfunction of the lower urinary tract, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 128, p 3437.

Question #36 **ANSWER=D**

Excessive placement of clips when managing the gonadal, adrenal, or lumbar branches can severely restrict the working space available for safe placement of the endovascular stapler later in the case when the main renal vein is addressed. Application of the stapler across a clip can lead to intraoperative or postoperative hemorrhage and must be avoided. Use of clips should have no effect on the ability to perform the lymphadenectomy, adrenalectomy, or the ability to achieve negative margins, or ability to control renal artery.

Kavoussi LR, Schwartz MJ, Gill IS: Laparoscopic surgery of the kidney, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 55, pp 1638-1639.

Question #37 **ANSWER=A**

Renal artery vasospasm may occur during renal hilar dissection, leading to reduced renal perfusion. The first step should be to simply reduce the insufflation pressure. This maneuver will allow improved renal perfusion and no additional steps are necessary in the majority of patients. If renal perfusion continued to be suboptimal, topical papaverine applied to the renal hilar vessels would be the next step. A fluid bolus in the presence of increased intraperitoneal pressure from the pneumoperitoneum is usually of little to no benefit. There is no role for systemic heparinization in this patient.

Eichel L, Clayman RV: Basics of laparoscopic urologic surgery, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 10. Philadelphia, Saunders Elsevier, 2011, vol 1, chap 9, pp 231-232.

Ratner LE, Montgomery RA, Kavoussi LR: Laparoscopic live donor nephrectomy: A review of the first five years. UROL CLIN N AM 2001;28:709-719.

Question #38 **ANSWER=E**

Use of denosumab or bisphosphonate therapy in men with prostate cancer has demonstrated two outcomes: prevention of osteoporosis and reduction of skeletal-related events. Denosumab and zoledronic acid both reduce analgesic use and the time to a skeletal event compared to placebo in this setting. However, these changes do not influence survival. None of the other listed agents will prevent bone events. The use of other agents such as enzalutamide or abiraterone have been shown to increase progression-free survival after the development of castrate resistant prostate cancer, but their immediate use in the hormone-sensitive setting is unknown. Estramustine can be associated with thromboembolic events and should not be used in this setting.

Antonarakis ES, Carducci MA, Eisenberger MA: Treatment of castration-resistant prostate cancer, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 110, p 2964.

Saad F, Gleason DM, Murray R, et al: A randomized placebo-controlled trial of zoledronic acid in patients with hormone-refractory metastatic prostate carcinoma. J NAT CANCER INST 2002;94:1458-1468.

Question #39 **ANSWER=B**

The CT image demonstrates a grade 4 renal laceration with extravasation of urine into a perinephric hematoma. The patient's symptoms of a low grade fever and ileus are consistent with peritoneal irritation from the perinephric urinoma and treatment is indicated. Options for management would be retrograde stent placement, with or without concurrent urethral catheter drainage, percutaneous nephrostomy or percutaneous drain placement. Retrograde stent placement provides the patient with a faster return to ambulation and normal activities with less concern for infection of the perinephric hematoma by the percutaneous tract. The disadvantage of placing a ureteral stent in children is the need for anesthesia for placement and removal and the small size of the ureteral stent. Specifically, if there is a large amount of blood clot in the renal pelvis, the clot may occlude the small ureteral stent with persistent extravasation of urine into the urinoma. In this radiograph, there is no evidence of significant blood clot within the renal pelvis and the urinoma is small in size, therefore, percutaneous nephrostomy or drain placement is not indicated. There is no significant hematoma present and, therefore, no need for selective angiographic embolization. The best treatment is with ureteral stent placement with concurrent drainage of the bladder via a urethral catheter to prevent free reflux up the stent from causing persistent symptoms. Once the ileus has resolved, the urethral catheter can be removed. Use of a urethral catheter alone would not be sufficient to treat the urinoma.

Husmann DA: Pediatric genitourinary trauma, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 138, p 3735.

Question #40 **ANSWER=A**

The clinical picture is consistent with Peyronie's disease. While the criteria for surgery includes the presence of stable and mature disease of at least a 12 month interval from its onset, surgical correction is not clearly warranted in this situation given the minimal degree (< 30 degrees) of penile angulation that may not preclude sexual intercourse. Penile prosthesis is not indicated in this patient due to the fact that he has adequate penile blood flow and minimal degree of penile curvature. Initial therapy may be best directed to improving erectile function using non-invasive oral pharmacotherapy such as PDE-5 therapy. Intracavernous pharmacotherapy is not recommended since it may exacerbate penile scarring.

Jordan GH, McCammon KA: Peyronie's disease, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 28, pp 798, 802.

Question #41 **ANSWER=C**

The presence of rete testis involvement is associated with approximately a 20-25% incidence of tumor relapse and lymphovascular invasion with approximately a 50% incidence of relapse of his tumor to his retroperitoneal lymph nodes. Placement of this patient on an observation protocol would suggest, at minimum, a 50% risk for the need for salvage chemotherapy. If he is observed and recurs, he will require chemotherapy which will have an adverse effect on his fertility. Chemotherapy, even if administered in low doses, can result in a permanent adverse effect on fertility in approximately 30% of patients. In contrast, fertility is preserved in 80%-90% of patients treated with a modified RPLND or nerve-sparing dissection, Even if he has retroperitoneal lymph node involvement found on pathologic assessment of his lymph nodes, RPLND is curative in two-third of these patients and chemotherapy can be avoided. The controversy regarding whether or not to proceed with modified RPLND is based upon the fact that approximately 50% of the patients would undergo needless surgery. Radiation therapy and carboplatin are not indicated in NSGCT.

Stephenson AJ, Gilligan TD: Neoplasms of the testis, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 31, pp 851-854.

Sheinfeld J, Bosl GJ: Surgery of testicular tumors, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 32, p 876.

Lowe BA: Surveillance versus nerve-sparing retroperitoneal lymphadenectomy in Stage 1 nonseminomatous germ-cell tumors. UROL CLIN N AM 1993;20(1):75.

Question #42 **ANSWER=C**

Uric acid stones are found in 34% of stone-forming patients with diabetes mellitus compared to 6% of non-diabetic stone formers. In essence, diabetic stone formers are approximately six fold more likely to develop a uric acid stone. Accordingly, diabetic stone formers have a lower urine pH compared with non-diabetic stone formers. The etiology of low urine pH in diabetic uric acid stone formers is believed to be due to insulin resistance. In normal individuals, insulin stimulates ammoniagenesis in renal tubule cells by promoting gluconeogenesis from glutamine and by stimulating ammonium excretion by the proximal tubular sodium/hydrogen exchanger. In obese patients with insulin resistance as seen in metabolic syndrome, failure of the renal tubule cells to respond to insulin results in defective ammonia production and/or excretion, thereby leading to a reduction in urinary pH and uric acid stone formation.

Pearle MS, Lotan Y: Urinary lithiasis: Etiology, epidemiology, and pathogenesis, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 45, p 1278.

Question #43 **ANSWER=D**

Osteoporosis is a recognized risk of long-term androgen ablation and has been shown to have significant clinical impact. Men started on LH-RH agonists should receive annual bone density scans and regular calcium and Vitamin D supplements. Treatment of osteoporosis, if it develops, may be done with bisphosphonates, but the ideal type of therapy is not proven. Prophylactic monthly zoledronate (Zometa®) or denosumab are cost prohibitive agents that have been shown to prevent bone-related events only in men with documented bony metastases.

Nelson JB: Hormone therapy for prostate cancer, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 109, p 2942.

Question #44 **ANSWER=A**

The accommodation of the bladder to increasing volumes of urine is primarily a passive phenomenon dependent on the intrinsic properties of the vesical smooth muscle and the quiescence of the parasympathetic efferent pathway. Stimulation of alpha-receptors do not initiate bladder relaxation. Stimulation of beta-2 and beta-3 adrenergic receptors in the detrusor muscle results in the direct relaxation of the detrusor smooth muscle. Mirabegron, a beta-3 agonist, takes advantage of this pathway to improve symptoms of overactive bladder.

Yoshimura N, Chancellor MB: Physiology and pharmacology of the bladder and urethra, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 60, pp 1790-1794.

Question #45 **ANSWER=C**

The retrograde urethrogram (RGUG) provided in the image is an incomplete study. Two major problems exist with this image. First, the patient is not tipped far enough laterally; this can be identified by the visible obturator ring. If either or both of the obturator rings are visible, a distortion of the urethra is produced due to an improper pelvic angle and the length of the stricture will appear shorter than it actually is. Second, not enough contrast passed through the stricture to delineate its proximal extent. A repeat RGUG would most likely not reveal any additional information. A voiding urethrogram would provide an antegrade study that will allow the physician to determine the proximal extent of the urethral stricture. To perform this study, the urologist may need to pass a glide wire through the stricture followed by a 6 Fr ureteral catheter. This will allow the bladder to be filled with contrast and not dilate or destroy the stricture. The patient is subsequently asked to void and the proximal location of the stricture identified. If you can combine the VCUG with a simultaneous RGUG, a so-called up and downogram can be obtained that will delineate the length of the stricture. Cystoscopy or urethral ultrasound would not add additional information as to the extent of the stricture. Urethral ultrasound has been shown to determine the degree of spongiofibrosis yet would not

add additional information over an antegrade study regarding the length of the stricture. Urethroplasty with incomplete staging information should not be performed in order to prevent unnecessary buccal mucosa harvest, and/or added operative time in the lithotomy position while a graft is unexpectedly harvested.

Jordan GH, McCammon KA: Surgery of the penis and urethra, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 36, p 970.

Question #46 **ANSWER=E**

Renal medullary carcinoma was first described in 1995 and, to date, less than 100 cases have been reported in the literature. It is an extremely aggressive disease with nearly all patients presenting with metastatic disease. Mean survival is less than six months and only two long-term survivors are reported in the literature. It has not been shown to respond to standard chemotherapy and/or immunotherapy regimens. Interestingly, approximately three-fourths of cases have been reported to involve the right kidney. Recent studies have reported amplification of the ABL gene and increased expression of ABL protein in the absence of BCR-ABL translocation characteristic of chronic myeloid leukemia. Medullary carcinoma is more common in patients with sickle cell trait. It tends to be central and infiltrative.

Campbell SC, Lane BR: Malignant renal tumors, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 49, p 1436.

Simpson L, He X, Pins M, et al: Renal medullary carcinoma and ABL gene amplification. J UROL 2005;173:1883-1888.

Question #47 **ANSWER=C**

Urine leak following partial nephrectomy occurs in up to 15% of cases. Provided a postoperative drain is left in situ, spontaneous closure of the urinary leak occurs within two to four weeks. In the case of an unrecognized or delayed urinary leak, the presence of an adjacent urinoma will prevent fistula closure and predispose the patient to infection/abscess formation. Percutaneous drainage of the urinoma is the preferred method used to control an unrecognized or delayed pyelocutaneous fistula. If the leak does not heal with drainage of the urinoma, consideration should be given to the possibility of either ureteral/bladder obstruction or bladder dysfunction as a cause of the persistent fistula. In these situations, a cystoscopy with a retrograde pyelogram followed by ureteral stent and urethral catheter placement should be pursued. The concomitant urethral catheter is used to aid healing by preventing high pressure reflux up the ureteral stent and/or to treat bladder outlet obstruction or voiding dysfunction as an etiology for the persistent urinary fistula.

Kavoussi LR, Schwartz MJ, Gill IS: Laparoscopic surgery of the kidney, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 55, p 1668.

Question #48 **ANSWER=A**

Unfortunately, no prostate is the perfect sphere, ellipse, or prolate sphere, rendering calculations somewhat inaccurate. The most accurate means of volume measurement by ultrasound is planimetry, which allows for variation in shape. In this, the probe is mounted on a stepping device and the signal marched through the gland at defined intervals, usually 3-5 mm. At each interval, the surface area of the prostate image is obtained. Volume is calculated by multiplying the sum of the surface areas by the stepping interval. While a prolate ellipsoid is the calculation typically used in TRUS of the prostate, it is not as accurate as planimetry. Because of its superior accuracy, planimetry is the method of choice for brachytherapy treatment planning.

Trabulsi EJ, Halpern EJ, Gomella LG: Ultrasonography and Biopsy of the Prostate, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 97, pp 2737-2738.

Question #49 **ANSWER=D**

This patient has intermediate-risk, clinically localized prostate cancer. According to the AUA Guidelines for the management of clinically localized prostate cancer, as a standard, an assessment of the patient's life expectancy, overall health status, and tumor characteristics should be performed prior to making any treatment decisions. Life expectancy, not patient age, is a major factor to consider in treatment selection. When life expectancy is long, localized prostate cancer can be a cause of morbidity and mortality. On the other hand, when life expectancy is relatively short, competing causes for mortality reduce the chance that a man will experience disease progression or die from prostate cancer. Imaging studies, including CT scan, bone scan, and ProstaScint® scans are generally not indicated in the pretreatment evaluation of patients with clinically localized disease. This is especially true in patients with low and intermediate risk disease because the yield is so low to preclude their usefulness. Urodynamics are not indicated. The role of molecular testing in this setting remains uncertain.

Thompson I, Thrasher JB, Aus G, et al: Guideline for the management of clinically localized prostate cancer: 2007 update. MANAGEMENT OF CLINICALLY LOCALIZED PROSTATE CANCER GUIDELINE. American Urological Association Education and Research, Inc, 2007. http://www.auanet.org/education/guidelines/prostate-cancer.cfm

Question #50 **ANSWER=D**

Isolated nocturnal incontinence is commonly noted in patients who have undergone radical cystectomy and orthotopic neobladder. This is thought to be related to loss of afferent input from the detrusor to the central nervous system. Normally, the afferent input causes a reflex rise in urethral pressure during reservoir filling. This reflex is maintained following radical prostatectomy which explains why isolated nocturnal incontinence is uncommon after this

procedure. If there was damage to the rhabdosphincter, the patient would experience incontinence during the day and night, as opposed to isolated nocturnal incontinence. This would also be the case if the neobladder had poor compliance or had contractions. While some authors have suggested that damage to the pelvic and hypogastric plexus contributes to incontinence after cystectomy, this also would not cause isolated nighttime incontinence.

Skinner EC, Skinner DG, Stein JP: Orthotopic urinary diversion, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 87, pp 2499-2500.

Question #51 **ANSWER=C**

The urodynamic study is consistent with detrusor overactivity. This patient has failed medical therapy so the next option, if he would like to improve his continence, would be bladder augmentation or onabotulinumtoxinA. Pelvic floor physical therapy would not be helpful in a patient with a complete spinal cord injury. Sacral nerve stimulation does not have an FDA indication for the treatment of neurogenic bladder. Artificial urinary sphincter would be indicated for stress urinary incontinence which would be unlikely with this level of injury and was not demonstrated on the urodynamic study. Doses of onabotulinumtoxinA should not exceed 360 units every 12 weeks. Since this patient was injected for his spasticity last month, he would be best treated in two months and not immediately. In addition, further treatment of both his detrusor overactivity and lower extremity spasticity with onabotulinumtoxinA should be coordinated between his urologist and physiatrist to eliminate the potential for over dosage over a period of time. Regarding the treatment of neurogenic bladder with onabotulinumtoxinA, 200 units is an efficacious starting point with the dose increased to 300 units for refractory cases. Studies comparing injections of onabotylinumtoxinA into the detrusor only, compared to a combined injection, with two-thirds of the volume injected into the detrusor and one-third of the volume injected into the trigonal areas, have found that the combination injection had better relief of symptoms, improved compliance, and no increased risk of vesicoureteral reflux compared to detrusor-only injections.

Andersson KE, Wein AJ: Pharmacologic management of lower urinary tract storage and emptying failure, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 68, p 2002.

http://www.auanet.org/education/guidelines/prostate-cancer.cfm
Gulanhusein A, Mangera A: OnabotulinumtoxinA in the treatment of neurogenic bladder. BIOLOGICS 2012;6:299-306.

Question #52 **ANSWER=D**

T1 tumors with aggressive features (tumor size > 3 cm, micropapillary histology, and lymphovascular invasion) have an increased risk of progression and should undergo definitive cystectomy that is highly effective for early stage tumors. While intravesical BCG is an option for the treatment of T1 bladder cancer, the high risk features of this tumor leave the patient at a very high risk of relapse and progression. This is inappropriate given his young age and

excellent health. Partial cystectomy is not the best choice for tumor control given the high risk of multifocal recurrences within the remaining bladder. Prophylactic radiotherapy and systemic chemotherapy have not been shown to reduce the risk of recurrence in individuals with T1 disease. Micropapillary urothelial carcinoma is unlikely to respond to intravesical therapies. The use of neoadjuvant chemotherapy in non-muscle invasive disease is unproven, so immediate cystectomy is most appropriate.

Wood DP: Urothelial tumors of the bladder, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 80, p 2331.

Question #53 **ANSWER=E**

The etiology of diarrhea following urinary diversion is related to the type and amount of bowel used in the diversion. Many patients initially suffer from diarrhea after the procedure, but this usually resolves during the postoperative period. A small number of patients suffer chronic and bothersome diarrhea that necessitates treatment. In the case of diversions that require ileal resection of > 40 cm but < 100 cm, the diarrhea is thought to be due to decreased ileal bile salt absorption that leads to increased bile salt delivery to the colon. This in turn leads to colonic irritation and increased bicarbonate and water secretion. This is effectively a secretory diarrhea. The initial treatment should be decreased fat intake and initiation of cholestyramine. In contrast, diversions in which the ileocecal valve or colon is resected result in decreased bowel transit time and an osmotic diarrhea. This is best treated with oral bulking agents and loperamide. Vitamin B12 replacement is usually indicated in patients who have had significant portions of terminal ileum removed, but this will not impact the diarrhea. Fluid restriction is not advisable in the setting of a urinary diversion.

Dahl DM, McDougal WS: Use of intestinal segments in urinary diversion, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 85, pp 2446-2447.

Question #54 **ANSWER=B**

The management of upper tract urothelial carcinoma has changed significantly in the past decade as endoscopic technologies have improved. Many of these tumors, which previously would have been managed by open surgical excision, can now be safely managed with endoscopic ablation. Patients with low volume, low grade, and low stage disease can be safely managed with minimally invasive techniques. Other factors that should lead to strong consideration of minimally invasive management include renal insufficiency or other abnormalities. In this case, the patient has a single non-invasive, low grade tumor which favors a minimally invasive nephron-sparing approach. While ureterectomy would spare the involved kidney, it is a major surgical procedure. As such, the likely minimal added cancer control benefit of open surgical extirpation over endoscopic management is outweighed by the risk of peri-operative complications. While ureteral stent placement or percutaneous nephrostomy with BCG instillation might be indicated for higher grade or stage disease managed endoscopically, it is unnecessary in this situation. In this case, endoscopic laser ablation is

likely adequate initial treatment of the ureteral tumor. Follow-up for these tumors must include evaluation of both the upper tract and the bladder, as there is increased risk of bladder tumors in these patients. Therefore, quarterly upper tract surveillance with imaging or ureteroscopy, cystoscopy, and urine cytology is the best surveillance strategy in this patient. BCG for high grade upper tract UC is occasionally used in patients with a solitary kidney or similar circumstances, but there is no definitive data to support a benefit.

Sagalowsky AI, Jarrett TW, Flanigan RC: Urothelial tumors of the upper urinary tract and ureter, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 53, p 1552.

Question #55 **ANSWER=E**

The incidence of tumor involving the urethra in women undergoing cystectomy for bladder urothelial carcinoma is approximately 12%. The urethral recurrence rate in properly selected patients is low at less than 4%. Bladder neck tumor involvement in women, however, may be seen in approximately 22% of patients and is a risk for a urethral tumor in about half (12%). Preoperative involvement of the bladder neck with tumor in women is not an absolute contraindication as long as full-thickness, intraoperative, frozen section analysis reveals no tumor involvement of the proximal urethra (distal surgical margin). Age, tumor grade and pathological stage do not appear to be significant risk factors or contraindications to orthotopic diversion in women. CIS and multifocality also increase the risk of urethral occurrence, but not to the same degree as bladder neck involvement.

Stein JP, Penson DF, Wu SD et al: Pathological guidelines for orthotopic urinary diversion in women with bladder cancer: A review of the literature. J UROL 2007;178:756-760.

Skinner EC, Skinner DG, Stein JP: Orthotopic urinary diversion, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 87, pp 2483-2484.

Question #56 **ANSWER=B**

The ilioinguinal nerve runs in the cremaster layer, and can be effectively spared by opening the cremaster and separating it from the remainder of the cord. The nerve does not have to be individually dissected.

Chung BI, Sommer G, Brooks JD: Anatomy of the lower urinary tract and male genitalia, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 2, pp 46-47.

Question #57 **ANSWER=D**

Congenital bilateral absence of the vas deferens (CBAVD) is associated with cystic fibrosis gene mutations in 85% of patients. Approximately 7% of brothers will have also vasal agenesis. Only 10-15% of men with CBAVD will have unilateral renal agenesis and most of these are in patients with no identifiable cystic fibrosis gene mutation. There is no association with Y microdeletions. Semen is almost always of low volume and acidic due to hypoplasia or absence of the seminal vesicles, which provide alkalinity.

Oates RD: The genetic basis of male reproductive failure. UROL CLIN N AM, 2008;35:257-270.

Sabanegh E, Agarwal A: Male infertility, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 21, pp 641-642.

Question #58 **ANSWER=D**

Consequences of PUV are detrusor hypertrophy and bladder neck hypertrophy. The outlet obstruction will result in elongation and dilation of the prostatic urethra due to the relative lack of musculature of the prostatic urethra. The hypertrophy of the bladder neck causes an upward course of the prostatic urethra and a high riding bladder neck which can make urethral catheterization difficult. During cystoscopy of such a posterior urethra, the cystoscope must be angled directly anterior in order to gain access to the bladder. All of the other options may also make catheterization difficult, but they are less likely to occur than bladder neck hypertrophy in the setting of a history of posterior urethral valves. .

Casale AJ: Posterior urethral valves, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 126, p 3391.

Question #59 **ANSWER=C**

In this clinical scenario, the use of topiramate creates a chronic intracellular acidosis. This in turn creates a urinary milieu similar to distal renal tubular acidosis with hyperchloremic acidosis, high urine pH, extremely low urinary citrate, and hypercalciuria. Treatment may be potassium citrate or cessation of the medication if possible. Amiloride will reduce urine calcium when used in conjunction with thiazide but is not indicated in this situation. Allopurinol is the preferred treatment for hyperuricosuria. Calcium carbonate has no role in the medical management of kidney stones. Topiramate acts as a carbonic anhydrase inhibitor and addition of a similar agent would be counterproductive.

Pearle MS, Goldfarb DS, Assimos DG, et al: Medical management of kidney stones: AUA Guideline: AUA Guideline. American Urological Association Education and Research, Inc, 2014, http://www.auanet.org/education/guidelines/management-kidney-stones.cfm

Question #60 **ANSWER=A**

Ischemic priapism presenting in a significantly delayed fashion (> 48-72 hours) may predictably fail to resolve with intracavernous treatment as well as surgical shunting and suggests that erectile dysfunction will be the inevitable outcome. Even if a successful shunt is performed, woody induration of the penis may persist. To confirm the presence of persistent hypoxemia, a penile Doppler ultrasound to assess for vascular flow and a corporal blood gas determination should be performed. If these evaluations confirm poor vascular flow and continued ischemia, experts have advocated immediate placement of a penile prosthesis. The recommendation is based in part on the knowledge that placement of a penile prosthesis at a later time, after significant fibrosis has evolved, is extremely difficult and fraught with higher complication rates. Based on the duration of priapism, it is unlikely that continuous irrigation with an alpha-adrenergic agent or systemic baclofen would be effective. Selective embolization of the cavernosal artery is a consideration for treatment of high flow priapism, not ischemic induced priapism.

Broderick GA: Priapism, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 25, p 760.

Question #61 **ANSWER=C**

Lesion size is the most reliable clinical means to differentiate benign from malignant incidental adrenal tumors. Tumors < 4 cm in size are malignant in only 2% of cases. All of the listed radiographic techniques have been applied to adrenal tumor diagnosis, however, CT scan without and with contrast with measurement of contrast washout is the most reliable indicator for malignant mass. On non-contrast images, lipid-rich adrenal adenomas will be homogenous and will have < 10 Hounsfield units. For lesions with > 10 Hounsfield units, a washout contrasted CT scan is necessary to distinguish benign lipid-poor adenomas versus malignant masses. Malignant masses will have delayed washout of contrast maintaining an average of 30 Hounsfield units higher signal intensity at ten minutes following contrast administration when compared to benign lesions which washout rapidly.

Kutikov A, Crispen PL, Uzzo RG: Pathophysiology, evaluation, and medical management of adrenal disorders, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 57, pp 1726-1728.

Question #62 **ANSWER=E**

This child has a patent urachus. Fifty percent of radiographically confirmed patent urachus will spontaneously close in the first six months of life and observation is warranted. Topical silver nitrate is a reasonable treatment modality for small urachal cysts, but the physician should be aware of the increased risk of bladder or bowel injury with silver nitrate used in the presence of a patent urachus or omphalomesenteric duct (connection of the umbilicus to small bowel).

Treatment of a patent urachus or mesonephric duct (i.e., omphalomesenteric duct) by silver nitrate is contraindicated due to possible injury to the bladder or small bowel. A CT or MRI scan is sometimes obtained on these children to exclude a patent omphalomesenteric duct; however, in this case, the CT scan is not necessary because the diagnosis of patent urachus is confirmed by sinogram. A VCUG is usually not necessary if a sinogram confirms the diagnosis unless history suggests the presence of a bladder outlet obstruction that could be the etiology of urachal patency.

Frimberger DC, Kropp BP: Bladder anomalies in children, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 125, pp 3381-3384.

Question #63 **ANSWER=C**

The most common cause of hyperuricosuria is excessive dietary purine intake. Gout, metabolic syndrome (obesity, hypertension, hyperlipidemia, and hyperglycemia) and myeloproliferative disorders are significant but less common risk factors. Decreased urinary volume and decreased citrate intake are not typical causes of hyperuricosuria. Excess Vitamin C intake is associated with hyperoxaluria.

Pearle MS, Goldfarb DS, Assimos DG, et al: Medical management of kidney stones: AUA Guideline: AUA Guideline. American Urological Association Education and Research, Inc, 2014. http://www.auanet.org/education/guidelines/management-kidney-stones.cfm

Question #64 **ANSWER=B**

Partial penectomy with an adequate surgical margin is the treatment of choice for urethral tumors localized to the distal half of the penis. Palpable inguinal lymph nodes occur in about 20% of cases and almost always represent metastatic disease, in contrast to penile cancer, in which a substantial percentage of palpable nodes may be inflammatory. Lymphatics from the male anterior urethra drain into the superficial and deep inguinal lymph nodes and occasionally into the external iliac nodes. Ilioinguinal lymphadenectomy is indicated in the presence of palpable inguinal lymph nodes without evidence of metastatic disease. Unlike penile cancer, benefit from prophylactic contralateral inguinal node dissection or XRT has not been demonstrated in urethral cancer. Although some instances of tumor control by radiation have been reported, in general, XRT has been reserved for patients with early-stage lesions who refuse surgery. The combination of chemotherapy and radiation has shown some success in a small number of patients, however, squamous cell cancers respond poorly to the M-VAC regimen.

Sharp DS, Angermeier KW: Surgery of penile and urethral carcinoma, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 35, p 948.

Question #65 **ANSWER=C**

It is recognized that underlying genitourinary malformations or other pathologies are at least three-fold more common in pediatric patients relative to adults undergoing evaluation for trauma. This is a classic case for raising the concern of an underlying abnormality since the gross hematuria seems out of proportion with the low severity of the trauma. The underlying problems may include hydronephrosis, multicystic kidney, Wilms' tumor, and various renal fusion anomalies. Therefore, it is appropriate to image with ultrasound to look for such potentially significant problems. A patient should not be considered for admission with serial examinations and hematocrit determination unless there is a documented substantial renal injury. Cystoscopy is not indicated in the initial evaluation of gross hematuria in children. CT scan would only be indicated if there is significant injury or abnormality on ultrasound, or if the mechanism of injury was more concerning.

Husmann DA: Pediatric genitourinary trauma, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 138, p 3742.

Question #66 **ANSWER=C**

This child has new onset reflux and febrile UTIs after a surgical procedure that increased his bladder outlet resistance. Of concern in this situation is that approximately 15% of patients with a neurogenic bladder will develop a poorly compliant bladder after increasing urinary outlet resistant. New onset of vesicoureteral reflux in this situation may be due to either noncompliance with CIC, thus resulting in an overdistention of the bladder, or the development of detrusor non-compliance. Urodynamics are first required to see if the bladder has deteriorated and to better direct treatment. If compliance and capacity are unchanged, then attention to the frequency of catheterization, with or without the addition of antimuscarinic therapy, should be the primary consideration. Treatment of reflux in a patient with a neurogenic bladder is not appropriate without an understanding of bladder dynamics since high storage pressures doom correction to failure. A spinal MRI scan can be considered if the urodynamics are abnormal, although a change in bladder function is likely related to the sling and not a tethered cord.

Adams MC, Joseph DB: Urinary tract reconstruction in children, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 129, p 3464.

Question #67 **ANSWER=D**

The patient appears to be obstructed following mid-urethral sling placement and should be considered for sling incision. Urodynamic data can be useful in select cases, but if the symptoms began after the sling was placed, she will likely need to have the sling incised regardless of urodynamic findings. Cystoscopy is necessary, however, to evaluate for urethra or bladder mesh perforation and other bladder pathology, as well as hypersuspension, and

should be done before planned sling incision. Cystoscopy is of particular importance in the patient with hematuria. Sling incision will likely be necessary but only after cystoscopy has ruled-out overt urethral erosion or other bladder/urethral pathology. Office urethral dilation is not recommended at such a late period of time after sling surgery as the synthetic mesh is likely scarred in at this time. Tamsulosin may help mild functional obstructions but iatrogenic anatomic obstruction is unlikely to improve.

Dmochowski RR, Padmanabhan P, Scarpero HM: Slings: Autologous, biologic, synthetic, and midurethral, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 73, pp 2148-2150.

Question #68 **ANSWER=C**

The urodynamics are consistent with bladder outlet obstruction with a voiding pressure close to 100 cm H_2O and a maximal flow close to 9 ml/sec. All of the options address bladder outlet obstruction, however, only the prostatic urethral lift does not cause retrograde ejaculation. TUIP, TUMT, PVP, and HOLEP all place patients at risk for retrograde ejaculation with the risk ranging from 9.2-67%. The prostatic lift obtained FDA approval in 2013 for the treatment of symptomatic BPH. The procedure does not involve cutting or resection of prostate tissue, instead relying on an implant to "lift" or pull the prostatic tissue away and open the prostatic urethra. To date, there have been no reports of erectile dysfunction or retrograde ejaculation in patients treated with this modality.

Perera M, Roberts MJ, Doi SA, et al: Prostatic urethral lift improves urinary symptoms and flow while preserving sexual function for men with benign prostatic hyperplasia: A systematic review and meta-analysis. EUR UROL 2015;67:704-713.

Cornu JN, Ahyai S, Bachmann A, et al: A systematic review and meta-analysis of functional outcomes and complications following transurethral procedures for lower urinary tract symptoms resulting from benign prostatic obstruction: EUR UROL 2015;67:1066-1096.

Question #69 **ANSWER=D**

The best answer involves nephrouretectomy in this setting with hemodialysis and possible future renal transplantation. The use of BCG in patients with ileal conduit urinary diversion is associated with up to a 10% risk of sepsis due to absorption. Partial nephrectomy in the setting of multifocality is associated with an unacceptable recurrence rate. Systemic chemotherapy would be poorly tolerated in the setting of a solitary kidney and not effective for CIS. The ileal conduit should be left in-situ and could be used in the future if renal transplantation is planned.

Thalmann GN, Markwalder R, Walter B, Studer UE: Long-term experience with bacillus Calmette-Guerin therapy of upper urinary tract transitional cell carcinoma in patients not eligible for surgery. J UROL 2002;168:1381-1385.

Sagalowsky AI, Jarrett TW, Flanigan RC: Urothelial tumors of the upper urinary tract and ureter. Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 53, pp 1525-1528.

Question #70 **ANSWER=B**

Early recognition of the diagnosis, aggressive surgical debridement and the use of broad-spectrum antibiotics are the most essential interventions in stopping the rapidly progressing infectious process of Fournier's gangrene. The combination of aggressive surgical therapy and appropriate antibiotic coverage has been documented to result in a reduction in mortality. Although high volume centers may have lower mortality, transfer to a tertiary facility may interrupt or delay care and should not be considered until the patient is initially stabilized. While hyperbaric oxygen has been proposed to reduce ongoing necrotizing tissue loss, it has not been found to reduce mortality. Glycemic control while important has also not been shown to influence survival. Diversion of urinary or fecal streams play a major role in reducing postoperative wound complications and length of postoperative care but have not been directly correlated to increased patient survival.

Norton KS, Johnson LW, Perry T, et al: Management of Fournier's gangrene: An eleven year retrospective analysis of early recognition, diagnosis, and treatment. AM SUR 2002;68:709-713.

Sorensen MD, Krieger JN, Rivara FP, et al: Fournier's gangrene: Management and mortality predictors in a population based study. J UROL 2009;182:2742-2747.

Question #71 **ANSWER=C**

The patient presented with symptoms of autonomic dysreflexia that have temporarily subsided but are likely to recur. This represents a life-threatening situation. Stent placement will avert recurrent obstruction and dysreflexia. Alkalinization and medical expulsive therapy are appropriate once the patient has been stented. Surgical intervention should be entertained if dissolution therapy is unsuccessful.

Wein AJ, Dmochowski RR: Neuromuscular dysfunction of the lower urinary tract. Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 65, p 1926.

Question #72 **ANSWER=B**

Even though mesh is not directly palpable on exam, the patient should be presumed to have an extrusion based on the bloody vaginal discharge six months out from surgery. Observation may be reasonable early on, but is unlikely to lead to resolution of the extrusion at this point. Vaginal estrogen is reasonable for a small exposure, such as this one, and failing that, partial sling excision with reapproximation of the vaginal edges may be necessary. Alternatively, one

may wish to go straight to partial excision with reapproximation. Complete sling excision would not be required in the case of small extrusion such as this one. If the patient had not had prior hysterectomy, then evaluation for vaginal bleeding (particularly uterine pathology) should be considered. If this patient had blood in the urine or severe new onset urinary symptoms, then cystoscopy would be warranted.

Dmochowski RR, Padmanabhan P, Scarpero HM: Slings: Autologous, biologic, synthetic, and midurethral, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 73, p 2115.

Question #73 **ANSWER=A**

Bagged collection of urine for evaluation in infants is notoriously non-specific for true urinary infection. The usual conundrum is that a bagged specimen will include many bacteria which were perineal and not within the urinary tract; this leads to many false positive results. However, when a bagged specimen shows no growth on culture, it can be seen as being a strong indicator with a > 99% probability that no urinary infection is present. Basically, a bagged culture is helpful to rule out infection if negative, but not very helpful to rule in infection; indeed studies have revealed that if the bag specimen is positive for > 100,000 colonies of a single organism, up to 80% of the specimens will be false positive compared to simultaneously obtain catheterized urine specimen. Leukocyte esterase was positive, but this finding only indicates that the urine came into contact with inflamed tissues and is not at all very specific for a true UTI. Urinary nitrite is produced when bacteria that reduce urinary nitrate to nitrite have been in contact with the urine. Classically, this signifies that the urine has come into contact with a member of the bacterial family of Enterobacteriaceae, e.g., Escherichia coli, Klebsiella, Proteus, Enterobacter, Serratia, or Citrobacter. It is noteworthy that clinically symptomatic UTIs with streptococcus, enterococcus, pseudomonas, and Candida will turn urine nitrite positive in < 5% of infections. The combined findings in this patient highly suggest that this girl is very unlikely to have a UTI; negative bagged urine culture, negative urine nitrite. She should not be treated for ~~UTI~~ and repeat culture in this circumstance is likely a waste of resources. Another source for the possible febrile illness should be sought.

Shortliffe LMD: Infection and inflammation of the pediatric genitourinary tract, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 116, pp 3096-3097.

Question #74 **ANSWER=D**

Uroflow evaluation with the determination of urinary residual is an important screening tool for patients with lower urinary tract symptoms. Normal values vary depending on age, sex, and volume voided. In men, urine flow declines with age while women will have minimal alterations with age. In general, in pre-pubertal males and females, the average peak flow rates range from 10-15 ml/sec. Post-puberty until age 45 years, the average peak uroflow rate in males is 21 ml/sec. The average peak flow rate for females is 18 ml/sec. Between the ages 46 to 65 years, the average peak uroflow rate for males will decrease to 12 ml/sec. The average peak uroflow rate for females will remain at 18 ml/sec. Between 66 to 80 years of age, the average

peak uroflow rate for males will further decrease to 9 ml/sec. The average peak uroflow rate for females remains at 18 ml/sec. In general, provided the patient voids a minimum of 125-150 ml, urologists will find a peak flow rate of < 15 ml/sec in one third of patients evaluated (one standard deviation below the mean) and a peak flow rate of < 12 ml/sec in 5% (two standard deviations below the mean). In using the uroflow to evaluate patients, it is critical to note the following: 1) The uroflow represents the combined dynamics of the outflow tract and detrusor contractility, a decrease in peak uroflow may be due to either the obstruction of the outflow tract, poor detrusor contractility, or both. 2) There is minimal to no correlation of the peak uroflow to prostate symptom scores. Specifically, pharmacological therapy for BPH will frequently document significant improvement in symptom scores with minimal to no increase in peak uroflow. 3) Studies have found that patients with a peak uroflow of > 15 ml/sec have significantly less improvement in prostate symptoms scores following TURP compared to patients with a peak uroflow of < 15 ml/sec. The uroflow, being of prognostic value in this circumstance, enables the surgeon to determine how well surgical intervention will improve the patient's symptoms.

McNicholas TA, Kirby RS, Lepor H: Evaluation and nonsurgical management of benign prostatic hyperplasia, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 92, pp 2616-2617.

Kumar V, Dhabalic J, Nelvigi G, et al: Age, gender and voided volume effect on peak uroflow rate and the uroflow nomogram. INDIAN J UROL 2009;4:461-466.

Question #75 **ANSWER=A**

Primary idiopathic (endemic) calculi form in children are commonly found in children from North Africa, the Middle East, and the Far East. With a large immigrant population in the United States, it is important to be aware of this health problem. These children classically rely on a cereal-based diet that is lacking in animal proteins. The lack of protein leads to a dietary phosphate deficiency, low urinary phosphate, and high levels of urinary ammonia. Due to this, the most common stone found in children from these areas is ammonium acid urate. High urinary sodium, calcium, and oxalate are not characteristic findings with endemic bladder stones.

Benway BM, Bhayani SB: Lower urinary tract calculi, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 89, p 2522.

Question #76 **ANSWER=C**

In patients with a suspected pheochromocytoma, it is critical to achieve adequate alpha-blockade prior to surgery. This is typically accomplished with phenoxybenzamine. In patients in whom blockade with phenoxybenzamine is inadequate, the addition of metyrosine, a tyrosine hydroxylase inhibitor, has been recommended to prepare the patient for anesthesia or surgery. An alternative to metyrosine would be to continue the phenoxybenzamine and add a beta-

blocker, but in this setting of inadequate alpha-blockade, the addition of a beta-blocker has on occasion been found to be associated with increased alpha-receptor stimulation and furthering hypertension. Therefore, the addition of metyrosine would be a better choice in patients who have their hypertension poorly-controlled by phenoxybenzamine. Weak alpha-blockers, such as prazosin, have been used, however, a majority of patients still appear to have hypertensive crises prior to or during surgery while on these drugs. Immediate surgical removal would be dangerous without pre-surgical medical stabilization which has not been accomplished in this patient. Clonidine and metyrapone do not play a role in the medical management of pheochromocytoma.

Kutikov A, Crispen PL, Uzzo RG: Pathophysiology, evaluation, and medical management of adrenal disorders, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 57, pp 1703-1711.

Michalakis K, Ilias I: Medical management of adrenal disease: A narrative review. ENDOCR REGUL 2009;43:127-135.

Pacak K, Eisenhofer G, Ahlman H, et al: Pheochromocytoma: Recommendations for clinical practice from the First International Symposium. October 2005. NAT CLIN PRACT ENDOCRINOL 2007;3:92-102.

Question #77 **ANSWER=D**

Abiraterone acetate is an oral Cyp-17 lyase and hydroxylase inhibitor indicated for the treatment of men with castration-resistant metastatic prostate cancer post-docetaxel treatment. The blockade of Cyp-17 inhibits androgen biosynthesis at all sites as well as inhibiting the biosynthesis of corticosteroids and can cause upregulation of ACTH and resultant hypersecretion of mineralocorticoids. Increased mineralocorticoids can cause hypertension, fluid retention, and hypokalemia. It is co-administered with prednisone. The most serious adverse event associated with its administration is hepatotoxicity, that can be severe and potentially life threatening. Liver enzymes as well as electrolytes must be checked frequently (every two weeks for the first three months) when initiating the medication. There is no associated renal toxicity. Fatigue, hypokalemia, and fluid retention are relatively common side effects but typically do not require dose reduction.

de Bono JS, Logothetis CJ, Molina A, et al: HI; COU-AA-301 Investigators. Abiraterone and increased survival in metastatic prostate cancer. NEJM 2011;364:1995-2005.

Question #78 **ANSWER=C**

Laparoscopic retroperitoneal lymphadenectomy (RPLND) has become a feasible technique compared to the open approach. The laparoscopic complications seem to compare favorably to the historic open RPLND series with the exception that an increased blood loss with the laparoscopic technique over the open technique has been reported. This complication appears to be related to the surgeon's experience and is more common during the initial learning curve.

That stated, this complication is still the most commonly reported complication of the laparoscopic procedure. The adequacy of the laparoscopic lymph node dissection in an experienced surgeon's hands is similar to open surgery with no increase in tumor recurrence noted. The observed frequencies in retrograde ejaculation, chylous ascites, and prolonged ileus are no different compared to the open approach.

Allaf JE, Kavoussi LR: Laparoscopic retroperitoneal lymphadenectomy for testicular tumors. Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 33, p 898.

Question #79 **ANSWER=C**

This child has clinical signs and symptoms of severe UTI (high fever, lethargy, and poor oral intake). Although culture results are not available, the urinalysis findings are suggestive of a UTI. Specifically, if both a positive leukocyte esterase and positive nitrite are present, 75% of the patients will have a positive culture result, i.e., a single bacterial organism at > 50,000 colonies of bacteria per ml of urine. If bacteria are seen on a catheterized urine specimen, it is 70% sensitive for a UTI for a positive culture result, i.e., a single bacterial organism at > 50,000 colonies of bacteria per ml of urine. The combination of these findings along with the patient's clinical symptoms strongly suggests that treatment should be instituted while awaiting the culture results. Nitrofurantoin achieves a low serum concentration, and is, therefore, inappropriate for severe systemic UTI. Imaging studies, such as ultrasound, CT, or MRI evaluation are indicated to rule out anatomic abnormalities if a child does not respond to treatment after 72 hours of I.V. appropriate antibiotics. A DMSA scan may be used to determine if the febrile infections is due to pyelonephritis, however, it should not be done prior to the institution of antibiotic therapy in this setting. The correct step is to begin a broad-spectrum antibiotic therapy, such as I.V. ceftriaxone.

Shortliffe LMD: Infection and inflammation of the pediatric genitourinary tract, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 116, pp 3097-3105.

Question #80 **ANSWER=A**

The LPP is determined by the resistance of the external sphincter. Antimuscarinic medication, such as oxybutynin, does not affect the external sphincter which is a striated muscle. Therefore, there should be no change in the LPP (detrusor or Valsalva). The effect of the antimuscarinic medication on the detrusor may increase bladder compliance by increasing the volume of urine stored at a given pressure, and thereby, increase the patient's bladder capacity. The closing pressure of the proximal urethra will not be affected.

Yeung CK, Sihoe JDY: Non-neuropathic dysfunction of the lower urinary tract in children. Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 127, p 3411.

McGuire E, Fitzpatrick C, Wan JW, et al: Clinical assessment of urethral sphincter function. J UROL 1993;150:1452-1454.

Question #81 **ANSWER=B**

Regarding operative risks for major urologic procedures, epidemiologic studies have shown that postoperative morbidity is fourfold and mortality is up to tenfold higher in smokers compared to nonsmokers. To decrease the risk of pulmonary complications to the level of a non-smoker, the smoking must be discontinued for at least two months preoperatively.

Vira MA, Steckel J: Core principles of perioperative care, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 6, p 161.

Question #82 **ANSWER=C**

BCG maintenance therapy is indicated for patients with CIS, even if focal, who achieve a complete response. The Southwest Oncology Group (SWOG) reported the most significant impact of maintenance therapy. Patients received a six-week induction course followed by three weekly instillations at three and six months and every six months, thereafter, for three years. This patient is at the three month point and should receive the first set of maintenance treatments as the next step. Estimated median recurrence-free survival was 76.8 months in the maintenance arm and 35.7 months in the control arm (P = .0001). Bladder biopsy is not necessary if the patient's cystoscopy and cytology are negative. Observation alone is not optimal therapy unless the patient has a contraindication or serious complication from BCG. Monthly BCG has been described and is commonly used, but has not been tested against the maintenance schedule proven to be effective in the large published SWOG trial.

Jones JS, Larchian WA: Non-muscle-invasive bladder cancer (Ta, T1, and CIS), Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 81, p 2335.

Question #83 **ANSWER=C**

Persistent drainage nine weeks following a repaired bladder injury would indicate issues related to poor healing such as foreign body, inadequate drainage from an indwelling catheter or recurrent/persistent malignancy. This injury is unlikely to heal with further catheter drainage following nine weeks of observation and waiting an additional three weeks and repeating a cystogram would be of little to no merit. The next step should be a cystoscopy and biopsy to rule out recurrent/persistent malignancy before proceeding with definitive therapy. Assuming the urethral catheter is working appropriately, suprapubic drainage will not be any more efficient and not resolve the issue. Fulguration of a fistula tract and/or injection of fibrin glue have been shown to be of benefit in fistula < 5 mm in size with definitive repair of fistula

pursued in large or persistent fistula. Surgical intervention, however, should not be pursued until persistent or recurrent malignancy has been ruled out.

Rovner ES: Urinary tract fistulae, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 77, pp 2252-2255.

Question #84 **ANSWER=D**

There is an increased awareness of the radiation risks of computed tomography. In view of this, ultrasound is an attractive alternative to measure stone size. The clinician should be aware of the limitations on ultrasound imaging of urolithiasis. Ultrasound will correlate approximately two thirds of the time with the stone size determined on CT scan. Specifically, the ultrasound will overestimate the size of one third of the stones smaller than 10 mm, and underestimating the size of one third of stones, > 10 mm. KUB underestimates > 90% stones, > 10 mm due in part to its inability to measure in three dimensions.

Viprakasit DP, Sawyer MD, Herrell SD, et al: Limitations of ultrasonography in the evaluation of urolithiasis: A correlation with computed tomography. J ENDOUROL 2012;26:209.

Parsons JK, Lancini V, Shetye K, et al: Urinary stone size: Comparison of abdominal plain radiography and noncontrast CT measurements. J ENDOUROL 2003;17:725.

Westesson K, Monga M: Asymptomatic renal calculi: Incidence and management. AUA UPDATE SERIES, 2012, lesson 36.

Question #85 **ANSWER=A**

This can be a challenging study to interpret due to the excessive activity from the rectal catheter. This results in artifactual activity in Pdet that is not a true change in this patient's detrusor pressures. In interpreting this study, it is important to look at all of the tracings on the study. Aside from a few pressure spikes due to cough, the Pves tracing is essentially flat to a filled volume of more than 1000 ml. This patient will be best treated with continued CIC. Therapies aimed at decreasing detrusor pressure (antimuscarinics and onabotulinumtoxinA) are not needed. Use of alpha-blockers would not be helpful in this patient who appears to have an areflexic bladder with only a small, short-lived rise in his vesical pressure at capacity. Lumbo-sacral re-routing was initially reported to be an option for spina bifida patients that were unable to void spontaneously; however, subsequent reports have not shown this to be overly beneficial and this procedure has not been evaluated in patients with urinary retention following laminectomy.

Wein AJ, Dmochowski RR: Neuromuscular dysfunction of the lower urinary tract, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 65, pp 1930-1931.

Question #86 **ANSWER=A**

Three neural pathways are necessary for complete sexual function. They are: sympathetic (T10-L2), parasympathetic (S2-S4), and motor function to the perineal muscles from the somatic motor neurons (S2-S4). Erections may be either cerebrally or directly induced by penile stimulation, i.e., reflexic erections. Cerebral induced erections occur in response to visual or sensory erotic stimulation to the cerebral cortex. Erections by this method occur via central innervation of the parasympathetic pathway, through the S2-S4 nerve routes and require an intact spinal cord. The parasympathetic pathway can also be stimulated by direct penile stimulation through S2-S4 sensory fiber stimulation to cause erections, i.e., reflexic induced erections. The three phases necessary for semen production are: emission, closure of the bladder neck, and ejaculation. In response to cerebral stimulation, signals are conducted down the thoracolumbar sympathetic nerves, resulting in sympathetic induce contraction of prostatic smooth muscle, seminal vesicles, and the vas deferens and allowing pre-ejaculatory fluid to be deposited into the prostatic urethra, a process called emission. Bladder neck closure occurs concurrently with emission in response to alpha-sympathetic stimulation by the sympathetic innervations. Emission will result in swelling of the bulbar urethra, the distension of the bulbar urethra stimulating rhythmic contractions of the bulbocavernosus, and pelvic floor muscles under somatic control through S2-S4 nerve roots (Onuf's nucleus). Semen is then projected in an antegrade fashion. Disruption of the sympathetic nerve fibers that travel through these plexuses with a complete spinal cord injury between T12-L2 can, therefore, cause loss of seminal vesicle emission and/or failure of bladder neck closure. Distention of the prostatic urethra will not occur, i.e., failure of emission, and the somatic controlled periurethral and pelvic muscles will not be stimulated to contract resulting in anejaculation. Reflexic erections, however, will be maintained since the parasympathetic and penile sensory S2-S4 nerve plexuses are intact.

Anderson JK, Cadeddu JA: Surgical anatomy of the retroperitoneum, adrenals, kidneys, and ureters, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 1, pp 14-18.

Lue TF: Physiology of penile erection and pathophysiology of erectile dysfunction, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 23, pp 693-695.

Sabanegh E, Agarwal A: Male infertility, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 21, pp 642-643.

Question #87 **ANSWER=A**

This asymptomatic patient has developed granulomatous prostatitis. This is a common condition following intravesical BCG therapy that requires no further intervention. If the patient is on maintenance BCG, it can be continued in this scenario. Isoniazid, rifampin, and cycloserine are used for systemic BCG toxicity and are not indicated in this case. The other more common side effect associated with intravesical BCG therapy is bladder irritability. This

symptom complex includes dysuria (91%), urinary frequency (90%), hematuria (46%), fever (24%), malaise (18%), nausea (8%), chills (8%), arthralgia (2%), and pruritus (1%).

Tareen B, Taneja SS: COMPLICATIONS OF INTRAVESICAL THERAPY. Taneja SS (ed): COMPLICATIONS OF UROLOGIC SURGERY, ed 4. Philadelphia, Elsevier Saunders, 2010, chap 8, pp 97-98.

Question #88 **ANSWER=C**

This patient has the valve bladder syndrome with progressive hydroureteronephrosis developing secondary to nephrogenic diabetes insipidus, obligatory high urine output, and a poorly compliant bladder at capacities of > 500 ml. With approximately 125-150 ml of urine output per hour, he would stay in fairly safe volume/pressure ranges if CIC was instituted every three hours. If hydroureteronephrosis persisted, then overnight catheterization would also be an option. Bladder augmentation would be too aggressive without an aggressive trial of medical management. Oral anticholinergics or onabotulinumtoxinA, if instituted without concurrent use of CIC, would be insufficient therapy due to already large PVR urine. Timed voiding every two hours while awake would also be reasonable option, however, this would not address his large residuals and may or may not address his hydroureteronephrosis and would demand strict follow-up to verify compliance with medical directives. Fluid restriction would not benefit this patient with nephrogenic diabetes insipidus and would only lead to relative dehydration and possibly worsening renal failure.

Casale AJ: Posterior urethral valves, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 126, pp 3402-3403.

Question #89 **ANSWER=D**

Intratubular Germ Cell Neoplasia (ITGCN) is diagnosed by testicular biopsy performed for the investigation of infertility, by biopsy of the contralateral testis in a patient with germ cell tumor (GCT), or by biopsy within the affected testis in a patient undergoing testis-sparing surgery. The rationale for treatment of ITGCN is based on the high risk of developing invasive germ cell tumor in at least 50% of patients. Treatment options include, orchiectomy, low-dose radiotherapy, and close observation. The choice of therapy should be individualized based on the patient's desire for future paternity, the presence or absence of a normal contralateral testis, and the patient's desire to avoid testosterone replacement therapy. Radical orchiectomy is the most definitive, although low-dose radiotherapy (20 Gy) is associated with similar rates of local control with the prospect of preserving testicular endocrine function owing to the relative radioresistance of Leydig cells compared with germinal epithelium. For patients who do not desire future paternity, XRT is the preferred option, although radical orchiectomy and testosterone replacement therapy is a reasonable alternative. For patients with a normal contralateral testis who desire future paternity (as is the case with this patient who is pursuing evaluation for infertility), radical orchiectomy is preferred because scatter to the contralateral testis from radiotherapy may impair spermatogenesis. For patients with semen parameters that are abnormal but sufficient for assisted reproductive techniques, close surveillance with

periodic ultrasound evaluation of the testis is a reasonable strategy with deferred therapy until successful pregnancy. Another option for these patients is exploration of the testis, sperm harvesting, and cryopreservation for assisted reproductive techniques, and radical orchiectomy followed by testosterone replacement therapy. Left varicocele repair alone does not address the concerns for malignant transformation of ITGCN. Single-dose carboplatin chemotherapy has been used in patients with stage I seminoma, but has no defined role in ITGCN. If no intervention is taken, close follow-up, as noted above, is still warranted.

Stephenson AJ, Gilligan TD: Neoplasms of the testis, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 31, pp 850-851.

Question #90 **ANSWER=B**

Penile fracture can usually be diagnosed by history and physical examination and imaging is unnecessary in the majority of patients. However, the clinician should be aware that differential diagnosis includes a false penile fracture and/or rupture of a penile vein with a subsequent penile hematoma. These latter patients may clinically present with the classic history of a typical snap-pop sensation and immediate detumescence as in this case. In cases in which the physical examination is not classic for a penile facture, imaging with a penile-perineal MRI scan is the most accurate test to prevent unnecessary surgical exploration. Both penile Doppler and cavernosography have very high false negative rates and are not recommended in the evaluation of suspected penile fracture. Obtaining a urinalysis to rule-out a concurrent urethral injury, found in up to 10-20% of patients with a penile fracture is absolutely necessary. In patients with a confirmed penile fracture, imaging of the urethra prior to exploration is mandatory and can be performed with either a retrograde urethrogram or cystoscopy at the time of the procedure. If a urethral injury is found, this should be repaired concurrently with the penile fracture.

Morey AF, Dugi DD III: Genital and lower urinary tract trauma, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 88, p 2507.

Question #91 **ANSWER=C**

The pressure flow urodynamic study reveals detrusor overactivity (DO), coexisting with urodynamic evidence of bladder outlet obstruction. In this study, external sphincter activity is noted with each episode of DO. This is a normal guarding response to an uninhibited bladder contraction and will occur in an attempt to prevent urge incontinence. When given permission to void, EMG activity, which measures the electronic potential of the external sphincter, appropriately quiets and the patient is able to void. Patients with multiple sclerosis (MS) may have DO which is seen in the urodynamic tracing. However, if high-pressure voiding was due to voiding dysfunction secondary to MS then the EMG would be active throughout the voiding phase. Hinman Syndrome (also termed non-neurogenic neurogenic bladder) and dysfunctional voiding are similar entities and would be characterized by simultaneous bladder emptying and voluntary striated sphincter contraction. Detrusor-external sphincter dyssynergia (DESD) is

also characterized by simultaneous detrusor and involuntary striated sphincter contraction. The likely etiology of this patient's urodynamic findings is benign prostate enlargement with secondary DO. Bladder outlet obstruction on a urodynamic study may be determined by use of either detrusor pressure flow rate nomograms, or alternatively may be diagnosed when two of the following four urodynamic criteria are met; flow rate < 12 ml/sec, detrusor pressure at peak flow > 50 cm/H_2O, elevated urethral resistance (Pdet at Qmax divided by 2 X Qmax > 0.2), or significant residual urine (> 100-150 ml) in the presence of high detrusor voiding pressures, i.e., detrusor pressures > 50 cm of H_2O at maximum flow rate. This patient has detrusor pressures at peak flow > 50 cm/H_2O, an elevated urethral resistance of approximately 0.3, and a peak uroflow at the cut-off level.

Nitti VW: Urodynamic and video-urodynamic evaluation of the lower urinary tract, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 62, pp 1861, 1862.

Wein AJ, Dmochowski RR: Neuromuscular dysfunction of the lower urinary tract, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 65, pp 1918, 1936.

Nitti VW: Pressure flow urodynamic studies: The gold standard for diagnosing bladder outlet obstruction. REV UROL 2005;7:S14–S21.

Question #92 **ANSWER=A**

Lansoprazole is a proton pump inhibitor (PPI). It is noteworthy that all PPIs have been found to be significantly associated with an increased risk of C. difficile colonization and infection. This has been attributed to their attenuation of acid secretion by the stomach and elimination of this barrier to bacterial colonization. None of the other medications has been associated with C. difficile colonization or infection.

Hookman P, Barkin JS: Clostridium difficile associated infection, diarrhea, and colitis. WORLD J GASTROENTEROL 2009;15:1554-1580.

Question #93 **ANSWER=D**

Production of erythropoietin (EPO) is closely associated with circulating oxygen levels. During conditions of hypoxia, hypoxia-inducible factor-1-alpha (HIF-1-a) is upregulated increasing EPO transcription. HIF-1-a is then rapidly degraded by proteases upon restoration of normal oxygen tension. Renin does not directly influence EPO production. Testosterone and angiotensin II induce erythrocytosis through proposed mechanisms, including stimulation of EPO, however, these are thought to be less significant than HIF-1-a. Mutation of the VHL gene such as in patients with von Hippel-Lindau syndrome results in constitutive production of HIF-1-a, increased EPO with resultant polycythemia. HIF-1-a also upregulates production of vascular endothelial growth factor (VEGF), which is the primary angiogenic factor responsible for the neovascularity associated with RCC.

Shoskes DA, McMahon AW: Renal physiology and pathophysiology, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 38, pp 1029-1030.

Question #94 **ANSWER=A**

Immunocompromised patients are generally considered to be contraindicated to receive intravesical BCG therapy due to the theoretical concerns of loss of efficacy and increase in toxicity. However, there exists little evidence to support or refute such claims. A recent report from Herr and Dalbagni demonstrate the safety and efficacy of intravesical BCG in immunocompromised patients including patients with autoimmune disease, transplant patients, and patients undergoing systemic chemotherapy. The authors demonstrated that intravesical BCG is safe and effective in immunologically compromised patients with bladder cancer with the majority of patients (91%) having an initial complete response. Transplant patients fared worse but still demonstrated a response to BCG with acceptable tolerability. Therefore, an initial trial of BCG therapy can be considered in this patient following appropriate counseling about risks, benefits, and safety issues. Valrubicin was approved by the FDA in 1998 for the treatment of BCG refractory CIS of the bladder in patients who are medically unfit or refuse a cystectomy, with modest efficacy observed in this setting. It is not indicated in this setting and its role in the immunocompromised patient is uncertain. Although thiotepa is the only intravesical chemotherapeutic agent FDA–approved for papillary bladder cancer, it may result in significant myelosuppression which would be of particular concern in the immunocompromised patient. Furthermore, its efficacy in CIS is limited and it has not been studied in this setting. Intravesical gemcitabine has been shown to have activity in non-muscle invasive bladder cancer in high-risk patients. Although early results are promising in the second line or salvage setting, the limited patient population evaluated supports the need for additional phase II and phase III studies. Moreover, its efficacy in the immunocompromised patient is unknown. Radical cystectomy is a reasonable option, but may be too aggressive for this patient as a first line option with untreated CIS.

Herr HW, Dalbagni G: Intravesical bacille Calmette-Guérin (BCG) in immunologically compromised patients with bladder cancer. BRI J UROL INT 2013;111:984-987.

Hall MG, Chang SS, Dalbagni G, et al: Guideline for the management of nonmuscle invasive bladder cancer: (Stages Ta, T1, and Tis): 2007 Update. American Urological Association Education and Research, Inc., 2007. http://www.auanet.org/education/guidelines/bladder-cancer.cfm

Jones JS, Larchian WA: Non-muscle-invasive bladder cancer (Ta, T1, and CIS). Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 81, pp 2343-2348.

Question #95 **ANSWER=A**

In the treatment of pyelonephritis, persistence of fever for 72 hours following initiation of I.V. appropriate antibiotics is within the range of normal and no additional studies should be done

at this time. Guidelines from the American Academy of Pediatrics recommend further radiologic testing in this age group only if the initial renal bladder ultrasound is abnormal or for occurrence of a second febrile UTI. Acute DMSA scanning may be helpful in situations where the diagnosis regarding the etiology of the fever is unclear and the physicians desire to document the presence of pyelonephritis. CT or MRI scans may be considered if the renal bladder ultrasound is abnormal or if fever persists beyond 72 hours. Persistent fever > 72 hours is best evaluated with either a CT or MRI scan, with repeat ultrasonography having an unacceptable false negative rate for documenting the presence of a perinephric abscess. A VCUG is not indicated in the acute setting but can be considered once the child is afebrile. Repeat cultures or broadened coverage is not required when initial sensitivities are available but should be considered for a temperature persisting > 72 hours. Circumcision at this age usually requires a general anesthetic and is not needed for a first UTI.

Shortliffe LMD: Infection and inflammation of the pediatric genitourinary tract, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 116, p 3085.

Question #96 **ANSWER=E**

The patient has suffered a ureteral contusion from a high velocity weapon, and many times the extent of the injury is underestimated at initial exploration. Following a high velocity injury, the patient is at high risk for subsequent ureteral stenosis, or tissue necrosis from delayed microvascular injury to the ureter. The best option for a distal ureteral contusion from a high velocity injury is ureteral reimplantation. A ureteroureterostomy should not be performed in the distal ureter. Observation, ureteral stent, and percutaneous nephrostomy drainage will not alter the eventual tissue damage from the blast effect and, thus, would not be helpful in this situation.

Santucci RA, Doumanian LR: Upper urinary tract trauma, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 42, pp 1179, 1182-1184.

Question #97 . **ANSWER=C**

Following ileal or colonic urinary reconstruction, patients are prone to the develop hyperchloremic, metabolic acidosis due to the exchange of ammonium ions (ammonium chloride) for carbonic acid and water. Treatment of chronic acidosis involves reduction of urinary contact time to ensure minimization of ammonium absorption. In the event the acidosis persists despite frequent catheterization, alkalinizing agents or inhibitors of chloride transport may utilized. Inhibitors of chloride transport, such as chlorpromazine or nicotinic acid, are generally not effective alone in the treatment of acidosis, but they may be used in conjunction with alkalinizing agents. In this case, the use of sodium bicarbonate and sodium citrate should be discouraged given the history of hypertension and the desire to limit sodium intake. As such, potassium citrate is the ideal first choice for treatment.

Dahl DM, McDougal WS: Use of intestinal segments in urinary diversion, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 85, pp 2442-2444.

Question #98 **ANSWER=E**

Interstitial cystitis (IC) is a clinical diagnosis characterized by diurnal and nocturnal urinary frequency and urgency, lower abdominal or suprapubic pain with bladder distension, and relief or improvement of pain with voiding. Symptoms should be present in the absence of identifiable pathology, e.g., UTI, and persisting for greater than nine months. Urodynamic evaluations will typically show a bladder capacity < 350 ml. The International Continence Society (ICS) prefers the term "painful bladder syndrome" (PBS) to describe this symptom complex, and reserves the diagnosis of IC for patients with "typical cystoscopic and histological features following hydrodistention". Classic cystoscopic findings are glomerulations and bladder wall petechial hemorrhage found following hydrodistention. The urologist must be aware, however, that these cystoscopic findings can also be seen upon hydrodistention in patients without IC and other diagnostic criteria, as noted above, must be met. In addition to glomerulations, Hunner originally described a characteristic lesion or "ulcer" in some patients with IC which has led to the classification of IC into 2 types: ulcerative and non-ulcerative. Approximately 15% of patients with IC will have extremely painful areas of inflammation in the bladder, well known as Hunner's lesions (formerly, Hunner's Ulcers). The detection of a Hunner lesion is best possible at cystoscopy following hydrodistension. In patients with PBS, the hydrodistension is best done under general, epidural, or local anesthesia due to the exquisite pain it will often invoke within the patient. A Hunner's lesion or "ulcer" is a distinctive inflammatory lesion presenting a characteristic deep rupture through the mucosa and submucosa provoked by bladder distension. Despite the name that has been commonly used, the lesion is not a pathologic ulcer and hence, the term, Hunner's lesion is gradually being adopted worldwide. A Hunner's lesion presents as a circumscript, reddened mucosal area with small vessels radiating towards a central scar. This site ruptures with increasing bladder distension, resulting in petechial oozing of blood from the lesion in a waterfall manner. Biopsy of the lesion classically shows inflammatory cystitis, often with epithelial denudation. AUA Treatment Guidelines outline current treatments for Hunner's lesions to include: fulguration, laser therapy, and/or the injection of triamcinolone into the center of the ulcer. Although long-term outcomes regarding injection of triamcinolone are currently unavailable, fulguration and laser therapy have been found to be associated with slightly > 50% of patients having complete resolution of their symptoms, with another 25% having > 50% improvement of their symptoms following treatment. Unfortunately, long-term follow-up reveals approximately one-third of the patients that symptomatically improved or resolved their symptoms following fulguration will have a clinical recurrence of their disease process. It is noteworthy that polymyxa viruses have recently been found to be present within Hunner's lesions suggestive that antiviral medications or topical agents with an antiviral effect (Clorpactin®) may be of benefit to this class of IC patients.

Hanno PM: Bladder pain syndrome (interstitial cystitis) and related disorders, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 12, p 357.

Hanno PM, Burks DA, Clemens JQ, et al: Guideline on the diagnosis and treatment of interstitial cystitis/bladder pain syndrome (2014). American Urological Association Education and Research, Inc, 2014. http://www.auanet.org/education/guidelines/ic-bladder-pain-syndrome.cfm

Question #99 **ANSWER=B**

The obstruction of the upper urinary tract by a ureterocele, resulting in moderate hydroureteronephrosis associated with bilateral vesicoureteral reflux, is the most concerning element found on diagnostic imaging. The findings of associated bilateral ureteral reflux suggest the ureterocele may be obstructing the bladder neck resulting in high pressure voiding and secondary reflux. Intravenous antibiotics followed by transurethral incision of the ureterocele would be the most prudent course of action in this young infant. All of the other options listed would be associated with increased risk of morbidity in an infant of this age. In less than 10% of cases will incision of the ectopic ureterocele completely resolve the clinical findings on repeat VCUG in three to six months. Frequently a repeat VCUG will reveal decompression of the ureterocele, but will have either persistent or new onset of reflux to the left upper pole. Prior to definitive surgical intervention, the latter usually performed at one year of age, assessment of the function of the left upper pole with a DMSA scan is performed along with repeat renal ultrasound and VCUG. Definitive treatment could include any of the surgical options listed; the type of surgery performed would be dependent upon radiographic findings.

Peters CA, Schlussel RN, Mendelsohn C: Ectopic ureter, ureterocele, and ureteral anomalies, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 121, p 3249.

Question #100 **ANSWER=D**

This patient has the classic findings of an eroded urethra secondary to long-term indwelling catheter use. She has essentially lost almost all of her urethral length and has a patulous wide open bladder neck and meatus. Placement of a larger catheter with a larger balloon will only worsen the erosion and would likely not improve the incontinence. A minimum of 1 cm urethral length is believed to be needed to allow for obstruction of the urethra by bulking agents or by sling placement. Although one could attempt urethral lengthening and then proceed with either bulking agents or sling placement, use of these procedures following urethral reconstruction has been found to be fraught with complications. A suprapubic (SP) tube alone would not be sufficient as urine would still leak per her incompetent bladder neck and urethra. This patient would be best served with a bladder neck closure (which could be done via a vaginal or transabdominal approach) and SP tube placement. Other options which could be considered would be bladder neck closure and construction of a continent urinary stoma if she is willing to perform CIC, bladder neck closure and ileovesicostomy, or supra-vesical non-continent urinary diversion.

Cespedes RD, Gerboc JL: Other therapies for storage and emptying failure, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 75, pp 2191-2193.

Question #101 **ANSWER=B**

Ultrastructural flagellar defects result in motilities of less than 5–10%. In these samples, most of the non-motile sperm are viable. Most cases of ultrastructural flagellar defects are associated with normal sperm densities. Since the semen volume is normal, there is no reason to look for retrograde ejaculation with a post-ejaculate urinalysis. While a partial ejaculatory duct obstruction has been reported to be associated with low motility, this should only be considered if the sperm are viable and thus would not be the next step. Cystic fibrosis mutations are associated with congenital absence of the vas deferens and azoospermia. Semen WBC staining is indicated only if increased numbers of round cells are noted in the semen.

Sabanegh E, Agarwal A: Male infertility, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 21, pp 621-622.

Jarow JP, Sigman M, Kolettis PN, et al: The optimal evaluation of the infertile male: AUA BEST PRACTICE STATEMENT. American Urological Association Education and Research, Inc, 2011. http://www.auanet.org/education/guidelines/male-infertility-d.cfm

Question #102 **ANSWER=D**

The current VCUG image is concerning for the persistence of (residual) PUV tissue with persistence of a dilated posterior urethra and a filling defect noted at the transition point from the prostatic to membranous urethra. Due to these findings, cystourethroscopy and repeat evaluation for possible repeat transurethral incision of PUV is mandatory. He may at some point benefit from biofeedback, oxybutynin, or CIC; however, these treatment modalities should not be employed until after there is documentation of valvular destruction. Radiographic studies do document bilateral bladder diverticula; however, these may or may not be clinically relevant to his voiding dysfunction and their treatment should only be pursued following documentation of valve destruction and failure of conservative treatment modalities.

Casale AJ: Posterior urethral valves, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 126, p 3397.

Frimberger DC, Kropp BP: Bladder anomalies in children, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 125, p 3384.

Question #103 **ANSWER=C**

The AUA/SUFU Urodynamics Guidelines suggest that clinicians should repeat stress testing with the urethral catheter removed in patients suspected of having stress incontinence (SUI)

who do not demonstrate SUI with the catheter in place. Filling the bladder to a higher volume than maximum capacity would not be indicated. Changing the prolapse reduction method would not be expected to change the findings. It should be noted the guidelines on urodynamic assessment of stress incontinence states that there is no standardized method with which to reduce prolapse during a urodynamic study. Patients with marked vaginal prolapse are at a high risk for concomitant stress incontinence and presence of a urethral catheter may prevent manifestation of the stress incontinence during urodynamics. Removal of the catheter (with continued reduction of prolapse) allows for complete evaluation and is the next step prior to proceeding with surgical planning.

Winter JC, Dmochowski RR, Goldman HB, et al: Adult urodynamics: AUA/SUFU GUIDELINE. American Urological Association Education and Research, Inc., 2012. http://www.auanet.org/education/adult-urodynamics.cfm

Question #104 **ANSWER=C**

Histology in this disorder of sex development patient demonstrates seminiferous tubules with no ovarian stroma. This finding is consistent with testicular differentiation, thus ruling out Turner syndrome (bilateral streak gonads), pure gonadal dysgenesis (bilateral streak gonads), mixed gonadal dysgenesis (one streak gonad, one testis), and congenital adrenal hyperplasia (two ovaries). Based on the histology and the normal external female genitalia, the patient has 46 XY complete androgen insensitivity syndrome (CAIS). It is not uncommon in AIS patients for the seminiferous tubules to demonstrate a paucity of germ cells, indeed many biopsies are found to contain Sertoli cells only.

Diamond DA, Yu RN: Sexual differentiation: Normal and abnormal, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 133, pp 3607-3623.

Question #105 **ANSWER=B**

The AUA Guidelines for Follow-up of Renal Masses recommends that patients undergo cross-sectional abdominal scanning (CT or MRI, but not ultrasound) within six months of active surveillance initiation to establish a growth rate. The Panel further recommends continued imaging at least annually thereafter. Data on long-term growth patterns of renal masses are limited, although there is a suggestion that masses show linear growth on axial imaging rather than logarithmic. Thus, serial axial imaging as early as six months after the initiation of surveillance will establish an expected growth rate for subsequent comparison. After this initial scan, subsequent imaging, which then can include ultrasound, can be performed yearly unless the pace of growth is concerning. Fluorodeoxyglucose PET scans have no utility in staging for RCC, and there is no indication for a functional renogram study. There is no indication for repeat biopsy for surveillance of renal masses.

Donat SM, Chang SS, Bishoff JT, et al: Follow-up for clinically localized renal neoplasms: AUA Guideline. American Urological Association Education and Research, Inc., 2013. http://www.auanet.org/education/guidelines/renal-cancer-follow-up.cfm

Question #106 **ANSWER=D**

In patients with high-risk non-muscle-invasive disease, there is a high risk of secondary tumor involvement of the prostatic urethra and ducts. Prostatic urethral involvement may be detected in 20-40% of these patients within ten years of diagnosis. In patients with refractory disease, the incidence of extravesical recurrence in the prostatic fossa may be as high as 33%, and a substantial proportion may be fatal. In this patient, persistently positive cytologies with no clear upper tract or bladder source would warrant biopsy of the prostatic urethra to investigate the source of the abnormal cytologies. Fluorescent in situ hybridization (FISH) or other molecular markers would not provide additional information over clearly positive malignant cytology. Intravesical topical therapies, such as mitomycin or BCG, will not treat the prostatic urethra adequately and are not indicated for cytology alone diagnoses. Ureteroscopy is not indicated with negative upper tract washings.

Jones JS, Larchian WA: Non-muscle-invasive bladder cancer (Ta, T1, and CIS), Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 81, p 2353.

Question #107 **ANSWER=D**

Hypertension is a very common presenting sign in patients with autosomal dominant polycystic kidney disease. The mechanism appears to be compression of the intrarenal vessels from the cysts causing ischemia and, thus, renin-mediated hypertension. Early recognition and treatment is important to avoid hypertensive-related renal deterioration. Because the mechanism is renin-mediated, the most logical choice in antihypertensive medication is either an ACE inhibitor or angiotensin receptor antagonist.

Pope JC IV: Renal dysgenesis and cystic disease of the kidney, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 118, pp 3173-3176.

Question #108 **ANSWER=A**

In a patient with a low grade pT1 penile cancer without lymphovascular invasion, the rate of inguinal metastases is < 10% and, thus, these patients should be observed. In this low risk patient, there is no indication for sentinel lymph node biopsy, prophylactic radiation, or lymphadenectomy. In general, bilateral inguinal lymphadenectomy is reserved for patients with pT2 or high grade disease. In addition, consideration for immediate bilateral prophylactic node dissection can be given for low grade pT1 tumors that harbor findings that are highly indicative of occult metastasis, such as lymphovascular invasion. It is noteworthy that in the setting of palpable lymph nodes, antibiotics administration and delayed reassessment is not indicated if there are clinical indications for proceeding with a lymph node dissection, namely pT1 high grade or pT2 or greater tumors.

Pettaway CA, Lance RS, Davis JW: Tumors of the penis, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 34, p 920.

Question #109 **ANSWER=E**

Testosterone stimulates erythropoiesis with a direct correlation between hemoglobin and hematocrit levels and testosterone levels. Injection of testosterone is associated with higher potential for secondary erythrocytosis than topical or oral preparations. High levels of testosterone are associated with polycythemia (hematocrit over 51%). Due to the increased risk of clotting complications with an elevated hematocrit, it is recommended that the testosterone dose is adjusted and/or periodic phlebotomy be performed to keep the hematocrit below 52-55%. All patients placed on testosterone should have periodic CBC assessments with the initial evaluation for erythrocytosis occurring three months following initiation of treatment.

Bassil N, Alkaade S, Morley JE: The benefits and risks of testosterone replacement therapy: A review. THERAPEUTICS AND CLINICAL RISK MANAGEMENT 2009;5:438.

Bhasin S, Cunningham GR, Hayes FJ: Testosterone therapy in men with androgen deficiency syndromes: An Endocrine Society Clinical Practice Guideline. J CLIN ENDOCRINOL METAB 2010;95:2536–2559.

Question #110 **ANSWER=C**

This boy has a typical presentation for hypercalciuria. The diagnosis is best made by a 24-hour urine collection with calcium excretion exceeding 4 mg/kg/day being diagnostic. Often, a urinalysis will reveal a high specific gravity > 1.020 and an abnormal spot urine calcium-to-creatinine ratio (> 0.21). Although these findings are helpful to prove dehydration and hypercalciuria as a cause of the dysuria, the best true diagnostic assay is the 24-hour urine collection checking for both 24-hour urinary volume and calcium excretion. Patients with documented hypercalciuria and low urinary volume are at higher risk for urolithiasis. Treatment should be with liberalization of fluids and repeat urine assessment. Identification of calculus disease via plain x-ray or CT scan would not be diagnostic of hypercalciuria and, in view of the normal ultrasound, would place the patient at needless risk of radiation exposure. In the absence of proteinuria, there is no need for renal biopsy.

Palmer LS, Trachtman H: Renal functional development and diseases in children, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 112, p 3006.

Question #111 **ANSWER=A**

This patient represents index patient 1 in the AUA Guideline for Castration-Resistant Prostate Cancer (CRPC). The guidelines make a primary recommendation for observation for this patient. The guidelines also make the recommendation that clinicians should not offer systemic chemotherapy or immunotherapy to patients with non-metastatic CRPC outside the context of a clinical trial, thus, making the use of sipuleucel-T, abiraterone with prednisone, and enzalutamide incorrect in this patient. As an option, the guidelines state that clinicians may offer treatment with first- generation anti-androgens (flutamide, bicalutamide and nilutamide) or first generation androgen synthesis inhibitors (ketoconazole with prednisone) to select patients with non-metastatic CRPC who are unwilling to accept observation. However, given the lack of data suggesting any clinical benefit and given the potential side effects of therapy, the panel only recommended the use of anti-androgens in this patient population only if patients are unwilling to accept the recommendation of observation. There is no statement that this patient is unwilling to accept observation, and, accordingly, observation should be the initial step and recommendation.

Cookson MS, Kibel AS, Dahm P, et al: Castration-Resistant Prostate Cancer: AUA Guideline. American Urological Association Education and Research, Inc., 2015. http://www.auanet.org/education/guidelines/castration-resistant-prostate-cancer.cfm

Question #112 **ANSWER=C**

Urinary oxalate is modulated by calcium intake which influences intestinal oxalate absorption. Large cohort studies have demonstrated an increased risk of stone formation with lower calcium diets and have also found that diets higher in calcium are associated with reduced oxalate excretion. Of note, patients with enteric hyperoxaluria and high levels of urinary oxalate, such as those with malabsorptive conditions (e.g., inflammatory bowel disease or Roux-en-Y gastric bypass), may benefit from more restrictive oxalate diets as well as from higher calcium intakes, which may include supplements, specifically timed with meals. In such cases, calcium will serve as an oxalate binder so that a significant proportion will appear in the stool. However, 24-hour urine monitoring can be used to ensure that hypercalciuria does not result. Animal protein restriction is not correct as that recommendation would be most appropriate for those with hyperuricosuria. A role for nutritional supplements, such as, omega-3 fatty acids, pyridoxine, and cholestyramine has been suggested, but at present the evidence is not sufficient to guide recommendations.

Pearle MS, Goldfarb DS, Assimos DG, et al: Medical management of kidney stones: AUA Guideline: AUA Guideline. American Urological Association Education and Research, Inc., 2014. http://www.auanet.org/education/guidelines/management-kidney-stones.cfm

Question #113 **ANSWER=E**

This patient has pathologic stage T2 disease and is at high risk for occult inguinal node metastases. Regardless of inguinal lymph node status (palpable or not), these patients should

undergo inguinal lymph node dissection. In this setting, antibiotics decrease the risk of inguinal wound infection, but response of lymph nodes to antibiotic treatment should not influence the decision for surgical staging. Whether inguinal nodes are palpable unilaterally or not palpable, bilateral inguinal node dissection is indicated. In this case, superficial inguinal dissection is indicated on the left and superficial and deep dissection on the right.

Pettaway CA, Lance RS, Davis JW: Tumors of the penis, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 34, pp 920-922.

Question #114 **ANSWER=A**

This patient has hyponatremia due to SIADH from self-medicating with DDAVP. He has a chronic condition (> 48 hours) with no symptoms and modest hyponatremia that can be corrected slowly over time. Removing the inciting agent (DDAVP) together with water restriction would be the optimal treatment. In the absence of symptoms, the addition of diuretics and saline replacement are not necessary. There is no role for oral sodium bicarbonate in this setting.

Shoskes DA, McMahon AW: Renal physiology and pathophysiology, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 38, pp 1039-1041.

Question #115 **ANSWER=D**

The patient has advanced RCC with predominantly non-clear cell histology. Additionally, she is now presenting with poor prognostic features. Prognostic scoring systems have been developed in advanced RCC and have been shown to have important correlations to response to therapies and to overall survival. The most commonly used prognostic model is from the Memorial Sloan Kettering Cancer Center and includes performance status, serum LDH, serum calcium, hemoglobin, and interval from diagnosis to treatment. Although the majority of clinical trials have focused on patients with clear cell histologies, data exists indicating that targeted therapies may have benefits in patients with non-clear cell histologies. According to the NCCN Kidney Cancer Panel, temsirolimus is a category 1 recommendation for the treatment of patients with non-clear cell histology and poor prognostic features. These recommendations by the panel are based primarily on the retrospective analysis of the global ARCC trial which evaluated temsirolimus in both clear cell and non-clear cell patients. In fact, this is one of the only phase III trials that included patients with non-clear cell histologies. Tyrosine kinase inhibitors (TKIs) (sunitinib, sorafenib) have been shown to have some effect in phase II trials in non-clear cell patients and are both are a category 2A recommendation by the NCCN panel. There are ongoing trials examining the potential benefits of pazopanib and axitinib as first-line therapies in non-clear cell patients, but data are limited and both drugs receive a category 2A recommendation based on extrapolation of results from other TKIs. Bevacizumab has been studied in a small phase II study of papillary renal cell carcinoma patients but the study was closed early due to slow accrual. The NCCN guideline panel has provided a category 2A recommendation for bevacizumab in these patients. The use of cytokine therapies (interferon

and IL-2) have not been shown to have significant benefits in non-clear cell patients. In the aforementioned ARCC trial, temsirolimus was compared to interferon-alpha. Overall survival was significantly better in the temsirolimus subgroup, thereby, justifying the recommendation of temsirolimus. Interferon is not recommended by the NCCN panel.

Srinivasan R, Linehan WM: Treatment of advanced renal cell carcinoma, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 50, p 1490.

Motzer RJ, Jonasch E, Agarwal N, et al: NCCN clinical practice guidelines in oncology: Kidney cancer (version 1.2015). http://www.nccn.org/professionals/physician_gls/pdf/kidney.pdf (accesses 10/21/2014).

Question #116 **ANSWER=A**

Neonates and young infants should be covered for Enterococcus species when choosing empiric antibiotics since the incidence of infections with this uropathogen is higher in early infancy than at a later age. Enterococcus is frequently sensitive to ampicillin and first-generation cephalosporins. Ceftriaxone and trimethoprim-sulfamethoxazole are specifically contraindicated in neonates with jaundice. Nitrofurantoin would not provide systemic treatment and is both contraindicated in infants with jaundice and in infants less than one month of age due to an increased risk for hemolytic anemia arising from the interactions of an immature liver and the medication. Ciprofloxacin typically would not cover the most common infecting organism, enterococcus, and is contraindicated in this age group.

Shortliffe LMD: Infection and inflammation of the pediatric genitourinary tract, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 116, p 3085.

Question #117 **ANSWER=A**

Ketamine (also known as: K, Special K, Vitamin K, green, and jet) is a tranquilizer that will induce a trance-like state while providing pain relief, sedation, and memory loss. Heart rate, respiratory function, and airway reflexes will remain functional. Ketamine is most commonly used for pain relief in emergency rooms and intensive care units and/or sedation at the time of anesthetic induction. Beginning in the late 1990's, it has gained popularity as a street drug and has quickly outgrown heroin and methamphetamine as the drug of choice in many parts of the world due to its low cost and easy accessibility. Ketamine has joined the ranks of PCP, Ecstasy (MDMA), GHB (Gamma Hydroxybutyrate), and Rohypnol as popular club drugs. It is frequently mixed with Rhobypnol or GHB to create the "date rape" drug. Ketamine, when used alone, will give a floating out of the body sensation combined with a mild hallucinogenic effect. Within the United States, 1-2% of individuals < 21 years of age admit to having tried ketamine and 10% of these individuals will become habitual users. Ketamine is currently the leading street drug used in Hong Kong and other parts of Asia. Indeed, drug and alcohol rehabilitation clinics within Hong Kong and other select Asian locations have found up to 80% of the individuals admitted for rehabilitation to be abusing the medication. Urologists should be aware

that the chronic use of ketamine will induce ketamine cystitis. Symptoms, cystoscopic, and biopsy findings are highly consistent with non-Hunner's interstitial cystitis, and without the proper history, distinction between the two diagnoses is almost impossible. Ketamine cystitis will usually lead to a severely fibrotic end-stage bladder that will result in the need for cystectomy. There are, however, successful case reports where the fibrosis has been halted or reversed by the use of intravesical chondroitin sulphate or hyaluronic acid. Tuberculosis of the bladder occurs secondary to tuberculosis of the kidney, and, therefore, upper tract abnormalities would be expected on CT scan. Malacoplakia typically manifests as mucosal plaques or nodules with bladder biopsy demonstrating Michaelis-Gutman bodies. Herpes simplex virus infection causes painful ulcers of the genitalia typically without bladder involvement. Cytomegalovirus may cause hematuria and urinary symptoms but only in immunocompromised individuals.

Wood D, Cottrell A, Baker SC, et al: Recreational ketamine: from pleasure to pain. BRI J UROL INT 2011;107:1881-1884.

Schaeffer AJ, Schaeffer EM: Infections of the urinary tract, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 10, pp 309-311.

Frenkl TL, Potts JM: Sexually transmitted infections, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 13, pp 404-405.

Ghoneim IA, Rabets JC, Mawhorter SD: Tuberculosis and other opportunistic infections of the genitourinary system, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 16, pp 469-474.

Question #118 **ANSWER=D**

The clinical presentation and CT scan is highly consistent with chylous ascites. Patients with postoperative chylous ascites classically have abdominal distention without significant pain or fevers and will have normal bowel habits. This complication results from disruption of the major para-aortic lymphatics channels leading to the cisterna chyli and is predominantly noted after left-sided procedures (i.e., radical and donor nephrectomy) or retroperitoneal lymphadenectomy. Chylous ascites is diagnosed by paracentesis with ascitic fluid found to have classically white and turbid appearance with fluid analysis showing elevated lymphocytes, associated with a high cholesterol and triglyceride content. Initial treatment is to reduce the flow of chyle into the lymphatics by a low-fat medium-chain triglyceride diet. If chylous ascites persist despite dietary management, the next step should involve bowel rest and the institution of total parenteral nutrition with the concurrent use of octreotide, a somatostatin analog. Somatostatin has been documented to significantly decrease postprandial increases in triglyceride levels by inhibiting lymphatic flow. Open or laparoscopic treatment of chylous ascites, using suture ligation and fibrin glue to control the leak, can be pursued if conservative management fails. Intraoperative location of the lymphatic leakage can be challenging and the combined use of preoperative lymphangiography and consumption of

"fatty" meal immediately before surgery has been documented to be beneficial in helping the surgeon locate the site of the leak.

Eichel L, Clayman RV: Fundamentals of laparoscopic and robotic urologic surgery, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 9, pp 249-250.

Question #119 **ANSWER=B**

All of the substances listed may be used to disinfect flexible cystoscopies. Ortho-phthalaldehyde (OPA), however, is the only one associated with anaphylactic reactions following repeated patient exposure. Consequently, it is recommended that OPA not be used to sterilize cystoscopies in patients requiring repetitive cystoscopy such as a patient with a history of bladder cancer.

Clemens JQ, Dowling R, Foley F, et al: Joint AUA/SUNA White Paper on Reprocessing of Flexible Cystoscopes. American Urological Association Education and Research, Inc, 2013. http://www.auanet.org/education/guidelines/flexible-cystoscopes.cfm

Question #120 **ANSWER=D**

Patients with autosomal dominant polycystic kidney disease can develop cyst infections. Symptoms and signs may include fever and flank or abdominal pain with normal urinalysis and sterile urine cultures. Therapy with lipid soluble antibiotics such as a fluoroquinolone agent is indicated if this diagnosis is suspected. Patients should defervesce within 72 hours. Persistent symptoms should prompt an abdominal CT scan to seek for infected cysts. Studies have shown that symptomatic infected cysts are typically larger than neighboring cysts, have thickened walls, are of higher attenuation, and enhance after contrast administration. This patient has not responded to appropriate antibiotic therapy. Therefore, the cyst should be drained and a percutaneous approach is preferred. Partial or simple nephrectomy is not indicated nor are additional antibiotics. A tagged indium-111 WBC scan can help localize the infection in patients without a dominant infected appearing cyst on CT scan.

Pope JC IV: Renal dysgenesis and cystic disease of the kidney, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 118, pp 3170-3176.

Gupta S, Seith A, Sud K, et al: CT in the evaluation of complicated autosomal dominant polycystic kidney disease. ACTA RADIOL 2000;41:280-284.

Question #121 **ANSWER=A**

The finding of asymptomatic bacteriuria in patients on CIC has been reported to occur in up to 50% of individuals. Treatment in asymptomatic individuals is not required; in fact, treatment will

predispose these patients to develop resistant organisms and significantly increases the risk for Clostridium difficile colitis. Changing to antibiotic coated catheters or sterile CIC are not indicated in this setting.

Averch TD, Stoffel J, Goldman HB, et al: AUA White Paper on catheter-associated urinary tract infections: Definitions and significance in the urologic patient: 2014. American Urological Association Education and Research, Inc., 2014. http://www.auanet.org/common/pdf/education/clinical-guidance/Catheter-Associated-Urinary-Tract-Infections-WhitePaper.pdf

Question #122 **ANSWER=A**

Performance of an MRI scan in patients with a sacral neuromodulation device in-situ has been considered to be a potential hazard secondary to the interaction of the MRI magnet with the metal leads or implanted pulse generator (IPG). Specifically, there is concern that this interaction could result in tissue damage arising from motion, dislocation or torquing of the implanted pulse generator (IPG), heating of the leads, and/or permanent damage to the IPG. In April 2012, the FDA approved the use of head (brain) MRI scans in patients implanted with the newer (InterStim II) IPG, the latter stimulation device has been in use since 2007. Since a head MRI scan is needed, this patient can proceed with the MRI scan. The physician should be aware that an FDA warning still exists regarding performing an MRI scan of the spine in the setting of an implanted neurostim device and removal of the sacral neuromodulation device maybe requested by the radiologist prior to performing the study. However, multiple studies currently exist that document that a 1.5 Tesla MRI scan of the spine may be safely performed provided the sacral neuromodulation is out of the isocenter of the MRI scanner (remote site). To date, multiple patients positioned with the IPG outside of the magnet bore have undergone remote site MRI with minimal or no complications reported in 97% of the patients. Complications, when they occurred, were device-related problems, such as malfunction or failure, with minimal to no patient-related problems. Most radiologists now consider remote site MRI scan of the spine to be a safe option following implantation of an InterStim II device.

U.S. Food and Drug Administration April 2012 Premarket Supplemental Approvals. http://www.fda.gov/medicaldevices/productsandmedicalprocedures/deviceapprovalsandclearances/pmaapprovals/ucm308481.htm. Accessed February 9, 2015.

Medtronic Guidelines for InterStim Therapy neurostimulation systems. http://manuals.medtronic.com/wcm/groups/mdtcom_sg/@emanuals/@era/@neuro/documents/documents/contrib_119885.pdf. Accessed February 9, 2015.

Chermansky CJ, Krlin RM, Holley DM: Magnetic resonance imaging following Interstim. An institutional experience with imaging safety and patient satisfaction. NEURO and URODYNAMICS 2011;30;1486-1488.

Question #123 **ANSWER=D**

Urethral erosion is a devastating complication of artificial urinary sphincter (AUS) placement which requires explantation. Patients classified as high risk for cuff erosion following AUS placement are defined as patients that have undergone: radiation therapy, a prior urethroplasty, multiple endoscopic treatments for bladder neck contracture or urethral stricture, prior urethral stent placement, or have a history of erosion or infection in a previous AUS. There is also a much lower but still significant increased risk of erosion with a prolonged postoperative catheterization interval (> 48 hours), or use of either a 3.5 cm or transcorporal cuff compared to a standard 4 cm cuff. No increased risk of erosion has been found related to age, proximal or distal bulbar urethral placement of the AUS, or prior radical prostatectomy.

Brant WO, Erickson BA, Elliott SP, et al: Risk factors for erosion of artificial urinary sphincters: A multicenter prospective study. UROL 2014;84:934-938.

Seideman CA, Zhao LC, Hudak SJ, et al: Is prolonged catheterization a risk factor for artificial urinary sphincter cuff erosion? UROL 2013;82:943-946.

Question #124 **ANSWER=B**

CT scan remains the gold standard for radiologic staging of renal trauma. One major limitation of CT scan, however, is the inability to define a renal venous injury adequately. A medial hematoma strongly suggests a venous injury, however, there is no imaging modality which can accurately diagnose a venous injury. A renal contusion is defined as normal urologic imaging with the presence of hematuria. Parenchymal lacerations are clearly defined, and extravasation of contrast-enhanced urine can easily be detected which has led to an enhanced ability to manage many injuries non-operatively. Repeated/delayed scanning of the kidneys ten minutes after injection of contrast identifies parenchymal lacerations and urinary extravasation accurately and reliably. It is important to note that ureteral injuries can be difficult to diagnose on CT scan. If the urinary extravasation from the ureteral injury is contained by Gerota's fascia, the extent of medial leakage can be minimal. It is also known that ureteral injuries do not show contrast in the ureter on delayed images. Tracing both ureters throughout their entire course on a CT scan is mandatory to fully evaluate urogenital injuries. Delayed images should be obtained 5 to 20 minutes after contrast injection to allow contrast to extravasate from the collecting system injury.

Santucci RA, Doumanian LR: Upper urinary tract trauma, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 42, p 1172.

Question #125 **ANSWER=D**

Sacral nerve stimulation (SNS) has FDA approval for treatment of: non-obstructive urinary retention, urinary urge incontinence, urinary urgency-frequency syndrome, and for the gastrointestinal indication of chronic fecal incontinence. Clinical trials are ongoing for its use in

interstitial cystitis, chronic prostatitis (i.e., chronic pelvic pain), and idiopathic constipation failing traditional treatment modalities. It has not been cleared by the FDA to be used in patients with urologic or gastrointestinal symptoms arising from a known neuropathy, such as multiple sclerosis, Parkinson's disease, a congenital neuropathic anomaly, post-traumatic spinal cord injury, and/or pelvic nerve injury arising from pelvic surgery.

http://professional.medtronic.com/pt/uro/snm/ind/index.htm#.VmBm6NIrKig

Question #126 **ANSWER=C**

The highest probability of 100% graft take and best cosmetic results occur with penile skin reconstruction using an unmeshed thick (0.012 - 0.015 inch) split thickness skin (STS) graft. Meshed or thinner STS grafts have more of a tendency to contract which compromises penile functionality and cosmesis. Local skin flaps from the abdomen or thigh generally do not produce the same cosmetic outcomes. Full thickness skin grafts may provide adequate cosmesis but are associated with a higher incidence of failure of the graft to take.

Morey AF, Dugi DD III: Genital and lower urinary tract trauma. Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 88, p 2513.

Question #127 **ANSWER=E**

The VALUE trial assessed the utility of urodynamics versus basic office evaluation in the uncomplicated patient with stress incontinence (SUI). Uncomplicated patients with SUI are those with demonstrable SUI on physical exam, no overactive bladder symptoms, normal bladder emptying, no prior surgery for SUI, and no signs, symptoms, or past medical history consistent with a possible neurologic etiology for their urinary incontinence. This study documented that within the uncomplicated patient population, the addition of urodynamic studies did not improve the surgical outcome following incontinence surgery compared to women who had a basic office evaluation alone. A basic office evaluation includes a pelvic exam with supine stress test with a full bladder, assessment of PVR, and urinalysis.

Nager, CW, Brubaker L, Litman HJ, et al: A randomized trial of urodynamics testing before stress incontinence surgery. NEJM 2012;366:1987-1997.

Zimmern, P, Litman H, Nagler C, et al: Pre-operative urodynamics in women with stress urinary incontinence increases physician confidence, but does not improve outcomes. NEUROUROL URODYN 2014;33:302-306.

Question #128 **ANSWER=C**

Diaphragmatic injury is a rare complication of laparoscopic upper tract urinary surgery. It is important to note that this injury has occurred early in the operation in a stable patient. The

injury is large enough that it must be repaired and placement of a chest tube to vent the pleural cavity alone would be inadequate treatment and could result in persistent loss of the pneumoperitoneum and/or inadequate pulmonary re-expansion. There is no need for open conversion; the injury can be repaired laparoscopically with aspiration of air from the pleural cavity and continuation of the operation. Placement of a chest tube is not routinely necessary following surgical repair. Packing the diaphragmatic injury or repairing the injury at the end of the operation risks continued filling of the pleural cavity with carbon dioxide leading to poor ventilation and high peak airway pressures.

Kavoussi LR, Schwartz MJ, Gill IS: Laparoscopic surgery of the kidney. Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 55, p 1668.

Question #129 **ANSWER=E**

During use of the argon beam electrocoagulator in a laparoscopic setting, it is important to "vent" from one of the trocar side arm ports during its use in order to avoid over-pressurizing the abdomen with the infused argon gas. If unrecognized, this can cause an abrupt increase in intra-abdominal pressure and eventual compromise of ventilation. All other listed maneuvers and ventilatory changes would not address the primary problem of increased intraperitoneal pressure.

Eichel L, Clayman RV: Fundamentals of laparoscopic and robotic urologic surgery. Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 9, p 222.

Question #130 **ANSWER=E**

The TOMUS trial compared the outcomes of retropubic sling to transobturator mid-urethral slings for treatment of stress urinary incontinence. In the original trial, success rates were statistically equivalent between the two groups. However, in long-term analysis (one versus five years), several differences were noted. Specifically, transobturator sling patients were more likely to manifest neurologic complications. It is believed these complications arose due to injury of small nerve branches from either the pudendal or obturator nerves occurring either at the time of trocar passage or alternatively due to long-term compression of the nerves from the obturator sling. Transobturator slings were also statistically less effective in preventing long-term urinary incontinence compared to retropubic urethral slings. Patients undergoing a retropubic urethral sling, however, had more bladder dysfunction, including higher postvoid residual urines, increased incidence of recurrent UTIs, and increased risk of delayed sling erosion into the bladder compared to patients undergoing a transobturator sling.

Richter, H, Albo ME, Zyczynski HM, et al: Retropubic vs transobturator mid-urethral slings for stress urinary incontinence. NEJM 2010;362:2066-2076.

Question #131 **ANSWER=E**

This child has a primary obstructive megaureter associated with diminished renal function. Although many children with a primary obstructive megaureter will show gradual progressive improvement in the degree of dilation and rapidity of washout with age, the decision to observe without surgical intervention is dependent upon the renal function and the absence of symptoms. In the presence of significantly impaired function (differential function of < 40%), surgical intervention is indicated. Since the child is otherwise healthy and uninfected, primary reconstruction with a tapered ureteral reimplantation is the method of choice. Temporary diversion by a distal cutaneous ureterostomy or alternatively creation of a widely refluxing ureterovesical junction may be considered in the presence of extremely poor renal function and or a premature or young, less than six- to eight-month-old infant, where a tapered reimplantation may be technically challenging. Placement of a percutaneous nephrostomy tube is mainly used in the severely ill infant with a severe urinary infection who is not responding to parenteral antibacterials.

Carr MC, Casale P: Anomalies and surgery of the ureter in children, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 120, p 3229.

Peters CA, Schlussel RN, Mendelsohn C: Ectopic ureter, ureterocele, and ureteral anomalies, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 121, p 3236.

Question #132 **ANSWER=D**

This patient has minimal urethral mobility with stress maneuvers and a low abdominal LPP consistent with intrinsic sphincter deficiency (LPP < 60 cm H2O). The treatment of choice with persistent incontinence secondary to intrinsic sphincter deficiency following a failed sling procedure is placement of an autologous rectus fascia sling. In and of itself, the postoperative findings of an open bladder neck on a videourodynamic study is not suggestive of a neurologic disorder (such as Shy-Drager syndrome). A neurologic consultation is, therefore, not indicated unless concurrent neurologic findings are present. Kegel exercises in a postoperative patient with these urodynamic findings would be of extremely limited benefit. Radiofrequency bladder neck suspension has not been shown to be of significant benefit in patients with recurrent stress incontinence following surgical repair and/or in patients with intrinsic sphincter deficiency (Valsalva LPP < 60 cm H2O). Artificial urinary sphincter placement may be considered an option but should be considered only after the patient had failed an autologous fascial sling.

Dmochowski RR, Padmanabhan P, Scarpero HM: Slings: Autologous, biologic, synthetic, and midurethral, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 73, p 2116.

Question #133 **ANSWER=B**

Approximately 5% of patients undergoing bladder onabotulinumtoxinA injections may develop urinary retention. Accordingly, patients with worsening urinary incontinence post-injection should undergo a PVR assessment to rule-out overflow incontinence. Antimuscarinics would not be advisable if her residual were high. Urodynamics would be premature at this early stage after injection. Repeating onabotulinumtoxinA injections may be an option at some point if she is not retaining urine. Sacral neuromodulation, while an option, is not recommended in the presence of known neurologic conditions and would only be considered after an elevated residual has been ruled-out.

Andersson KE, Wein AJ: Pharmacologic management of lower urinary tract storage and emptying failure, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 68, p 1987.

Question #134 **ANSWER=C**

Permanent ejaculatory dysfunction may occur in as high as 20% of men following urethroplasty. Complaints are usually related to pooling of semen within the urethra and/or loss of force with ejaculation. The etiology is poorly defined but is presumed to be due to either tortuosity of the neourethra and/or dysfunction of the bulbocavernosal muscle. Temporary erectile dysfunction is found in up to 20% of individuals undergoing an anterior urethroplasty. This incidence is similar between all types of anterior urethroplasties, e.g., excision and primary anastomosis, vascularized or graft urethroplasties. The erectile dysfunction symptoms classically resolve within six months with < 3-4% of patients reporting a permanent alteration in their erectile capabilities. New onset of penile curvature may occur usually following an overaggressive attempt at excision and primary anastomosis performed in the distal bulbar region. Loss of libido and anorgasmia are very rare complaints following urethroplasty and are predominately due to a psychological component.

Blaschko SD, Sanford MT, Cinman NM, et al: De novo erectile dysfunction after anterior urethroplasty: A systematic review and meta-analysis. BRI J UROL INT 2013;112:655-663.

Dubey D, Kumar A, Bansal P, Srivastava A, Kapoor R, Mandhani A, Bhandari M. Substitution urethroplasty for anterior urethral strictures: A critical appraisal of various techniques. BRI J UROL INT 2003;91:215-218.

Question #135 **ANSWER=C**

Daily tadalafil is FDA approved for the signs and symptoms of BPH and erectile dysfunction. Improvements may be seen with both erectile dysfunction and urinary symptom scores such as the International Prostate Symptom Score (IPSS). Use of once daily tadalafil (or other phosphodiesterase inhibitors) does not improve urinary flow rates. There is no evidence that a certain degree of baseline bother, as measured by the IPSS or International Index of Erectile Function (IIEF), are necessary to predict success with this therapy. In addition, there is

evidence that suggests that combination therapy with phosphodiesterase inhibitors and alpha-blockers work together synergistically; however, this combination may also result in symptomatic hypotension. Phosphodiesterase inhibitors are not presently part of the AUA Guidelines for the Management of BPH.

McNicholas TA, Kirby RS, Lepor H: Evaluation and nonsurgical management of benign prostatic hyperplasia, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 92, p 2649.

Gacci M, Corona G, Salvi M, et al: A systematic review and meta-analysis on the use of phosphodiesterase 5 inhibitors alone or in combination with alpha-blockers for lower urinary tract symptoms due to benign prostatic hyperplasia. EUR UROL 2012;61:994-1003.

Question #136 **ANSWER=E**

This patient has normal seminal volume and normal seminal pH. This rules out ejaculatory duct obstruction or congenital bilateral absence of the vas (CBAVD) which are both associated with low volume, acidic semen specimens. A low normal FSH of 3.6 mIU/ml indicates spermatogenesis is likely intact and that obstructive azoospermia is present. A testicular biopsy is warranted during which sperm retrieval and cryopreservation should be considered. If the testicular biopsy is normal, then a post-testicular obstruction is present and either an epididymovasostomy or a vasovasostomy can be performed at the time of biopsy. Clomiphene will increase serum FSH but will not correct obstructive azoospermia. Seminal fructose is absent in ejaculatory duct obstruction or CBAVD. A transrectal ultrasound is not indicated because seminal volume is normal. Post-ejaculate urine analyses are useful in cases of low volume semen specimens or cases with dry ejaculates to rule out retrograde ejaculation.

Jarow J, Sigman M, Kolettis PN, et al: The evaluation of the azoospermic male: An AUA best practice policy. AZOOSPERMIC MALE BEST PRACTICE STATEMENT. American Urological Association Education and Research, Inc, 2011. http://www.auanet.org/education/guidelines/male-infertility-b.cfm

Sabanegh E, Agarwal A: Male infertility, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 21, pp 634-635.

Question #137 **ANSWER=E**

An FDA warning exists that recommends against the use of phosphodiesterase type 5 inhibitors in patients with a recent history of a myocardial infarction (less than six months) and in patients with known hereditary degenerative retinal disorders such as retinitis pigmentosa. Thus, the use of tadalafil or sildenafil in this patient would not be advised. Testosterone therapy is not considered first-line therapy for erectile dysfunction. Intracavernous injection is relatively contraindicated in men with a history of coagulopathy (clopidogrel) or unstable

cardiovascular disease and thus would not be a good option for this patient. The best option for this patient would be intraurethral alprostadil suppository.

Burnett AL: Evaluation and management of erectile dysfunction, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 24, p 742.

Question #138 **ANSWER=E**

Retention of vaginal packs for > 24 hours post-surgery does place the patient at risk for toxic shock syndrome, however, antibiotic therapy is not indicated in an asymptomatic patient. In the clinical situation described, treatment should be with outpatient observation of the individual and with notification of the hospital SERS (Serious Event Reviews System) program. This system will review the process by which this complication occurred and recommend steps to prevent its recurrence. The Joint Commission on the Accreditation of Health Care Organizations (JCAHC) is a national association existing since 1951 that accredits and certifies more than 20,000 health care organizations and programs in the United States. Joint Commission accreditation and certification is performed to verify that the health care organization undergoing review meets or exceeds current national standards of care, and is recognized nationwide as a symbol of quality. Accreditation is necessary for financial reimbursement of the institution by select insurers and other third parties and may be required in select states to care for patients. JACHO recognizes and rewards hospitals for running quality improvement projects, such as SERS, but does not establish or maintain the quality improve project; the latter is a function of the individual hospital or surgical center involved. There is no need to notify your malpractice insurer or the insurer of the outpatient surgical center regarding this finding unless a serious consequence of its action should occur or comments from the patient are a concern.

The Joint Commission. Frequently asked questions: Retained foreign object after surgery. http://www.jointcommission.org/assets/1/18/retained_foreign_objects_faqs.pdf. Accessed May 11, 2010.

Question #139 **ANSWER=D**

This patient is at high risk for venous thromboembolic event (VTE) because of his cancer diagnosis, age, surgery, and prolonged immobility. Thus, guidelines indicate the need for full precautions. His idiopathic thrombocytopenic purpura may put him at increased risk of perioperative bleeding, but does not protect him from the risk of VTE. Thus, subcutaneous heparin is the standard prophylaxis, although it should be used cautiously in patients with severe thrombocytopenia. Enoxaparin should be used only with extreme caution in patients with thrombocytopenia. In either case, close monitoring of the platelet count is indicated to detect any heparin-induced thrombocytopenia. Warfarin does not provide immediate protection, and is, therefore, reserved for long-term anticoagulation. Pentoxifylline has not been shown to prevent VTE.

Forrest JB, Clemens JQ, Finamore P, et al: Best practice policy statement for the prevention of deep vein thrombosis in patients undergoing urologic surgery. PREVENTION OF DVT AFTER UROLOGIC SURGERY BEST PRACTICE STATEMENT. American Urological Association Education and Research, Inc., 2008. http://www.auanet.org/content/guidelines-and-quality-care/clinical-guidelines/main-reports/dvt.pdf

Question #140 **ANSWER=D**

Endovascular radiofrequency ablation (RFA) of the renal artery results in destruction of the renal sympathetics and is being increasingly utilized for management of pharmacologically resistant hypertension. Sympathetic innervation to the kidneys run in the adventitial wall of the renal arteries. Stimulation of the renal sympathetics results in a decrease in renal blood flow, an increase in renin secretion, retention of sodium and water, and hypertension. Circumferential RFA of the renal sympathetics occurs by introduction of a 6 Fr catheter by the femoral vein; the therapeutic catheter has a steerable tip and is connected to a console that delivers radiofrequency energy. The level of energy delivered is monitored with a sensor at the tip of the catheter so that excessive tissue injury is avoided. Ablation of the renal sympathetics results in dilation of the renal efferent arteries, decreased plasma renin activity, and increased renal blood flow. In addition, it is postulated that renal artery sympathetic ablation results in stimulating an inhibitory regulatory feedback mechanism that decreases the overall sympathetic outflow. Renal artery RFA has no effect on parasympathetic nerve activity. It has been associated with rare intimal dissections of the renal artery and renal artery aneurysms that may require emergent nephrectomy.

Symplicity HTN-2 Investigators, Esler MD, Krum H, Sobotka PA, Schlaich MP, Schmieder RE, Böhm M: Renal sympathetic denervation in patients with treatment-resistant hypertension (The Symplicity HTN-2 Trial): A randomised controlled trial. LANCET 2010;376:1903-1909.

Question #141 **ANSWER=B**

A recent secondary analysis of the SWOG neoadjuvant chemotherapy trial testing M-VAC followed by cystectomy vs. cystectomy alone for muscle invasive bladder cancer showed that the survival benefit to chemotherapy in patients with mixed histology including squamous or glandular differentiation was actually superior to that seen in patients with pure urothelial cancer. Partial cystectomy is not appropriate for large urothelial carcinomas regardless of their location. Radical cystoprostatectomy and ileal conduit will be appropriate after chemotherapy or if the patient cannot safely have chemotherapy due to comorbidities or other constraints such as poor renal function. Adriamycin-based chemotherapy is used for pure squamous cell carcinoma of other primary sites but has no role in urothelial carcinoma. Chemotherapy and XRT are not preferred in a patient that is otherwise a surgical candidate. If the patient had pure squamous cell carcinoma, immediate radical cystoprostatectomy would be appropriate.

Wood DP: Urothelial tumors of the bladder, Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 80, p 2309.

Question #142 **ANSWER=A**

This patient is currently in the active phase of Peyronie's disease. The vacuum erection device and the penile traction device have not been adequately studied as primary treatment therapies during the acute phase of this disorder and should not be recommended at this time. The role of ESWL to treat Peyronie's disease has been shown to decrease penile pain but does not significantly improve the penile curvature or resolve the hourglass deformity. Intra-lesional collagenase is recommended to be used in patients in the active phase and with patients with a minimum of 30 degree curvature. Collagenase has not, however, been tested in patients with an hourglass deformity. Incision and grafting or plication should only be performed in patients in the quiescent phase. The best option at this time is anti-inflammatories and observation.

Jordan GH, McCammon KA: Peyronie's disease, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 28, p 802.

Question #143 **ANSWER=C**

The best management for ureteral strictures less than 2 cm with no previous intervention is an endoscopic approach. Balloon dilation has been reported with some short-term success but long-term outcomes are unfavorable. Should balloon dilation fail, a much longer stricture may develop requiring more invasive intervention. Ureteroscopic ureterotomy, such as with laser incision, provides a more durable long-term outcome. Care must be taken to place the endoureterotomy incision away from the iliac vessels medially (anteromedial incision). Cautery wire incision does not offer any advantage over ureteroscopic endoureterotomy, and ureteroureterostomy is reserved for recurrent ureteral strictures or strictures > 2 cm upon presentation.

Nakada SY, Hsu THS: Management of upper urinary tract obstruction, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 2, chap 41, p 1154.

Question #144 **ANSWER=E**

A known complication of intra-lesional collagenase is a penile fracture. Thus, patients are advised not to engage in sexual activity for two weeks after the injection in order to mitigate the risk of penile fracture. In this case, it is highly likely that he has experienced a penile fracture and he should be surgically explored. A cystoscopy would be warranted at the time of penile exploration to rule out a concurrent urethral injury. Delaying the second injection to > 72 hours, using anti-inflammatories or applying a pressure dressing, would be appropriate if the penile pain would have occurred following the injection only, but would not be the best option in treating a patient who developed symptoms during or following coitus.

Jordan GH, McCammon KA: Peyronie's disease, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 28, p 801.

Gelbard M, Goldstein I, Hellstron WJ, et al: Clinical efficacy, safety and tolerability of collagenase clostridium histolyticum for the treatment of Peyronie's disease in two large double-blind, randomized, placebo controlled phase 3 studies. J UROL 2013;190:199-207.

Question #145 **ANSWER=A**

T-tests as well as analysis of variance, correlation coefficients, and linear multiple regression are used to compare results of a dependent variable that is measured as a continuous variable. These tests can compare groups that have means and standard deviations. When the dependent variable is measured as a binary variable, then statistics such as the frequency are able to be determined, but means and standard deviations or variance are not. In that case, the types of statistical procedures used are chi-square, Fisher's exact test, point-biserial correlation coefficients, and logistic regression.

AUA Core Curriculum statistics section
https://www.auanet.org/university/core_topic.cfm?coreid=122

Question #146 **ANSWER=B**

Identification of a ureteral perforation is an indication for immediate discontinuation of the procedure and passage of a ureteral stent. Persistence of the operation may lead to further shear force injury on the ureter or extravasation of irrigant or urine. If a ureteral stent is placed, percutaneous drainage is not necessary.

Ost MC, Schneck FX: Surgical management of pediatric stone disease, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 4, chap 135, p 3667.

Question #147 **ANSWER=C**

The patient has poor bladder compliance with bilateral grade 2 VUR, elevated pressures of > 40 cm at 100 ml, and end fill detrusor pressure with overflow at system LPP of 85 cm at 280 ml. These urodynamic findings are highly suggestive of high detrusor pressures being related to her loss of renal function. She can undergo kidney transplant, however, to reduce risk of damage to the transplant, she would be best treated with pre-transplant bladder augmentation. This would lower her detrusor storage pressures and probably minimize or resolve her low grade VUR. It is noteworthy that this patient does not have oliguric renal failure. Poor detrusor compliance is frequently found on a urodynamic study in oliguric or anuric pre-transplant patient due to disuse detrusor atrophy. In the latter patients, the bladder will almost invariably develop normal compliance post-transplant and no preoperative intervention is required. If

there is concern that the bladder is really noncompliant in a patient with oliguric renal failure, individuals may be started on CIC with increasing volumes of fluid placed in the bladder over a series of weeks and the urodynamic study repeated. This patient does not have any of the criteria necessary to consider pre-transplant nephrectomy. Indications for pre-transplant nephrectomy are: renal lithiasis, renal mass, chronic pyelonephritis, uncontrollable hypertension, and excessive proteinuria. Occasionally in a patient with autosomal dominant polycystic kidney disease, a nephrectomy may be performed due to inadequate space for a renal transplant.

Wein AJ, Dmochowski RR: Neuromuscular dysfunction of the lower urinary tract, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 65, pp 1929, 1943.

Question #148 **ANSWER=A**

The American Heart Association does not recommend the administration of prophylactic antibiotics to prevent bacterial endocarditis associated with urodynamic testing or other genitourinary procedures presuming a negative urinalysis and sterile technique. Infectious endocarditis is more likely to result from random bacteremias associated with daily activities than from those caused by genitourinary procedures. Prophylaxis may prevent only a very small number of cases of infectious endocarditis, if any, in individuals undergoing genitourinary procedures. Overall, the risk of antimicrobial-associated adverse events exceeds the benefit from prophylactic antimicrobial therapy solely to prevent infectious endocarditis in patients undergoing genitourinary procedures.

Wilson W, Taubert KA, Gewitz M, et al: Prevention of bacterial endocarditis: Guidelines from the American Heart Association. CIRCULATION 2007;116:1736-1754.

Wolf JS, Jr, Bennett CJ, Dmochowski RR, et al: Best Practice Policy Statement on Urological Surgery Antimicrobial Prophylaxis. American Urological Association Education and Research, Inc., 2008. http://www.auanet.org/education/guidelines/antimicrobial-prophylaxis.cfm

Question #149 **ANSWER=A**

Recently, the FDA has issued a warning and label change with testosterone products for the potential increased risk of cardiovascular disease in men taking testosterone. Patients should be counseled on this potential cardiovascular risk prior to starting therapy. Testosterone therapy has been shown to improve insulin resistance and osteoporosis. Patients on testosterone therapy can develop erythrocytosis, not anemia. There is no data to support that testosterone causes prostate cancer or increases incidence of recurrence.

Morales A: Androgen deficiency in the aging male, Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 1, chap 29, p 819.

AUA Position Statement on Testosterone Therapy.
https://www.auanet.org/education/testosterone-therapy.cfm

Question #150 **ANSWER=D**

Hexaminolevulinate hydrochloride was approved in the U.S. by the FDA in 2010 as an optical imaging agent indicated for use in the cystoscopic detection of non-muscle invasive bladder cancers. It is used with a cystoscopic photodynamic detection system to perform so-called fluorescent, or "blue light" cystoscopy to aide in the detection of bladder tumors. According to the pivotal phase III North American multicenter trial, fluorescence cystoscopy improved the detection of both CIS and of papillary tumors as compared to conventional white light cystoscopy. As of yet, these pivotal trials have not demonstrated a reduction in progression rates, cystectomy rates, or use of intravesical therapies. Of note, it is contraindicated in patients who have received BCG within 90 days of treatment and, therefore, is not commonly utilized at this time for the tumor detection post-BCG.

Jones JS, Larchian WA: Non-muscle-invasive bladder cancer (Ta, T1, and CIS), Wein, AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 10. Philadelphia, Elsevier Saunders, 2012, vol 3, chap 81, p 2342.

Burger M, Grossman HB, Droller M, et al: Photodynamic diagnosis of non-muscle-invasive bladder cancer with hexaminolevulinate cystoscopy: A meta-analysis of detection and recurrence based on raw data. EUR UROL 2013;64:846-854.

Fradet Y, Grossman HB, Gomella L, et al: PC B302/01 Study Group. A comparison of hexaminolevulinate fluorescence cystoscopy and white light cystoscopy for the detection of carcinoma in situ in patients with bladder cancer: A phase III, multicenter study. J UROL 2007;178:68-73.

Grossman HB, Gomella L, Fradet Y, et al; PC B302/01 Study Group. A phase III, multicenter comparison of hexaminolevulinate fluorescence cystoscopy and white light cystoscopy for the detection of superficial papillary lesions in patients with bladder cancer. J UROL 2007;178:62-67.