American Urological Association Education and Research, Inc.
Office of Education

2020 Self-Assessment Study Program

Part II - Study Booklet
Comments, References, and Answers

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EXPLANATION TO PARTICIPANTS

SELF-ASSESSMENT STUDY PROGRAM

INTRODUCTION

This study booklet provides a valuable study program and should prove to be the most significant part of the Self-Assessment Study Program for you. You are urged to set aside time on several different occasions to analyze your reasoning processes as compared to those of the Examination Committee. To properly complete this part of the learning experience, it is estimated that you will need to spend approximately 20 hours reading references and related materials.

It is important that you carefully read the comments to understand why the answer is deemed the "best answer." You may have selected the correct answer but your logic in selecting it may differ from that of the Examination Committee. It is also very important to obtain and read the references given so that you may gain the maximum benefit of this Self-Assessment Study Program. We recommend that you do this reading even if you selected the correct answer to the question.

In closing, we recommend that you save and file all of your Self-Assessment Study Program materials. They will assist you in comparing your progress when reviewing the next SASP, and will remain valuable resource information for your practice.

SCORING

Your results are based on the total number of points you scored out of the possible 750 for the entire examination; 5 points for each correct answer.

In the Comments and References Section, the response which is deemed to be the correct answer is provided.

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EXPLANATION OF PARTICIPANT PROFILE

Identification Information: Please check to be sure this corresponds with the information you filled in on your answer sheet so you can verify that you have received the appropriate report.

Type of Question: Each question is assigned to two categories for analysis and reporting. They are: 1) Problem Area and 2) Patient Type.

1) **Problem Area:** Each question is assigned to one of eleven Problem Areas.

   a. Calculous Disease
   b. Congenital Anomalies, Embryology, Anatomy
   c. Core Competencies, Geriatrics, Radiation Safety and Ultrasound
   d. Fluid & Electrolyte, Transplant, Hypertension, Vascular Disease, Nephrology
   e. Infection & Inflammatory Disease
   f. Neoplasm
   g. Neurogenic Bladder, Voiding Dysfunction, Incontinence
   h. Obstructive Uropathy, Laparoscopy, Robotic Surgery
   i. Physiology, Immunology, Adrenal
   j. Sexual Dysfunction, Endocrinopathy, Fertility Problems
   k. Trauma, Fistulae
   l. Urinary Diversion

2) **Patient Type:**

   a. Adult
   b. General
   c. Pediatric

Number of Items: Indicates the number of examination items (questions) that were classified in each content area.

Participant Average: Indicates the percent score earned by the participant when his performance on the items was tabulated. The percent score on the total examination is also indicated at the bottom.

All data concerning performance on the Self-Assessment Study Program is processed in a secure section of the Office of Education, and the results are confidential.

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EXPLANATION OF THE PEER GROUP ANALYSIS

This report indicates the performance of the participant's peer group and offers the opportunity for comparing the peer group performance to the average of all participants who completed the examination. The Peer Group is identified at the top of the report. Be sure it is accurate for you. Years since completion of residency training determined into which peer group you were categorized.

1 - 5 years	16 - 25 years
6 - 10 years	26 - 35 years
11 - 15 years	Over 35 years

0 years - Resident

Type of Question: Lists the content categories into which items were classified.

Percent Averages: Peer Group percentage is the average score for your Peer Group in each content area and on the total examination. All Groups is the average score of all examination participants in each content area and on the total examination.

Total Examination: Total average when all items of the examination are calculated.

Number of Participants in Peer Group: Number of participants in your peer group used to compute your percentile ranking which is located on the bottom of your Participant Profile.

IMPORTANT!!! CME Credit Expiration Dates

Please note: CME Credits expire after three years of original release date.

Answers must be submitted by the CME credit expiration deadline to receive credit for that year. Refer to CME expiration dates below:

2020 SASP	December 31, 2022
2019 SASP	December 31, 2021
2018 SASP	December 31, 2020

2017 SASP and Prior Years are not eligible for CME credits.

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Question #1

ANSWER=D

Profound dysfunctional voiding can be quite severe with the presentation of non-neurogenic neurogenic bladder (Hinman-Allen syndrome). The assessment of dyssynergic voiding with uroflow/EMG should identify the etiology. Although invasive urodynamics and MRI scan of the spine may be indicated, these would be second-order evaluations after failed management or when associated with other symptoms of potential spinal cord tethering. Certainly, more invasive procedures such as cystoscopy and urethral dilation will not address this functional issue. The presence of hydroureteronephrosis is not due to upper tract urinary obstruction; therefore, a MAG-3 renal scan is not indicated.

MacLellan DL, Bauer SB: Neuromuscular dysfunction of the lower urinary tract in children, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 142, pp 3279-3281.

Question #2

ANSWER=B

Respiratory alkalosis is a very early sign of septic shock and is caused by the initial tachypnea stimulated by the sepsis. As hypoperfusion occurs, metabolic acidosis develops. Tachycardia, oliguria, increased cardiac output, and increased plasma norepinephrine occur later in septic shock.

Schaeffer AJ, Matulewicz RS, Klumpp DJ: Infections of the urinary tract, Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 12, p 293.

Question #3

ANSWER=D

There was at one time concern that a cutaneous vesicostomy caused permanent loss of bladder volume and compliance. However, recent studies show that it does not significantly affect either, and that in fact, the bladder cycles via a properly created vesicostomy. Preoperative videourodynamics showing a small bladder capacity do not predict eventual functional bladder capacity. Approximately 75% of children will have normal bladder function after vesicostomy closure. The need for bladder augmentation is more related to the effects of the primary pathological condition on the detrusor. Augmentation cystoplasty may be needed after undiversion in patients with PUV, based on the effect of the primary obstruction on long-term detrusor function. The eventual need for augmentation should be assessed with sequential follow-up after the vesicostomy has been closed.

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Shukla AR: Posterior urethral valves and urethral anomalies, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 141, p 3260.

Question #4

ANSWER=E

Patients with VHL syndrome may have hemangioblastomas of the cerebellum, RCCs, and cystadenomas of the epididymis. The diagnosis, however, can often be made most easily with inspection of the retina, with identification of angiomas. Renal angiomyolipomas are commonly seen in tuberous sclerosis complex. Thyroid carcinoma can be seen more commonly in patients with multiple endocrine neoplasia syndrome. Cafe-au-lait spots are pathognomonic of neurofibromatosis.

Neumann HP, Berger DP, Sigmund G, Blum U, et al: Pheochromocytomas, multiple endocrine neoplasia type 2, and von Hippel-Lindau disease. NEJM 1993;329:1531-1538.

Campbell SC, Lane BR: Malignant renal tumors, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 57, pp 1321-1324.

Question #5

ANSWER=B

All of the following drugs may enhance the hypoprothrombinemic response to oral anticoagulants: allopurinol, aminoglycosides, aminosalicylic acid, chloramphenicol, cimetidine, ethacrynic acid, fluoroquinolones, indomethacin, isoniazid, metronidazole, miconazole, nalidixic acid, oxyphenbutazone, phenylbutazone, propoxyphene, salicylates, sulfonamides, tetracyclines, trimethoprim/sulfamethoxazole, and Vitamin E. Nitrofurantoin does not interact with warfarin. The semi-synthetic beta-lactam penicillins, such as carbenicillin, ticarcillin, mezlocillin, and piperacillin, may produce coagulation defects at high doses, especially in the presence of renal impairment. Iodinated contrast material may also produce transient abnormalities in clotting. Broad-spectrum antimicrobials, particularly when administered orally, may disrupt the gut flora and alter Vitamin K synthesis. Drugs such as allopurinol and metronidazole inhibit the hepatic metabolism of oral anticoagulants. Drugs such as ethacrynic acid, nalidixic acid, and sulfonamides displace oral anticoagulants from proteins and increase the amount of circulating anticoagulant.

Schaeffer AJ, Matulewicz RS, Klumpp DJ: Infections of the urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 12, pp 257, 258.

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PHYSICIAN'S DESK REFERENCE. Montvale, Medical Economics, 1995, pp 949-950.

Question #6

ANSWER=E

The clinical presentation and CT scan are most consistent with xanthogranulomatous pyelonephritis (XGP). The CT scan demonstrates the presence of a calculus and severe distortion of the renal parenchyma. Lipid laden macrophages are commonly identified in renal tissue and urine. Such cells are not seen in the urine of patients with pyelonephritis. In this case, complete removal of the kidney is warranted. Long-term antibiotics or PCNL is not the best solution. There is no abscess fluid to drain. Although RCC and urothelial carcinoma have been reported to occur in such cases, they are rare and the clinical picture is most consistent with an inflammatory, not a neoplastic, disorder. Nephroureterectomy is not indicated.

Schaeffer AJ, Matulewicz RS, Klumpp DJ: Infections of the urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 12, p 288.

Question #7

ANSWER=D

Detrusor external sphincter dyssynergia (DESD) is a urodynamic finding that is strictly found in injuries of the suprasacral spinal cord. Pseudodyssynergia refers to a spike on the electromyography (EMG) tracing during cystometry that occurs from an attempt to inhibit an involuntary detrusor contraction. This is a voluntary contraction of the external sphincter. Since the sacral spinal cord begins at spinal column levels T12 to L1 and terminates in the cauda equina at spinal column level L2, recurrent lumbar disc herniation, cauda equina syndrome, and permanent nerve injury from the laminectomy are not associated with DESD. Of all the choices, multiple sclerosis is the only process that is associated with an insult to the suprasacral spinal cord. In addition, multiple sclerosis often presents in young females.

Wein AJ, Dmochowski RR: Neuromuscular dysfunction of the lower urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 75, pp 1769-1770.

Question #8

ANSWER=A

Renal calculi occur in very low birth weight pre-term infants with a history of severe ventilatory problems and bronchopulmonary dysplasia. Many of these infants require long-term treatment with diuretic agents to manage heart failure. The diuretic agent used most often is furosemide, which increases the rate of urinary

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calcium excretion up to ten times normal. Chronic hypercalciuria from furosemide therapy has been shown to result in nephrocalcinosis and calculus formation. Loss of calcium from chronic administration of furosemide may lead to secondary hyperparathyroidism and bone changes. Treatment includes switching from furosemide to thiazide diuretics. Other etiologies of stone formation do not occur with increased frequency in premature infants requiring diuretic therapy. Hyperuricosuria is associated with gouty diathesis and may predispose to uric acid and calcium oxalate stones. RTA is an electrolyte disturbance due to impaired renal hydrogen ion excretion (type 1) and impaired bicarbonate resorption (type 2), but is not a common etiology for stones in premature infants on diuretic treatment.

Lipkin ME, Ferrandino MN, Preminger GM: Evaluation and medical management of urinary lithiasis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 52, pp 1232-1233.

Question #9 ANSWER=C

The celiac axis provides the arterial blood supply to the stomach through: 1) the left gastric artery which supplies the lesser curvature, 2) the hepatic artery which gives off the right gastric artery, which also supplies the lesser curvature, and the gastroduodenal artery which supplies the antrum and duodenum before giving off the right gastroepiploic artery, and 3) the splenic artery which gives off the short gastric arteries, which supply the fundus and cardia, and the left gastroepiploic artery. The right and left gastroepiploic arteries supply the greater curvature and the omentum. The omentum can be used as a pedicle flap. The pedicle can be based on either the right or left gastroepiploic artery; however, the caliber of the right gastroepiploic artery is usually larger, thus favoring its use.

Badlani GH, De Ridder DJMK, Mettu JR, Rovner ES: Urinary tract fistulae, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 89, p 2116.e13.

Dahl DM: Use of intestinal segments in urinary diversion, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 97, p 2281.e1.

Question #10 ANSWER=D

The site of action of both parathyroid hormone (PTH) and Vitamin D is on the distal tubule. Calcium resorption occurs in this region of the kidney architecture under hormonal influence. Calcium is reabsorbed in the proximal convoluted tubule as well, but the difference is that it is not under the influence of PTH. Similarly, approximately 15% of filtered calcium resorption occurs in the thick ascending loop of Henle that occurs passively. The cortical and medullary collecting tubules, as well

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as the loop of Henle, are not responsible for calcium resorption and homeostasis. Aldosterone regulates sodium reabsorption and potassium secretion in the cortical collecting tubule. The properties of the medullary collecting tubule are similar to the cortical collecting tubule with respect to the principle and intercalated cells responsible for NaCl reabsorption and acid secretion, respectively. However, the medullary collecting tubule differs from the cortical collecting tubule with respect to its water and urea permeabilities and the greater ability of the medullary collecting tubule to concentrate urine under the influence of ADH. There is limited active transport of any kind within the thin descending limb of Henle; however, there is high permeability to water.

Shoskes DA, McMahon AW: Renal physiology and pathophysiology, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 44, pp 1011-1019.

Question #11

ANSWER=D

The standard definition of significant bacteriuria for a clean voided urine is > 10^5 CFU/mL of a uropathogen. This criterion has stood the test of time for screening and epidemiological studies and for entering patients in clinical trials. However, there are several important exceptions to its rigid use in clinical practice and one is in patients with a pyuria/dysuria syndrome. In these patients, a lower colony count may represent significant bacteriuria. Certain bacterial species such as coagulase-negative Staphylococci grow slowly in urine and significant infections may only have counts of 10^3 CFU/mL. Since the patient has a symptomatic, culture-proven UTI, treatment with phenazopyridine alone would be inappropriate. Repeat urine culture (midstream or catheterized) is not indicated. Mycobacteria culture is indicated only in sterile pyuria.

Schaeffer AJ, Matulewicz RS, Klumpp DJ: Infections of the urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 12, pp 252, 265.

Question #12

ANSWER=A

The length of time postoperatively after orthotopic diversion influences continence results. The image demonstrates a smooth walled bladder without reflux. The reservoir capacity can and typically does increase over the first six to twelve months, and even longer in patients with anti-refluxing afferent limbs (e.g., Studer type). CIC will decrease incontinence but too frequent CIC will prevent the reservoir from increasing its capacity over time. Alpha-blocker therapy may relax the proximal urethra and exacerbate incontinence. At this point, it is premature to perform interventions such as sphincter placement as well as augmentation.

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Skinner EC, Daneshmand S: Orthotopic urinary diversion, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 99, pp 2346, 2465.

Question #13 ANSWER=B

This patient has Turner Syndrome. These girls can be recognized by their typical physical findings including short stature, webbed neck, and shield chest. Girls with the 45,XO karyotype usually exhibit all the stigmata of the syndrome. Patients with the 45,XO/46,XY karyotype are at increased risk for dysgerminoma and gonadoblastoma and require gonadectomy. Horseshoe kidney occurs with increased prevalence in patients with Turner syndrome and a renal ultrasound is warranted. VUR, renal agenesis and vaginal agenesis are not associated with Turner syndrome. UPJ obstruction may occur in association with horseshoe kidney, but is not seen with increased frequency in Turner syndrome.

Diamond DA, Yu RN: Disorders of sexual development: Etiology, evaluation, and medical management, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 150, pp 3478-3479.

Question #14 ANSWER=A

The patient most likely has stress incontinence. The catheter could be occluding the bladder neck, preventing demonstration of stress incontinence, and the Valsalva should be repeated after catheter removal. A repeat urodynamic study with a suprapubic catheter would be overly aggressive and is not necessary since the bladder capacity is known to be normal and there is no evidence of detrusor overactivity. Cystoscopy and retrograde urethrogram would demonstrate an anastomotic stricture, but would not demonstrate stress incontinence. Likewise, uroflowmetry is unlikely to add additional information when a pressure-flow study has been performed. If stress urinary incontinence is demonstrated with catheter removal, and the patient is interested in proceeding with surgical intervention, cystoscopy should then be done to evaluate his anastomosis.

Sandhu JS, Breyer B, Comiter C, et al: Incontinence after prostate treatment: AUA/SUFU GUIDELINE. Published 2019.
https://www.auanet.org/guidelines/incontinence-after-prostate-treatment

Nitti VW, Brucker BM: Urodynamic and video-urodynamic evaluation of the lower urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 73, pp 1727-1728.

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Question #15 ANSWER=A

Intrauterine insemination (IUI) is an effective treatment option for couples when the male partner has a total motile sperm count (ejaculate volume x sperm concentration x % sperm motility) greater than 5 million. IUI involves placing processed sperm into the uterine cavity via a catheter inserted through the cervix and into the uterus. This approach allows the sperm to bypass the vaginal fluid and cervical mucous, and thus, higher numbers of motile sperm are able to reach the fallopian tubes, where fertilization occurs. Semen volume and sperm production are commonly limited in men with Kallmann syndrome, because prostate, seminal vesicle, and testicular size are often decreased as a result of this condition. However, sperm quality tends to be completely normal. In vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI) are not indicated at this point. Screening scrotal ultrasound is not indicated in infertile male patients without physical exam findings needing further investigation, and testis biopsy will not be helpful since the patient is not azoospermic. TRUS is useful to evaluate for suspected ejaculatory duct obstruction, which is usually associated with low ejaculate volume (< 1.0 mL) azoospermia. Ejaculatory duct obstruction is not associated with Kallmann syndrome.

Niederberger CS: Male infertility, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 24, p 573.e5.

Question #16 ANSWER=C

Measuring renal function in patients with intestinal diversion may be difficult. Most parameters of renal function will be affected by the intestinal absorption of various substances in the urine, including creatinine and urea (affecting acid loading tests), as well as secretion of alkalinizing substances and alteration in the osmotic content affecting urinary concentrating ability, so creatinine clearance and proteinuria will not be accurate measures. Sodium handling in ileal segments is not markedly altered as ammonium substitutes for sodium in the Na/H antiporter in the bowel lumen.

Dahl DM: Use of intestinal segments in urinary diversion, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 97, pp 2208-2211.

Question #17 ANSWER=D

A number of recognizable syndromes are associated with an increased incidence of Wilms' tumor. Three syndromes that are well known to be at high risk for Wilms' tumor development include: Denys-Drash syndrome (DDS - male pseudohermaphroditism manifested by proximal hypospadias and cryptorchidism,

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membranoproliferative glomerulonephritis, and nephroblastoma), Beckwith-Wiedemann syndrome (macroglossia, nephromegaly, and hepatomegaly), and WAGR syndrome (Wilms' tumor, aniridia, gonadoblastoma, and intellectual disability). In patients with DDS, the kidneys need to be monitored carefully and removed as renal failure occurs. With DDS, there is no increased risk of RCC, Sertoli cell tumor or NSGCT of the testis.

Ritchey ML, Shamberger RC: Pediatric urologic oncology: Renal and adrenal, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 155, p 3568.

Question #18 ANSWER=E

This boy most likely has torsion of the left appendix testis or epididymis resulting in reactive epididymitis. This does not require surgical exploration when the diagnosis is clear. Considering the age of the patient, the presentation is very strongly consistent with torsion of an appendix testis, and testicular scan is unlikely to add any useful information. In cases of epididymitis in this age group, antibiotics are not needed as bacterial epididymitis is rare. The most appropriate treatment includes NSAIDS as well as rest and scrotal support. A VCUG is not useful given the normal kidneys on ultrasound and absence of infection.

Palmer LS, Palmer JS: Management of abnormalities of the external genitalia in boys, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 146, p 3375.

Question #19 ANSWER=D

The best choice for management is a tetanus immunization (if he is not up to date), antibiotics, debridement, and primary closure with drainage. Skin grafts and placement of the testicles in the thigh are seldom required when half of the scrotal skin remains. Secondary closure for such a recent injury is unnecessary. If grafting is required, a meshed split-thickness graft is preferable because the meshing allows exudate to escape and gives improved cosmesis. Thigh pouches are rarely required as wet to dry dressings of the exposed gonads can be effective until reconstruction is feasible.

Husmann DA: Pediatric genitourinary trauma, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 154, p 3558.

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Question #20 ANSWER=B

Impairment of all aspects of renal function, including urinary concentration, ammonia excretion, potassium reabsorption, and sodium reabsorption are seen in unilateral ureteral obstruction. Only urinary dilution is not affected by chronic unilateral ureteral obstruction in humans.

Meldrum KK: Pathophysiology of urinary tract obstruction, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 48, pp 1095-1096.

Question #21 ANSWER=A

A meta-analysis including 206 cases with scrotal violation found that the risk of local recurrence increased from 0.4% for patients treated with inguinal orchiectomy to 2.9% with scrotal violation, but there was no difference in systemic recurrence or survival rates. As such, excision of the scrotal scar may be considered at the time of RPLND and removal of the spermatic cord remnant, with no additional treatment necessary. Specifically, prophylactic (given the negative metastatic evaluation) inguinal lymph node biopsy, dissection, or XRT would not be necessary. Likewise, scrotal violation during orchiectomy would not itself represent an indication for systemic chemotherapy.

Stephenson A, Eggener SE, Bass EB, et al: Diagnosis and treatment of early stage testicular cancer: AUA GUIDELINE. Published 2019.
https://www.auanet.org/guidelines/testicular-cancer-guideline

Capelouto CC, Clark PE, Ransil BJ, et al: A review of scrotal violation in testicular cancer: Is adjuvant local therapy necessary? J UROL 1995;153:981.

Stephenson AJ, Gilligan TD: Neoplasms of the testis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 34, p 792.

Question #22 ANSWER=A

This man likely has chronic bacterial prostatitis, which is usually manifested by recurrent UTIs with the same organism. While lower urinary tract bacterial localization is helpful in identifying the prostate as a nidus of infection, localization is useless in the presence of bacteriuria, with all isolation specimens having bacterial growth due to contamination. This man is currently symptomatic with documented bacteriuria, and therefore, should not undergo localization testing. In this situation, preferred treatment is to obtain a midstream urine culture and treat with

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nitrofurantoin. Nitrofurantoin will clear the urine of bacteriuria and have little to no effect on intraprostatic bacteria. Once the urine has been documented to be sterile, usually in three to five days, bacterial localization studies with initial voided, midstream, expressed prostatic secretions, and post-prostatic massage urinary specimens should be obtained. These tests will allow confirmation of chronic bacterial prostatitis. For chronic prostatitis caused by E. coli, four to six week treatment with fluoroquinolones is superior to the alternative three month therapy with trimethoprim/sulfamethoxazole; however, the risk of fluoroquinolone use should be discussed with the patient. Approximately 20% of the patients will fail the initial therapy and a rescue treatment with a second cycle of therapy with an alternative quinolone has been found to rescue the majority of the relapsing patients.

Nickel JC: Inflammatory and pain conditions of the male genitourinary tract: Prostatitis and related conditions, orchitis, and epididymitis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 13, pp 310, 313.

Question #23 ANSWER=D

This patient has a massive fat-containing tumor of the right kidney. The primary differential diagnosis is between an angiomyolipoma (AML) and a retroperitoneal liposarcoma. The CT scan demonstrates the tumor arising from within the kidney, not the retroperitoneum, and the tumor does not "push" the kidney as is characteristic of the imaging findings in liposarcoma. Thus, the diagnosis is a very large AML, and with these characteristic radiological findings, a biopsy is not necessary. Given the large size of this AML, it has a significant risk for hemorrhage, particularly in a young woman of childbearing age, so observation is not an appropriate management strategy. Selective renal arterial embolization is the treatment of choice in many instances of AML, especially in the acute situation of spontaneous hemorrhage. In most cases of massive AML, the tumor size precludes effective embolization and the risk of spontaneous hemorrhage persists despite embolization. Thus, surgical resection (or a partial nephrectomy, if technically feasible) is a better choice. In this case, because of the large tumor size and anatomical location, a total nephrectomy is the likely outcome. Neoadjuvant radiation prior to resection may be recommended if this were a liposarcoma, but as AML is a benign tumor, this is not indicated.

Campbell SC, Lane BR: Malignant renal tumors, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 57, pp 1360-1362.

Margulis V, Karam JA, Matin SF, Wood CG: Benign renal tumors, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 56, p 1309.

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Flum AS, Hamoui N, Said MA, et al: Update on the diagnosis and management of renal angiomyolipoma. J UROL. 2016;195(4 Pt 1):834-846.

Question #24

ANSWER=D

Brushite, cystine, and calcium oxalate monohydrate stones are all fairly resistant to SWL fragmentation; however, of these types, brushite is the most resistant. Uric acid is less resistant to fragmentation, and struvite is the most fragile. Calcium oxalate dihydrate and hydroxyapatite are more fragile than brushite to SWL.

Matlaga BR, Krambeck AE, Lingeman JE: Surgical management of upper urinary tract calculi, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 54, p 1268.

Question #25

ANSWER=D

The efficacy of estrogen for the prevention of UTIs in post-menopausal women has been demonstrated in several studies. There appears to be a higher effectiveness rate in topically applied estrogen in the vagina with an improvement in lactobacillus concentrations, decreased vaginal pH and a decrease in UTI episodes from 5.9 to 0.5 episodes per year. Antimicrobial prophylaxis may be considered, but quinolones and nitrofurantoin are not the best choices due to the potential for side effects. Lactobacillus probiotics, while effective in an investigational setting, have not been subject to the scrutiny of controlled trials. The use of oral estrogen for UTIs is controversial due to systemic side effects (e.g., increased risk of stroke and blood clots if oral estrogen is started five years after menopause).

Schaeffer AJ, Matulewicz RS, Klumpp DJ: Infections of the urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 12, p 271.

Question #26

ANSWER=A

The presence of cryptorchidism increases the risk of testicular cancer in the cryptorchid testis. Orchiopexy before puberty has been associated with a decreased risk of testicular cancer, and is, therefore, recommended when cryptorchidism is detected in this age group. Management of the postpubertal patient with cryptorchidism has evolved over time, as understanding of the long-term malignancy risks of cryptorchid testes has improved and as perioperative anesthetic risks have decreased. Given the risk of malignancy, orchiectomy of the undescended testes may be considered in healthy postpubertal patients until the risk of operative mortality exceeds the risk of mortality from germ cell cancer, which has been demonstrated

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to occur at age 50 for ASA class I and II cases. As such, while orchiectomy may be considered for healthy patients with cryptorchidism between age 12 and 50, observation is recommended for postpubertal patients at significant anesthetic risk, as well as all males older than 50 with cryptorchidism (as in this patient). Biopsy would not be indicated in this setting, as a negative biopsy cannot exclude the presence of malignancy elsewhere in the testis. Likewise, although hCG therapy has historically been used to stimulate testicular descent, such hormone therapy is not currently recommended given the lack of rigorous data supporting its efficacy.

Stephenson AJ, Gilligan TD: Neoplasms of the testis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 34, p 784.

Wood HM, Elder JS: Cryptorchidism and testicular cancer: Separating fact from fiction. J UROL 2009;181:452-461.

Oh J, Landman J, Evers A, et al: Management of the postpubertal patient with cryptorchidism: An updated analysis. J UROL 2002;167:1329-1333.

Barthold JS, Hagerty JA: Etiology, diagnosis, and management of the undescended testis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 148, pp 3444; 3450-3452.

Question #27 ANSWER=C

Asymptomatic bacteriuria is common in spinal cord injury patients, especially those managed with CIC, and generally does not need to be treated. Sterile and CIC have been associated with rates of bacteriuria ranging from 1% to 3% per catheterization. Symptomatic infections should be treated, but these patients usually do not report the same irritative symptoms as neurologically intact patients. Symptoms that merit treatment include fever, flank or abdominal discomfort, increased leakage between catheterizations, increased spasticity, symptoms of autonomic dysreflexia, and malaise or lethargy. Malodorous urine may be bothersome to the patient but is not an indication for treatment. Most patients on CIC will have > 100,000 CFU/mL and > 10 WBC/hpf on urine culture if there is any bacteriuria. The presence of antimicrobial-resistant bacteria, such as MRSA, in patients with asymptomatic bacteriuria is not an indication for therapy.

Schaeffer AJ, Matulewicz RS, Klumpp DJ: Infections of the urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 12, pp 299, 300.

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Question #28 ANSWER=B

Sleep apnea is a recognized cause of nocturia and secondary nocturnal enuresis. It causes nocturnal diuresis by a cascade of events which are precipitated by hypoxia which occurs during the intermittent occlusion associated with obstructive sleep apnea. The hypoxia-induced increase in right atrial transmural pressure leads to elevated atrial natriuretic peptide (ANP) and subsequent decreased secretion of ADH, resulting in increased nocturnal urinary output. ANP secretion is induced by elevated intrathoracic pressures due to diaphragmatic contraction against a closed upper airway. Isolated detrusor overactivity at night is unlikely in the absence of daytime symptoms. Mobilization of mild lower extremity edema is unlikely to cause a significant increase in nighttime urine production. Sleep apnea can cause hypercarbia but this is not a known cause of increased urine production. An additional advantage of treatment of sleep apnea with CPAP is improvement in nocturnal enuresis.

Weiss JP, Marshall SD: Nocturia, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 78, pp 1825-1826.

Question #29 ANSWER=A

Although less common with improved radiation techniques, radiation-induced fistulas are commonly associated with persistent or recurrent cervical cancer. Fistulas may occur during or shortly following XRT as a result of tumor necrosis in the wall of the vagina or bladder. Fistulas that develop one or more years following XRT are attributed to radiation-induced endarteritis obliterans with subsequent necrosis of the vaginal and bladder wall. The most important aspect in the management of a patient with a fistula following XRT is to rule out recurrent cervical cancer. Locally recurrent cervical cancer following definitive XRT is associated with poor survival despite aggressive multimodal management. Fistula repair would not be indicated in the setting of recurrent disease. While nephrostomy placement would divert some of the urine in the short term, it would not help with the diagnosis of potential recurrence. Fibrin glue could be considered in a small (< 2-3 mm), oblique, non-radiated fistula; this would not be an appropriate option in this patient.

Badlani GH, De Ridder DJMK, Mettu JR, Rovner ES: Urinary tract fistulae, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 89, p 2108.

Question #30 ANSWER=A

There have been many successful pregnancies reported after renal transplantation

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and vaginal delivery is appropriate without the concern for a pregnancy that extends beyond normative gestational age values. Most women can deliver vaginally without risk to the allograft. The risk of birth defects is not significantly different from age-matched women in the general population. Because the volume of distribution increases during pregnancy, the dose of immunosuppressive medications may be increased to prevent renal allograft rejection. Impaired renal allograft function and proteinuria are significant risk factors for pre-eclampsia, hypertension, rejection, and graft failure.

Armenti VT, Radomski JS, Moritz MJ, et al: Report from the National Transplantation Pregnancy Registry (NTPR): Outcomes of pregnancy after transplantation, in Cecka and Terasaki (eds), CLINICAL TRANSPLANTS 2004, chap 9, pp 103-114.

Cararach V, Carmona F, Monleon FJ, Andreu J: Pregnancy after renal transplantation: 25 years' experience in Spain. BR J OBSTET GYMAECOL 1993,100(2):122-125.

Gritsch HA, Blumberg JM: Renal transplantation, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 47, p 1069.

Question #31 ANSWER=E

Potential side effects of intracavernous sympathomimetics include dizziness, hypertension, reflex bradycardia, headache, tachycardia, and irregular cardiac rhythms. However, phenylephrine is a pure alpha-agonist, with the most likely side effect, if seen, being hypertension with secondary reflex bradycardia.

Broderick GA: Priapism, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 28, p 680.

Question #32 ANSWER=A

This patient has a high probability of having renal artery stenosis. By removing one kidney, the situation becomes analogous to the one-kidney, one clip model. In this situation, hypertension is largely maintained by volume and sodium excess. In the face of normal circulating angiotensin II (AII) levels, ACE inhibitors or AII antagonists do not result in marked decrease of blood pressure. Calcium channel blockers and alpha-blockers also are not very effective until the volume overload has been treated. Since the etiology of hypertension is intravascular volume expansion, the best choice is a diuretic.

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Gulmi FA, Reiser IW, Spitalewitz S: Renovascular hypertension and ischemic nephropathy, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 45, p 1029.

Question #33

ANSWER=D

Unilateral renal agenesis (URA) occurs in one out of 1100 births; it is more common on the left and may be inherited in an autosomal dominant pattern with variable inheritance. Twenty-five to thirty percent of children with the VACTERL association (vertebral, imperforate anus, cardiac, tracheoesophageal atresia, renal, and limb anomalies) will have unilateral renal agenesis. Although ipsilateral adrenal agenesis can occur, genital anomalies occur much more frequently. In men, the testis and the head of the epididymis are invariably present. However, the proximal structures derived from the Wolffian duct (the body and tail of the epididymis, vas deferens, seminal vesicle, ampulla, and ejaculatory duct) are absent in almost 50%. In women with URA, one-fourth to one-third have an abnormality relating to Müllerian duct development. Ureteral bud abnormalities are common; the ipsilateral ureter is absent in about 1/2 of individuals. Urethral anomaly and two-vessel cord are not significantly increased in patients with unilateral renal agenesis.

Shapiro E, Telegrafi S: Anomalies of the upper urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 130, p 2982.

Question #34

ANSWER=C

This is a large (> 6 cm), heterogeneous appearing mass which has a high probability of representing a malignancy. While this may be adrenocortical carcinoma, metastasis (in particular from lung cancer) should be considered as well. In either of these cases, chest imaging is indicated prior to proceeding with further evaluation (i.e., biopsy) or management (i.e., surgery). In the case of adrenocortical carcinoma, chest imaging would be important for staging, as if there are metastases detected, then systemic therapy might be appropriate, particularly as the tumor is non-functional. Moreover, if a lung mass is detected, then tissue diagnosis may be required by biopsy to determine primary versus metastatic site of disease. The mass is too large and heterogeneous to presume this is an adenoma, so an adrenal protocol CT scan with washout phases is unlikely to be helpful in guiding management.

Kutikov A, Crispen PL, Uzzo RG: Pathophysiology, evaluation, and medical management of adrenal disorders, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 65, pp 1556-1562.

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Neuroendocrine tumors: NCCN GUIDELINES, 2017.
https://www.nccn.org/professionals/physician_gls/pdf/neuroendocrine.pdf

Question #35 ANSWER=C

Autonomic hyperreflexia or dysreflexia (AD) is most commonly seen in patients with spinal cord injury levels above T6. It is an exaggerated sympathetic nervous system response to afferent visceral stimulation that manifests with sweating, headache, hypertension, reflex bradycardia, and flushing above the level of the spinal cord lesion. The normal systolic blood pressure (SBP) in paraplegics and tetraplegics is low, usually 90-110 mmHg. Elevation of SBP with AD symptoms classically begins with a 20 mmHg rise above baseline, well within normal range for a neurologically-intact individual. If the SBP is > 120 mmHg and the patient is symptomatic, presumed AD is present. Initial therapy should focus on the removal of inciting factors. In this case, that would include emptying of the bladder and removal of all urodynamic catheters. If the symptoms persist and SBP remains elevated, but lower than 150 mmHg, then evaluation and treatment of fecal impaction (second-most common cause of AD after bladder distension) are recommended. However, if the systolic pressure remains above 150 mmHg after bladder emptying and catheter removal, then use of a rapid-onset, short-acting anti-hypertensive is recommended while the cause of AD is investigated. One-half to 1 inch of nitropaste 2% should be applied above the level of the lesion (vasoconstriction occurs below the level of the lesion and may interfere with drug absorption) and is preferred due to its ability to be wiped free if rebound hypotension occurs. Nifedipine had been recommended as a primary treatment or prophylactic agent for AD; however, because of several adverse, rebound hypotensive crises resulting in stroke or MI after its use, the Joint Commission for Treatment of High Blood Pressure and National Spinal Cord Injury committees have discouraged its use and it has been banned for treatment or prevention of AD in some hospitals. If the blood pressure remains elevated and does not respond to transdermal or oral therapy, I.V. hydralazine is an option; however, blood pressure may be quite labile after its use with both hypotension and/or rebound hypertension, and the patient will require hospital admission with further monitoring. After the patient is stabilized, additional monitoring may be required. Atropine is not indicated for treatment of this condition.

Wein AJ, Dmochowski RR: Neuromuscular dysfunction of the lower urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 75, p 1776.

Gunduz H, Binak DF: Autonomic dysreflexia: An important cardiovascular complication in spinal cord injury patients. CARDIOL J 2012;19:215-219.

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Question #36

ANSWER=B

The aim of clomiphene citrate therapy in an infertile patient with low serum testosterone levels is to increase intratesticular testosterone levels and thus optimize the intratesticular environment for spermatogenesis. The clomiphene citrate dosage should be titrated to increase the serum testosterone levels to the mid-normal range, when possible. A third semen analysis is unlikely to aid in the diagnosis given that both prior semen tests revealed normal ejaculate volume azoospermia. While exogenous hCG might help optimize his low testosterone levels, recombinant FSH is not indicated given that his FSH levels are not abnormally low. A diagnostic testis biopsy is not required to establish the presence of spermatogenic dysfunction, as the likelihood of non-obstructive azoospermia in a man with testis longitudinal axis less than 4.6 cm and FSH greater than 7.6 IU/L is 89%. Microsurgical reconstruction with epididymovasostomy will not result in ejaculated sperm because his azoospermia is caused by impaired spermatogenesis, not obstruction.

Hussein A, Ozgok Y, Ross L, Niederberger C: Clomiphene administration for cases of nonobstructive azoospermia: A multicenter study. J ANDROL 2005;26:787-791.

Niederberger CS: Male infertility, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 24, pp 575-576.

Schoor RA, Elhanbly S, Niederberger CS, Ross LS: The role of testicular biopsy in the modern management of male infertility. J UROL 2002;167:197-200.

Mulhall JP, Trost LW, Brannigan RE, et al: Evaluation and management of testosterone deficiency: AUA GUIDELINE. Published February 2018. https://www.auanet.org/guidelines/testosterone-deficiency-guideline

Question #37

ANSWER=E

The inferior mesenteric artery supplies the main blood supply to the left colon via the left colic artery and superior hemorrhoidal arteries. When this is injured or ligated, blood supply is maintained proximally via the middle colic artery which is a branch of the superior mesenteric artery, and distally via the middle and inferior hemorrhoidal arteries. The middle colic and hemorrhoidal arteries connect with each other via the marginal artery of Drummond. This artery runs parallel to the wall of the colon. It is important to maintain this artery during any dissection of the left colon in cases where injury to the inferior mesenteric artery may occur.

Dahl DM: Use of intestinal segments in urinary diversion, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 97, p 2281.

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Question #38

ANSWER=A

Genital skin avulsion may result from machinery accidents, high-speed blunt trauma, or bizarre sexual practices. The classic mechanism is entrapment of clothing and scrotal skin in the power takeoff apparatus of farming tractors. The underlying testicular structures are often spared. Complex avulsions are best managed with initial judicious debridement, close observation, and delayed reconstruction via primary re-approximation or skin grafting. Immediate grafting of a potentially contaminated wound offers little advantage and may risk graft loss if infection ensues. While avulsed skin from blunt degloving injuries may be preserved and used as either split or full-thickness grafts, machinery accidents in which skin is entrapped and avulsed are likely to damage the intrinsic vascular structures of the skin and make it unsuitable for grafting. Wet to dry dressings allow for granulation tissue to develop with its associated neovascularity, and also cleansing and debridement of the wound bed. Thigh pouches are a reasonable alternative for temporary or permanent management of exposed testes, but immediate creation of pouches may risk infection if the wound is contaminated. Likewise, thigh flap reconstruction is an elective definitive approach to scrotal skin absence, but is not appropriate in the acute injury setting. Finally, the scrotum is uniquely amenable to primary reconstruction because of its excellent vascularity and elasticity; primary closure is possible even when up to 60% of scrotal tissue is lost.

Morey AF, Metro MJ, Carney KJ, et al: Consensus on genitourinary trauma: external genitalia. BJU INT 2004;94:507-515.

Morey AF, Zhao LC: Genital and lower urinary tract trauma, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 101, p 2385.

Question #39

ANSWER=B

Perioperative coronary stent thrombosis is a catastrophic complication that can occur in patients receiving both bare-metal and drug-eluting stents. Non-cardiac surgery and most invasive procedures increase the risk of stent thrombosis, especially when the procedure is performed early after stent placement. Reasons for an increased risk of stent thrombosis include: incomplete stent endothelialization early after placement, discontinuation of antiplatelet therapy during the peri-procedural period, and the prothrombotic state often created during surgery. Avoidance of preoperative stent implantation, selection of optimal stent type when stent implantation cannot be avoided, delay of non-essential, non-cardiac surgery, a continuation of antiplatelet therapy in the perioperative period, and increased collaboration between different disciplines (surgery, anesthesiology, and cardiology) can all help minimize the risk of perioperative stent thrombosis. Numerous clinical guidelines advise that elective, non-cardiac surgery be delayed for at least four weeks after bare-metal stent implantation and 12 months after drug-eluting stent

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placement in order to minimize the risk of stent thrombosis. Furthermore, if surgery will need to be performed within 12 months of stent placement, then bare-metal stent implantation is typically preferred over drug-eluting stents, because bare-metal stents endothelialized more rapidly and may, therefore, carry a lower risk of stent thrombosis.

Darvish-Kazem S, Gandhi M, Marcucci M, Douketis JD: Perioperative management of antiplatelet therapy in patients with a coronary stent who need noncardiac surgery. A systematic review of clinical practice guidelines. CHEST 2013;144:1848-1856.

Brilakis ES, Banerjee S, Berger PB: Perioperative management of patients with coronary stents. J AM COLL CARDIOL 2007;49:2145-2150.

Question #40

ANSWER=C

Surgical treatment of bony metastases from RCC is indicated in patients who are at high risk of fracture, particularly those with large (> 3 cm) lytic lesions, involving the cortex of weight-bearing bones. Although the patient has a poor long-term prognosis, should he develop a femur fracture, the quality of his remaining survival will be markedly diminished. Since the risk of fracture is relatively high (given the size and characteristics of the lesion), systemic therapy should be delayed until the femur has been stabilized. Tyrosine kinase inhibitors (pazopanib) or checkpoint inhibitors (ipilimumab and nivolumab) would both be reasonable choices following stabilization of the femur. XRT and strontium-89 would help control pain but would not be adequate to prevent fracture in this case.

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.

Srinivasan R, Linehan WM: Treatment of advanced renal cell carcinoma, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 63, p 1503.

Grunwald V, Eberhardt B, Bex A, et al: An interdisciplinary consensus on the management of bone metastases from renal cell carcinoma. NAT REV UROL. 2018 Aug;15(8):511-521. doi: 10.1038/s41585-018-0034-9. Review. PubMed PMID: 29904105.

Issack PS, Barker J, Baker M, et al: Surgical management of metastatic disease of the proximal part of the femur. J BONE JOINT SURG AM 2014;96(24):2091-2098.

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Question #41 ANSWER=D

There are many ongoing neoadjuvant clinical trials evaluating novel androgen deprivation therapies prior to radical prostatectomy. Tumor volume, stage, nodal status, and margin status can be evaluated by the pathologist and appear improved in men receiving neoadjuvant hormonal ablation; however, the risk of biochemical relapse is equivalent to those men who do not receive neoadjuvant therapy. Gleason scoring can be difficult in men who have received hormonal deprivation due to the noted treatment effect in the tissues. Among these men, the Gleason score can appear artificially elevated and it is recommended Gleason score not be assigned.

Epstein JI: Pathology of prostatic neoplasia, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 110, p 2599.

Question #42 ANSWER=D

Submucosal stones, defined as calculi iatrogenically displaced into the wall of the ureter, can be problematic. Removal of such stones is difficult, as ureteral perforation with urinoma can occur, and fibrosis may result. If submucosal stones are identified, laser excision followed by ureteral stent placement is recommended. If laser excision fails, the next step for a symptomatic submucosal stone is resection of the affected segment of ureter with repair. SWL will not be effective in the treatment of a submucosal stone. Laparoscopic excision of the stone fragment without repair of the ureter will not be an adequate treatment option since the likely associated ureteral stricture will not be addressed. Buccal mucosa graft would only be used in complex cases of ureteral stricture disease. Stent placement would only provide temporary relief from obstruction, and would not address the issue of the submucosal stone.

Matlaga BR, Krambeck AE, Lingeman JE: Surgical management of upper urinary tract calculi, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 54, p 1284.

Question #43 ANSWER=A

Post-void dribbling is most commonly due to vaginal pooling of urine which leaks out once the patient stands or walks. Vaginal reflux is seen by VCUG in many young girls. Immediate improvement may be seen by undertaking maneuvers to facilitate vaginal drainage while still on the toilet; this includes straddling the toilet seat, sitting backward on the toilet seat, leaning forward after voiding, suprapubic compression before getting up, and careful tissue drying after the above maneuvers.

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Medications and the other studies are not necessary. Five minutes on the toilet will not ensure drainage of urine trapped in the vagina.

Austin PF, Vricella GJ: Functional disorders of the lower urinary tract in children, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 143, p 3310.

Question #44 ANSWER=A

Children with correction of severe obstructive uropathy will sometimes demonstrate a persistent decrease in renal concentrating ability. This tends to worsen with growth and may lead to very high obligate urine output. This output can, at times, be so high that children cannot void frequently enough to maintain safe intravesical pressures; hydronephrosis and rising creatinine will ensue. This boy appears to void without obstruction. He does have reduced bladder compliance (as many valve patients do), and his safe zone for filling is equal to 220 mL. However, if his urine output is very high, then he will reach this capacity very quickly after voiding. While he may eventually need timed voiding, antimuscarinic medication, CIC, or a nocturnal indwelling catheter, none of these can be used in a logical way without first knowing more about the patient's daily urine volume. An alpha-blocker is not indicated in this patient.

Shukla AR: Posterior urethral valves and urethral anomalies, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 141, pp 3264-3266.

Question #45 ANSWER=E

The images demonstrate a large intraperitoneal bladder perforation with extravasation of contrast posterior to the bladder (image 1) that also tracks around the bowel into the left upper quadrant (image 2). At the time of a recognized bladder perforation during TURBT, the remainder of the resection should be aborted. Although extraperitoneal perforations may be managed successfully with only urethral catheterization, evidence of a significant intraperitoneal leak should prompt open repair of the bladder injury. Placement of a percutaneous drain alone is insufficient with the large perforation. Placement of a left ureteral stent is not indicated as the fluid on the left side of the abdomen is not due to obstruction/hydronephrosis.

Jones JS: Non-muscle-invasive bladder cancer (Ta, T1, and CIS), in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 93, p 2209.

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Question #46 ANSWER=C

The clinical scenario of dribbling despite normal voiding creates suspicion of an ectopic ureter. Often the ectopic upper pole moiety of the duplex kidney is very small and not easily identified on ultrasound. In these cases, an MRI scan or MR urogram are the best imaging tests to localize the difficult to identify small, dysplastic upper poles and their ureters. MR urogram is not always required since the T2-weighted images of a standard MRI are particularly suited for finding and defining fluid-filled structures like an ectopic ureter. Sagittal imaging may demonstrate the exact termination of the ectopic ureter. DMSA scan is most useful in the identification of small ectopic kidneys but is unlikely to be useful when the renal ultrasound is normal. If the moiety is small, a MAG-3 renal scan will appear normal because the upper pole often has no function and the lower pole will not deviate. VCUG will sometimes show VUR into an ectopic ureter depending on the location of the orifice. Cystoscopy and vaginoscopy can identify the ectopic orifice, but the orifice is often difficult to identify endoscopically and is not as sensitive as an MRI scan. Retrograde pyelogram is also limited due to difficulty in identifying the ectopic ureteral orifice.

Peters CA, Mendelsohn C: Ectopic ureter, ureterocele, and ureteral anomalies, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 134, pp 3080-3082.

Question #47 ANSWER=C

The internal iliac lymph nodes (hypogastric) have the highest independent risk of being positive. The external iliac, obturator, common iliac, and presacral areas are all regions with potential for lymph node metastases but at lower rates.

Weckermann D, Dorn R, Trefz M, et al: Sentinel lymph node dissection for prostate cancer: Experience with more than 1,000 patients. J UROL 2007;177:916-920.

Loeb S, Eastham JA: Diagnosis and staging of prostate cancer, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 111, p 2608.

Question #48 ANSWER=D

Typically, CVA is associated with neurogenic detrusor overactivity (DO) with appropriate relaxation of the bladder outlet (both smooth and striated sphincteric mechanisms) during involuntary bladder contractions. External sphincter contractions may be seen with DO as a voluntary normal guarding reflex. DO associated with detrusor external sphincter dyssynergia is commonly seen with suprasacral spinal cord injury and in 25-40% of patients with multiple sclerosis.

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Sphincter bradykinesia is not typically seen with CVA and is associated with Parkinson's disease.

Wein AJ, Dmochowski RR: Neuromuscular dysfunction of the lower urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 75, p 1764.

Question #49 ANSWER=C

The new onset of a UTI and incontinence in an augmented patient with a neurogenic bladder raises concerns. The first concern in a patient at this age, going through puberty, should be determining whether she is doing CIC as she has been instructed. It is very common for teenagers at this developmental stage to become non-compliant with CIC due to peer pressure and the desire to be "normal". Their attitude toward authority and supervision is also changing. Teenagers are commonly untruthful when questioned about CIC. For this reason, it is very important to first determine whether CIC is really being done appropriately. If CIC is not a problem, then the evaluation for bladder stones, changing bladder storage dynamics, and other issues should be addressed.

Adams MC, Joseph DB, Thomas JC: Urinary tract reconstruction in children, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 145, p 3330.

Question #50 ANSWER=E

Cross-sectional imaging, especially CT scan, has become the imaging modality of choice to demonstrate a vesicoenteric fistula. CT or MRI scans may localize the fistula tract as well as the involved segment of bowel. The triad of findings on CT that are suggestive of colovesical fistula consists of (1) bladder wall thickening adjacent to a loop of thickened colon, (2) air in the bladder (in the absence of previous lower urinary tract manipulation), and (3) presence of colonic diverticula. Cystoscopy has the highest yield in identifying a potential lesion, with some type of abnormality noted on endoscopic examination in more than 90% of cases. However, the findings on cystoscopy are often nonspecific and include localized erythema and papillary or bullous changes; a definitive diagnosis by cystoscopy can be made in only 35% to 46% of cases. This patient has clear evidence of a vesicoenteric fistula and further diagnostic studies are not indicated. Should she be a poor surgical risk, long-term antibiotics could be used. Definitive colonic resection of presumed diverticulosis and repair of fistula is indicated with exploratory laparotomy. General surgery may wish to proceed with colonoscopy/barium enema to evaluate the extent of the affected segment or rule out malignancy.

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Badlani GH, De Ridder DJMK, Mettu JR, Rovner ES: Urinary tract fistulae, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 89, pp 2129-2132.

Question #51 ANSWER=A

Selective serotonin reuptake inhibitors (SSRIs) such as paroxetine, sertraline, clomipramine, and tramadol have all been shown to improve premature ejaculation. However, all four of these medications are contraindicated with the use of a monoamine oxidase inhibitor (MAOI). The only pharmacological option for this patient is topical anesthetic spray. Behavioral therapy would be an alternative to pharmacological management.

McMahon CG: Disorders of male orgasm and ejaculation, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 29, p 698.

Zoloft® (sertraline hydrochloride) tablets, oral solution. Information for Patients. Retrieved from https://www.pfizermedicalinformation.com/en-us/zoloft/drug-interactions

Question #52 ANSWER=A

A referring health care provider is permitted to disclose protected health information about an individual to a health care provider for that provider's treatment of the individual. A release of information is not required. Professionalism precludes the inconvenience of rescheduling the patient for another appointment. Redrawing the PSA is potentially more efficient (although results will not be immediately available) but is not cost-effective. The protected health information form that is signed in your office only affirms that the patient is aware of your privacy policies and does not give permission for release of information.

Does the HIPAA Privacy Rule permit doctors, nurses, and other health care providers to share patient health information for treatment purposes without the patient's authorization? Retrieved from https://www.hhs.gov/hipaa/for-professionals/faq/481/does-hipaa-permit-doctors-to-share-patient-information-for-treatment-without-authorization/index.html

Question #53 ANSWER=C

For a fat-containing tumor, a T2-weighted image with fat suppression is most likely to identify macroscopic fat and confirm the diagnosis of an angiomyolipoma (AML).

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A T1-weighted image without gadolinium is insufficient to confirm the diagnosis of AML. Lesions that enhance with gadolinium on T1-weighted images are typically consistent with malignant lesions. Enhanced T2-weighted imaging is rarely obtained. Magnetic resonance angiographs are rarely necessary for the diagnosis of a renal mass and would not be helpful in this situation.

Campbell SC, Lane BR: Malignant renal tumors, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 57, p 1314.

Question #54 ANSWER=A

Pelvic floor muscle training has been shown to be effective for the treatment of both stress urinary incontinence (SUI) and urgency urinary incontinence (UUI) in women and is considered first-line therapy. Vaginal estrogen may improve her vaginal atrophy and genitourinary symptoms of menopause; however, neither oral nor vaginal estrogen has been shown to improve incontinence (even in the setting of vaginal atrophy). Duloxetine, a serotonin reuptake antagonist, may have a positive impact on SUI, but has not been shown be effective for UUI. Duloxetine is not approved for use in the United States for the treatment of SUI. A periurethral injection may be useful in elderly patients (or others looking to avoid surgery) with SUI but would not treat this patient's symptoms.

Drake MJ: Overactive bladder, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 76, pp 1083-1084.

Gormley EA, Lightner DJ, Burgio KL, et al: Diagnosis and treatment of non-neurogenic overactive bladder (OAB) in adults: AUA/SUFU GUIDELINE. Published 2012. Amended 2014, 2019.
https://www.auanet.org/guidelines/overactive-bladder-(oab)-guideline

Question #55 ANSWER=A

Simple measures, such as catheter irrigations (e.g., acetic acid) and placement of a larger diameter suprapubic tube, may temporize but not completely address the underlying problem of recurrent catheter encrustation with sediment. Catheter encrustation is attributed to bacterial biofilm, particularly biofilms made by urease producing bacteria such as Proteus mirabilis. Urine culture is the appropriate next step. If a urease producing organism is identified, both treatment of the offending organism and evaluation for the presence of bladder or upper tract stones (e.g., with cystoscopy, non-contrast CT scan) that may serve as a nidus for bacterial infection is necessary.

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Wyndaele JJ: The encrustation and blockage of longterm indwelling catheters. SPINAL CORD 2010;48:783.

Question #56

ANSWER=B

The patient has evidence of a right upper tract urothelial carcinoma, causing obstruction with resultant hydronephrosis and renal atrophy. Her personal and family history of cancers along with an upper tract tumor are suggestive of Lynch syndrome, also known as hereditary non-polyposis colorectal cancer (HNPCC). This is caused by mutations in mismatch repair genes which include MLH1, MSH2, MSH6, and PMS2. These patients are at risk of developing colorectal cancer, endometrial carcinoma, digestive adenomas, and ovarian serous cystadenocarcinoma. The other genes listed are associated with other heritable cancers: breast and ovarian cancer (BRCA1); hamartoma, endometrial, and kidney (PTEN, Cowden syndrome); breast cancer, osteosarcoma, and soft tissue sarcoma (TP53, Li-Fraumeni syndrome); renal cell carcinoma, pancreatic neuroendocrine, hemangioblastoma, and pheochromocytoma (Von Hippel-Lindau syndrome).

Smith AK, Matin SF, Jarrett TW: Urothelial tumors of the upper urinary tract and ureter, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 58, p 1365.

Mork M, Hubosky SG, Rouprêt M, et al: Lynch syndrome: A primer for urologists and panel recommendations. J UROL 2015;194:21-29.

Question #57

ANSWER=E

This man presents with symptoms of pyelonephritis. While uncomplicated cystitis in a young sexually active male may not require investigation beyond a follow-up urine culture, a complicated UTI in an older male warrants urologic evaluation, such as CT urogram and cystoscopy due to the higher incidence of associated urologic abnormalities, such as obstruction from either urethral or ureteral strictures, tumor, or stones. Observation is incorrect. Localization cultures might be considered as part of a urologic evaluation but are not sufficient as isolated tests in the presence of a complicated febrile UTI. There is no justification for antimicrobial prophylaxis or urodynamic studies at this time.

Schaeffer AJ, Matulewicz RS, Klumpp DJ: Infections of the urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 12, pp 277, 278.

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Question #58

ANSWER=A

As the patient is asymptomatic, intervention is not required at this time. Extrusions that are larger or symptomatic should be treated. Transvaginal estrogen is thought to promote vaginal healing. Oral estrogen therapy, however, is not helpful in this scenario. Removal of the entire mid-urethral sling is not required for a small exposure of mesh, may be technically challenging, and may lead to recurrent stress urinary incontinence. With partial sling excision, continence is typically maintained in the majority of patients; therefore, replacement of another sling would not be indicated. When a mid-urethral sling is eroded into or involves the urinary tract, it should be treated with removal.

Dmochowski RR, Osborn DJ, Reynolds WS: Slings: Autologous, biologic, synthetic, and midurethral, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 84, pp 2026-2028.

Question #59

ANSWER=A

Red blood cell production is controlled primarily by erythropoietin production in the kidney. Hypoxia is the primary stimulant of erythropoietin production. This occurs in the renal interstitial fibroblasts and possibly in renal proximal tubular cells. Erythropoietin stimulates maturation of erythroid burst-forming units, which eventually leads to increased production of RBCs. Erythropoietin production is not stimulated by either increased CO_2 or decreased afferent arteriolar pressure. Neither the heart nor the renal medullary collecting duct cells produce erythropoietin.

Shoskes DA, McMahon AW: Renal physiology and pathophysiology, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 44, p 1011.

Question #60

ANSWER=D

Although hypokalemia has been classically described as a common finding in primary hyperaldosteronism, in contemporary series, up to 90% of newly-diagnosed patients are normokalemic at the time of diagnosis. In primary hyperaldosteronism, aldosterone increases sodium reabsorption and potassium secretion in the distal nephron. Hypernatremia does not occur as sodium reabsorption is accompanied by water uptake maintaining isotonicity. At the same time, the resultant volume expansion is limited by mineralocorticoid escape – the result of which limits volume expansion to approximately 1.5 kg or less. In primary hyperaldosteronism, aldosterone secretion is independent of the renin-angiotensin-aldosterone system, and plasma renin levels will be suppressed. This finding is in contrast to patients with secondary hyperaldosteronism, where elevated renin levels are the cause of

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elevations in aldosterone secretion. This distinction between plasma renin levels in primary and secondary hyperaldosteronism is a critical concept used when screening for primary aldosteronism. Suppression of renin results in decreased levels of angiotensin II. This is formed when renin cleaves angiotensinogen to angiotensin I, which in turn is cleaved by angiotensin-converting enzyme to angiotensin II.

Kutikov A, Crispen PL, Uzzo RG: Pathophysiology, evaluation, and medical management of adrenal disorders, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 65, pp 1539-1540.

Question #61 ANSWER=B

Patients with an InterStim® II can have an MRI scan of the head using a 1.5-Tesla machine with the stimulator turned off. In general, patients with older InterStim® generators may have an MRI scan of the head with the stimulator turned off and the magnet switch turned off. However, certain serial numbers should not have an MRI scan and this information is readily available on the Medtronic website. MRI scan evaluations of the body are not recommended, though reports have shown this to be safe with the implantable pulse generator and magnet turned off using both 0.6 and 1.5-Tesla machines. This is an emerging technology and new products may be available in the near future with improved MRI compatibility.

Vasavada SP, Rackley RR: Electrical stimulation and neuromodulation in storage and emptying failure, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 81, p 1902.

Chermansky CJ, Krlin RM, Holley TD, et al: Magnetic resonance imaging following InterStim®: An institutional experience with imaging safety and patient satisfaction. NEUROUROL URODYN 2011;30:1486-1488.

Question #62 ANSWER=B

Lower pole residual fragments have a low chance of spontaneously passing. They are also less likely to require intervention as they have a greater tendency to remain asymptomatic in the kidney. A 24-hour urine stone risk profile will help direct medical therapy, especially in a recurrent stone former. In patients with residual fragments after PCNL, those treated with medical therapy had a significantly better stone remission rate (77%) as compared to the control (observation) group (21%). Additionally, residual fragments greater than 2 mm located in the renal pelvis or ureter are independent predictors of a stone event. Ultrasound tends to over-size small renal stones, so there is no need to confirm the presence or size of a small stone in the lower pole, since prevention is the next key step. Further treatment

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(ureteroscopy or SWL) in the postoperative period for a small residual fragment is not necessary at this time; however, long term follow-up is recommended. Additionally, SWL is typically not recommended for very small stones.

Assimos D, Krambeck A, Miller NL, et al: Surgical management of stones: AUA/ENDOUROLOGICAL SOCIETY GUIDELINE. Published April 2016. http://www.auanet.org/education/guidelines/surgical-management-of-stones.cfm

Pearle MS, Goldfarb DS, Assimos DG, et al: Medical management of kidney stones: AUA GUIDELINE. Published March 2014. Validity confirmed 2019. https://www.auanet.org/guidelines/kidney-stones-medical-mangement-guideline

Question #63

ANSWER=C

Recurrent prolonged erections (stuttering priapism) in patients with sickle cell disease and trait eventually progress to more significant episodes. Many therapies have been proposed to include oral alpha-adrenergic agents, hormonal therapy with LH-RH agonists/antagonists, and antiandrogens. Intracavernous alpha-agents (phenylephrine) can be used at the time of a prolonged episode but are not used on a daily basis. Oral estrogens have unacceptable adverse effects, including cardiovascular risks, and are not recommended in this setting. Alpha-adrenergic agents should be used with caution in patients with hypertension. Oral antiandrogens will also allow this patient to continue to have erections and remain sexually active.

Broderick GA: Priapism, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 28, p 683.

Question #64

ANSWER=B

The second (descending) portion of the duodenum is of most importance to the urologist because it lies immediately anterior to the right renal hilum and pelvis. This portion of the duodenum is frequently mobilized (referred to as a Kocher maneuver) to expose the right kidney during a transperitoneal approach. The second portion also receives the common bile duct and surrounds the head of the pancreas. Stomach mobilization is not necessary for the right renal hilar exposure. Neither the superior mesenteric artery nor inferior mesenteric vein need to be mobilized to expose the right renal hilum. Mobilization of the hepatocolic ligament will provide exposure to the upper pole of the right kidney, but does not provide access to the hilum of the right kidney.

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Palmer DA, Moinzadeh A: Surgical, radiographic, and endoscopic anatomy of the retroperitoneum, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 33, p 773.

Question #65 ANSWER=C

This patient has met the criteria for failure of his brachytherapy (nadir + 2 ng/mL). Although a PSA nadir of 1.0 ng/mL is associated with a higher chance of failure, it does not necessarily predict survival. The pre-treatment PSA, in this case, is favorable and would not predict a poor outcome. Although Gleason score has been associated with prostate cancer-specific mortality, most of the time it has been associated with Gleason scores of 8-10. Short time to recurrence is also unfavorable but not as predictive as PSA doubling time. The short doubling time has been shown in multiple studies to be the factor most predictive of prostate cancer-specific mortality in patients who have a recurrence after definitive local treatment.

Lee EK, Thrasher JB: Management of biochemical recurrence after definitive therapy for prostate cancer, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 119, pp 2770-2771.

Question #66 ANSWER=B

Impedance is an indication of the integrity of a circuit. The range of impedances is generally 400-1500 ohm. High impedances (> 4000 ohms) suggest a disruption in the circuit, called an "open" circuit, and suggest that the electrons are unable to flow. Fractures in the leads or loose connections can create an open circuit. In this case, since the other electrodes have acceptable impedances, reprogramming the device using the other electrodes would be the next step. Although the addition of medications or onabotulinumtoxinA injection may be helpful, neither may be necessary if reprogramming provides symptom relief. Surgical revision is not indicated unless all attempts at reprogramming have failed.

Vasavada SP, Rackley RR: Electrical stimulation and neuromodulation in storage and emptying failure, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 81, pp 1911-1914.

Question #67 ANSWER=C

This child is at risk for upper urinary tract deterioration due to the elevated detrusor LPP. Intervention with CIC is required. The child has a reasonable bladder capacity and anticholinergics are not necessary initially. Reassessment with a catheterization diary after starting CIC is needed to determine the bladder pressure at the patient's

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typical catheterized urine volume. This is most predictive of outcome for success with conservative management and to determine the need for antimuscarinics or more aggressive therapy such as onabotulinumtoxinA injections. Antimuscarinic therapy (oxybutynin) without CIC would not provide adequate drainage, especially with high-grade VUR. Reimplantation is not warranted at this point without a trial of non-operative management.

MacLellan DL, Bauer SB: Neuromuscular dysfunction of the lower urinary tract in children, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 142, pp 3276-3277.

Question #68 ANSWER=C

The NCCN guidelines include a "very low-risk prostate cancer" group that is similar to common inclusion criteria for active surveillance. The criteria include: clinical T1c, PSA less than or equal to 10 ng/mL, PSA density under 0.15 ng/mL/cc, Gleason 6 (3+3) (Grade Group 1), and up to 3 positive biopsy cores with no core greater than 50% involvement. PSA density is one of the strongest predictors of upgrading for men with low-grade prostate cancer undergoing radical prostatectomy or for progression while on surveillance. The PSA density of this patient is 0.2 ng/mL/cc, which places him the the low-risk group, as opposed to the very low-risk group.

Prostate Cancer: NCCN GUIDELINES, version 1.2019.

Carter HB, Dall'Era MA: Active surveillance of prostate cancer, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 113, p 2632.

Question #69 ANSWER=E

Onuf's nucleus resides in the anterior horn of the S2 through S4 regions of the sacral spinal cord and contains the pudendal motor neurons that innervate the external striated urethral sphincter. Bladder sensation and bladder contraction involve parasympathetic neurons in the dorsal and ventral portions of the sacral spinal cord, respectively. Coordination between bladder contraction and external sphincter contraction involves neurons in the pontine micturition center.

Chai TC, Birder LA: Physiology and pharmacology of the bladder and urethra, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 69, p 1663.

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Question #70 ANSWER=D

The 2013 AUA Guideline for follow-up for clinically localized renal neoplasms recommends in Statement 12 that patients at moderate- to high-risk for recurrence (which includes pT2-4 and any N+ patients) undergo "baseline chest and abdominal scan (CT or MRI) within three to six months following surgery with continued imaging (US, CXR, CT or MRI) every six months for at least three years and annually thereafter to year five. (Recommendation; Evidence Strength. Grade C)."

Donat SM, Diaz M, Bishoff JT, et al: Follow-up for clinically localized renal neoplasms: AUA GUIDELINE. Published April 2013.
https://www.auanet.org/guidelines/renal-cancer-follow-up-for-clinically-localized-renal-neoplasms-guideline

Campbell SC, Lane BR: Malignant renal tumors, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 57, p 1347.

Question #71 ANSWER=A

Although this patient has a positive cough stress test, the main complaint is urgency urinary incontinence and frequency. Therefore, according to the 2014 AUA/SUFU OAB Guidelines, behavioral modification and pelvic floor muscle training are recommended as first-line treatment, with or without pharmacotherapy (antimuscarinics or beta-3-agonist). Despite the fact that she has a positive cough-stress test, she is not reporting subjective stress urinary incontinence (SUI). Thus, therapy such as a bulking agent or sling aimed at treating SUI should not be part of the initial treatment plan. Stage 1 anterior vaginal wall prolapse is a normal finding and should not cause any signs of a vaginal bulge; therefore, there is no role for a prolapse repair at this time.

Drake MJ: Overactive bladder, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 76, pp 1805-1806.

Gormley EA, Lightner DJ, Burgio KL, et al: Diagnosis and treatment of non-neurogenic overactive bladder (OAB) in adults: AUA/SUFU GUIDELINE. Published 2012. Amended 2014, 2019.
https://www.auanet.org/guidelines/overactive-bladder-(oab)-guideline

Question #72 ANSWER=B

Identification and control of the renal vessels before opening Gerota's fascia

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decreases renal loss. This is done by opening the retroperitoneum over the anterior midline of the aorta just cephalad of the inferior mesenteric artery (IMA) and continue up to the ligament of Treitz. One can then follow the anterior aorta from the IMA cephalad. The next vessel one encounters is the left renal vein which generally crosses anterior to the aorta. Whether approaching the right or left kidney, placing a vessel loop around the left renal vein helps, because the left and right renal arteries can be isolated close to their takeoff from the aorta behind the left renal vein. If the aorta cannot be found due to a large thrombus in the retroperitoneum, then the best anatomic landmark to find the anterior surface of the aorta is the inferior mesenteric vein (IMV). Dissection just medial to the IMV allows for dissection through the hematoma which leads to the anterior surface of the aorta. Once the aorta is identified, the remainder of the steps are as described above.

Santucci RA, Chen ML: Upper urinary tract trauma, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 50, p 1153.

Question #73 ANSWER=C

The optimal way to administer intravesical mitomycin C includes: elimination of residual urine, overnight fasting (dehydration), oral sodium bicarbonate (alkalinization to reduce drug degradation), and increasing the drug concentration to 40 mg/20 mL. Antibiotics, NSAIDS, and antimuscarinics do not improve the efficacy of intravesical mitomycin C.

Intravesical administration of therapeutic medication: Standard operating procedure: AUA/SUNA. Published July 2015.
https://www.auanet.org/guidelines/intravesical-administration-of-therapeutic-medication

Jones JS: Non-muscle-invasive bladder cancer (Ta, T1, and CIS), in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 93, p 2215.

Question #74 ANSWER=A

A Martius flap is composed of fibrofatty labial tissue. The blood supply of the Martius flap is from the posterior labial vessels inferiorly, external pudendal artery superiorly, and obturator artery laterally. The Martius flap is optimally used for more distal fistulae involving the bladder neck, trigone, and urethra. Mobilization and tunneling of a Martius flap to reach a fistula at the level of a well-supported vaginal apex can be challenging and may compromise its blood supply. Therefore, a peritoneal flap is preferred for patients with a vesicovaginal fistula in this location. The layer of peritoneum can often be dissected just beyond the bladder in the anterior cul-de-

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sac. The peritoneum is not opened and once mobilized it can then be placed over the fistula repair as another layer. Vascularized flaps involving the greater omentum can be used for abdominal repairs of a vesicovaginal fistula but cannot be performed with a transvaginal approach.

Badlani GH, De Ridder DJMK, Mettu JR, Rovner ES: Urinary tract fistulae, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 89, pp 2111, 2116.

Question #75

ANSWER=A

This patient has clinical symptoms consistent with the recurrence of C. difficile colitis following appropriate treatment with oral metronidazole. Patients presenting with recurrence are treated based on symptom severity, with similar guidelines for initial infection. With WBC > 15,000/cu mm and elevated serum creatinine > 1.5x baseline, this patient has a "severe" infection and should be managed with oral vancomycin. If the infection is severe and complicated (hypotension, shock, ileus, megacolon), I.V. metronidazole should be added to the oral vancomycin. If there is severe ileus, then rectal instillation of vancomycin should be considered. Stool transplant is recommended only for multiple recurrences.

Khourdaji IS, Jafri, SM: Understanding clostridium difficile infection for the urologist. AUA UPDATE SERIES 2014, vol 33, lesson 10, pp 106-111.

Question #76

ANSWER=B

Bleeding can be encountered during sling procedures, especially at the time of needle passage through the endopelvic fascia. This bleeding will usually abate on its own over time. If it does not, then the appropriate management would be to complete the surgery, close the vagina and pack the vagina which leads to tamponade of the bleeding and adequate control in most cases. Attempts to control the bleeding with further vaginal dissection is not recommended since the exact site of bleeding is often hard to find and further dissection may only exacerbate the situation. Angiographic embolization and/or abdominal exploration would be recommended for patients that continue to bleed despite a period of compression which would suggest injury to a major vessel.

Chiles L, Rovner ES: Complications of female incontinence surgery, in Taneja SS (ed): COMPLICATIONS OF UROLOGIC SURGERY, ed 5. Philadelphia, Saunders Elsevier, 2017, chap 49, p 527.

Dmochowski RR, Osborn DJ, Reynolds WS: Slings: Autologous, biologic, synthetic, and midurethral, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 84, p 2036.

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Question #77 ANSWER=E

This patient has a significant penile curvature of 90 degrees and a Sexual Health Inventory for Men (SHIM) score of 15 which suggests moderate erectile dysfunction (ED). Correcting only the penile curvature will not address the ED. Even with the penile prosthesis, the curvature will need to be addressed. Curvature during penile prosthesis surgery can be corrected with adjunct maneuvers, including modeling, plaque excision, and grafting, plication, or corporal incisions if needed.

Levine LA, Larsen S: Diagnosis and management of Peyronie Disease, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 31, p 747.

Burnett AL, Nehra A, Breau RH, et al: Erectile dysfunction: AUA GUIDELINE. Published 2018.
https://www.auanet.org/guidelines/erectile-dysfunction-(ed)-guideline

Nehra A, Alterowitz R, Culkin DJ, et al: Peyronie's disease: AUA GUIDELINE. Published April 2015.
https://www.auanet.org/guidelines/peyronies-disease-guideline

Question #78 ANSWER=D

The treatment in this patient is driven by the presence of the small cell carcinoma component, which is a sub-type of neuroendocrine tumors (along with large cell carcinoma and carcinoid). These typically behave in a more aggressive fashion and have histologic and genomic features similar to small cell carcinomas of other organs, such as the lung and prostate. Aggressive, multi-modal therapy is warranted for localized disease as in this case and treatment is not per typical urothelial algorithms. Thus, up-front cystectomy is not indicated. Similarly, chemotherapeutic regimens are based on the treatment of small cell carcinoma of the lung, and thus, gemcitabine is not included. Pembrolizumab has been approved for advanced small cell lung cancer, but has not demonstrated efficacy in the neoadjuvant setting. Chemotherapy given prior to XRT in this situation would be cisplatin and etoposide rather than the combination of 5-FU and mitomycin C, which is a standard for urothelial carcinoma of the bladder.

Wood DP Jr: Tumors of the bladder, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 92, p 2202.

https://www.nccn.org/professionals/physician_gls/PDF/bladder.pdf

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Question #79

ANSWER=D

Bladder calculi occur in 30-50% of patients who undergo enterocystoplasty. In this patient, the size and number of stones make it unlikely that irrigation will clear the stones. SWL is not effective in this setting. Because of the previous bladder neck reconstruction, endoscopic lithotripsy (cystolitholapaxy) through the urethra or appendix channel is not the best choice. Cystolithotomy is an efficient approach to eliminate the stones completely and can usually be accomplished percutaneously. Larger stones may require open cystolithotomy. Although stones are common, this does not require abandoning the reconstruction and converting to a supravesical diversion.

Benway BM, Bhayani SB: Lower urinary tract calculi, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 55, p 1295.

Question #80

ANSWER=C

Historically, there have been shortages of BCG; therefore, there is a need for alternatives for bladder cancer patients. The AUA recommends intravesical mitomycin-C as the preferable alternative in this scenario (six week induction and monthly maintenance), with other alternatives being gemcitabine, epirubicin, docetaxel, valrubicin, or sequential therapy. Given the high-risk nature of urothelial CIS, a delay in treatment or surveillance is not advisable. Valrubicin is approved for BCG-refractory CIS in patients who are not candidates for cystectomy. In the absence of other adverse features (e.g., T1 disease), radical cystectomy is not the preferred initial therapy.

American Urological Association: BCG SHORTAGE INFO. Published February 2019. https://www.auanet.org/about-us/bcg-shortage-info

Yates DR, Brausi MA, Catto JW, et al: Treatment options available for bacillus Calmette-Guérin failure in non-muscle-invasive bladder cancer. EUR UROL 2012;62:1088.

Casey RG, Catto JW, Cheng L, et al: Diagnosis and management of carcinoma in situ of the lower urinary tract: A systematic review. EUR UROL 2015;67(5):876.

Mostafid AH, Palou Redorta J, Sylvester R, Witjes JA: Therapeutic options in high-risk non-muscle-invasive bladder cancer during the current worldwide shortage of Bacille Calmette-Guérin. EUR UROL 2015;67(3):359-360.

Kamat AM, Lamm DL, O'Donnell M, et al: What is the urologist to do in a BCG shortage? AUA NEWS 2014;19(11):1.

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Jones JS: Non-muscle-invasive bladder cancer (Ta, T1, and CIS), in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 93, p 2216.

Question #81

ANSWER=E

Parastomal hernias arise when a gap exists between the ileum (or whatever intestinal segment is chosen) forming the stoma and the surrounding fascia. Most commonly, incorrect placement of the stoma lateral to the rectus muscle results in a gradual opening of the surrounding fascia. Sjodahl and colleagues evaluated 130 patients with intestinal stomas and found the incidence of parastomal hernia to be 2.8% in patients with stomas brought through the rectus muscle compared with 21.6% in patients whose stomas were placed lateral to the rectus muscle. To minimize the chances of a parastomal hernia, the surgeon should ensure that the entire fascial opening is within the body of the rectus muscle. Adequate mesenteric blood supply to the distal (stoma) end of the conduit is required to avoid devascularization of the bowel segment. Although such devascularization can result in acute necrosis or chronic ischemia (which in turn can lead to stomal stenosis), the blood supply does not have a role in the development of a parastomal hernia. The use of irradiated bowel also may predispose to conduit ischemia but has not been shown to predispose to hernia formation. Although some have demonstrated an association between obesity, wound infection, steroids, malnutrition, and abdominal distention and the development of a parastomal hernia, tobacco abuse and a history of COPD have not been found to be significant predisposing factors. Neither neoadjuvant chemotherapy nor age is associated with increased risk of parastomal hernias.

Kanofsky JA, Godoy G, Taneja SS: Complications of conduit urinary diversion, Taneja SS (ed): COMPLICATIONS OF UROLOGIC SURGERY, ed 4. Philadelphia, Elsevier Saunders, 2010, chap 46, pp 539-541.

Sjödahl R, Anderberg B, Bolin T: Parastomal hernia in relation to site of the abdominal stoma. BR J SUR 1988;75:339-341.

Kouba E, Sands M, Lentz A, et al: Incidence and risk factors of stomal complications in patients undergoing cystectomy with ileal conduit urinary diversion for bladder cancer. J UROL 2007;178(3 Pt 1):950-954.

Dahl DM: Use of intestinal segments in urinary diversion, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 97, p 2293.

Narang SK, Alam NN, Campain NJ, et al: Parastomal hernia following cystectomy and ileal conduit urinary diversion: A systematic review. HERNIA 2017;21:163.

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Question #82

ANSWER=C

This is likely a case of L5-S1 discitis due to placing sutures through the L5-S1 disc space. The dissection during minimally-invasive sacrocolpopexy has been implicated as being too proximal on the sacral promontory making this scenario more likely. The proper location of the sutures should be into the S1 location of the anterior spinous ligament. Use of multifilament sutures may be associated with the development of discitis and is used less frequently now due to this complication. Given that six weeks have gone by, reassurance is not the best option and diagnosis with MRI imaging should be performed. Antibiotics will not improve this non-infectious adverse event. A transvaginal ultrasound will not detect the inflammation that is present near the disc space. Mesh removal is not warranted at this juncture until a definitive diagnosis is established. Moreover, additional evaluation and treatment by other specialists (pain management, neurology) is warranted prior to mesh removal.

Rajamaheswari N1, Agarwal S, Seethalakshmi K: Lumbosacral spondylodiscitis: An unusual complication of abdominal sacrocolpopexy. INT UROGYNECOL J 2012;23:375-377.

Raz S, Rogo-Gupta L: Complications related to the use of mesh and their repair, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 85, p 2041.

Question #83

ANSWER=D

In this scenario, a branch of the epigastric artery itself has likely been injured during trocar placement. Despite conservative measures, the bleeding continues, and unlike a venous injury, the arterial bleeding is not likely to stop without formal ligation or cauterization. Hence, upsizing the trocar will not stop arterial bleeding. The best next step is to utilize a port closure device such as the Carter-Thomason to pass a suture alongside the trocar tract and secure the bleeding vessel. Sometimes, a figure of eight closure is required to stop the bleeding. Attempts at cauterization are often difficult as the ends of the bleeding vessels retract into the soft tissues making identification difficult. Once the bleeding vessel is controlled, the operation can be resumed with re-evaluation of this trocar site at the end of the operation. If these measures fail, an open exploration may be required.

Ordon M, Eichel L, Landman J: Fundamentals of laparoscopic and robotic urologic surgery, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 10, p 219.

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Question #84 ANSWER=E

At the time of radical cystectomy, suspicious lymph nodes can be encountered. Approximately 25% of patients will ultimately have positive lymph nodes at the time of radical cystectomy. If the suspicious node(s) can be safely resected and the volume of suspicious lymph nodes is limited, it is reasonable to continue the cystectomy and orthotopic urinary diversion. The patient will benefit from the local control of the lymphadenectomy and cystectomy. There is no evidence that stopping surgery and treating with chemotherapy or chemotherapy and XRT is superior to completing the cystectomy. Positive lymph nodes are not a contraindication to orthotopic urinary diversion.

Guzzo TJ, Vaughn DJ: Management of metastatic and invasive bladder cancer, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 94, p 2228.

Question #85 ANSWER=C

This man has a low-pressure, low-flow pattern on his pressure flow study. While long-standing BPH may have contributed to his retention, his current case of emptying/voiding failure is not due to obvious bladder outlet obstruction. Instead, an underactive detrusor is present. There is essentially no reproducible urodynamic data that support the use of bethanechol in any specific category of patients. Additionally, the potential side effects of cholinomimetic drugs include: flushing, nausea, vomiting, diarrhea, gastrointestinal cramps, bronchospasm, headache, salivation, sweating, and difficulty with visual accommodation. While sacral neuromodulation is approved for non-obstructive urinary retention, there is limited evidence for its efficacy in the patient with Parkinson's disease (PD) and operating the controller may be a challenge for someone with advanced neurologic disease. Similarly, CIC would achieve efficient bladder emptying, but may be difficult to perform for someone with advanced PD. Surgical therapy to reduce outlet resistance via TURP is not contraindicated in patients with PD who are obstructed. However, a PD patient with poorly sustained bladder contractions is less likely to achieve successful emptying with this therapy. This leaves suprapubic tube as the most viable option.

Andersson KE, Wein AJ: Pharmacologic management of lower urinary tract storage and emptying failure, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 79, p 1871.

Wein AJ, Dmochowski RR: Neuromuscular dysfunction of the lower urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 75, pp 1766-1767.

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Question #86

ANSWER=C

The patient has distal renal tubular acidosis (dRTA) based on these laboratory studies. Potassium citrate is the most appropriate initial treatment of this condition. Chlorthalidone is used for hypercalciuria. Potassium chloride can replete potassium losses associated with thiazide-therapy, but has no role in the treatment of dRTA. Sodium bicarbonate and sodium citrate will both correct the underlying acidosis, but the sodium load is undesirable, and, therefore, not first-line therapy.

Pearle MS, Goldfarb DS, Assimos DG, et al: Medical management of kidney stones: AUA GUIDELINE. Published March 2014. Validity confirmed 2019.
https://www.auanet.org/guidelines/kidney-stones-medical-mangement-guideline

Question #87

ANSWER=A

Extraperitoneal bladder injuries can be managed non-operatively with catheter drainage, except in the presence of bladder neck injury, rectal injury, or clot retention. Additionally, all intraperitoneal bladder injuries should be repaired. If a catheter has been successfully placed across a membranous urethral injury as in this patient, then there is no need for acute surgery. However, if a catheter could not be placed across the membranous urethral injury, then a suprapubic catheter should be placed, and it would be reasonable to repair the bladder at the same time.

Morey AF, Brandes S, Dugi DD, et al: Urotrauma: AUA GUIDELINE. Published April 2014. Amended 2017.
https://www.auanet.org/guidelines/urotrauma-guideline

Question #88

ANSWER=D

Fractional Excretion of Sodium (FENA) is calculated as follows: FENA = (Plasma Creatinine x Urine Sodium) / (Plasma Sodium x Urine Creatinine). A FENA of 4% is consistent with postrenal causes of acute renal failure. Values between 1-4% suggest intrinsic causes of acute renal failure. In this case, the FENA is 5% which indicates a post-renal obstruction. Of the choices listed, urinary retention is the only etiology that would result in bilateral postrenal obstruction.

Meldrum KK: Pathophysiology of urinary tract obstruction, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier Saunders, 2015, vol 2, chap 48, p 1090.

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Question #89 ANSWER=B

There is no role for early delivery in the setting of normal amniotic fluid volume. In terms of evaluation, this patient is at risk of UTI because of high-grade kidney dilation, ureteral dilation, and increased bladder wall thickness. Because of male gender, the diagnosis of bladder outlet obstruction, most commonly posterior urethral valves, should be excluded prior to discharge with renal ultrasound and VCUG. Fetal MRI scan would not impact decision making during pregnancy at this juncture for counseling regarding intervention or termination of pregnancy. Finally, a renal scan would not be in order at this stage, but may have a role in follow-up at some point to determine renal function and/or ureteral drainage.

Nguyen HT, Benson CB, Bromley B, et al: Multidisciplinary consensus on the classification of prenatal and postnatal urinary tract dilation (UTD classification system). J PED UROL 2014;10:982-998.

Nguyen HT, Herndon CD, Cooper C, et al: The Society for Fetal Urology consensus statement on the evaluation and management of antenatal hydronephrosis. J PED UROL 2010;6:212-231.

Question #90 ANSWER=E

Calcium gluconate is indicated in the treatment of hyperkalemic emergencies because its electrophysiologic effect prevents cardiac arrest; however, it does not actually lower serum potassium. Kayexalate is only an effective transfer resin in the rectum, and as such, does not work rapidly when administered orally. Sodium bicarbonate favors potassium uptake by cells but is minimally effective in patients with ESRD. Glucose and insulin lower the potassium concentration within minutes. Insulin acts on the sodium potassium ATPase to promote cellular uptake of potassium. The glucose is administered to avoid hypoglycemia.

Shoskes DA, McMahon AW: Renal physiology and pathophysiology, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 44, p 1023.

Question #91 ANSWER=C

UTIs in this age group are often associated with bladder dysfunction. Cystoscopy and urethral calibration have not been shown to be beneficial, even with a "spinning-top" urethra, which is thought to be related to external sphincter overactivity. Alpha-blockers may be indicated for children who are having problems with relaxation of the internal sphincter. The nocturnal enuresis may be primary, but there is likely a secondary component related to a small functional bladder capacity,

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so DDAVP would not be indicated, especially in this age group. Antimuscarinics would be useful in treating this patient's overactive bladder dysfunction and improving the spontaneous resolution rate for the low-grade reflux. In both open and endoscopic series, there is an increased surgical failure rate for reflux resolution with lower urinary tract dysfunction, so it is recommended that attempts at treating this dysfunction be performed initially before surgical intervention is considered. Surgical intervention is more likely to be successful after bladder rehabilitation. Biofeedback could be an alternative in the older child and following a uroflow-EMG study confirming detrusor-sphincter dyssynergia.

Austin PF, Vricella GJ: Functional disorders of the lower urinary tract in children, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 143, pp 3298-3299.

Question #92

ANSWER=D

Patients with sacral spinal cord injury retain psychogenic erectile ability even though reflexogenic erections are abolished. These cerebrally-elicited erections are found more frequently in patients with lower motor neuron lesions below T12. Psychogenic erections do not occur in patients with lesions above T9 and the efferent sympathetic outflow is thought to be at levels T11 and T12. Thus, this patient would be able to obtain spontaneous and psychogenic erections but not reflexogenic erections. There is no reason why he would have a decreased response to PDE-5 inhibitors.

Lue TF: Physiology of penile erection and pathophysiology of erectile dysfunction, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 26, p 618.

Question #93

ANSWER=B

In some older patients, bladder outlet obstruction from BPH may be suspected and one may immediately proceed to outlet reduction surgery after failure of pharmacotherapy with an alpha-adrenergic blocker. This patient is young and has severe LUTS, and thus, should undergo more extensive workup prior to any manner of surgical therapy. His flow rate is low and would be consistent with either obstruction or detrusor underactivity. Videourodynamics should discern this and other outflow related issues (i.e., dysfunctional voiding) and can also demonstrate the presence of primary bladder neck obstruction. An antimuscarinic would address storage, but not emptying symptoms.

Nitti VW, Brucker BM: Urodynamic and video-urodynamic evaluation of the lower urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 73, p 1718.

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Foster HE, Barry MJ, Gandhi MC, et al: Surgical management of benign prostatic hyperplasia/lower urinary tract symptoms: AUA GUIDELINE. Published 2018. Amended 2019.
https://www.auanet.org/guidelines/benign-prostatic-hyperplasia-(bph)-guideline

Question #94

ANSWER=B

Persistent penile erection may develop at any time during an endoscopic procedure and may drastically limit movement and manipulation of the cystoscope. Time should be given for the detumescence to spontaneously occur without any active treatment; however, if this does not happen, a pharmacologic agent such as phenylephrine should be administered to hasten detumescence. As this is a vasoactive substance, the anesthesiologist should be alerted to the impending injection and monitor for systemic cardiovascular changes. If access is needed in a dire situation and vasoactive substances have failed, a perineal urethrostomy can be considered. However, unless it is an emergency, aborting the case may be preferable to a perineal urethrostomy. Continuing the case and resuming resection in the event of a persistent erection may limit access to some portions of the prostate and may also damage the corpora. Conversion to general anesthesia has not been shown to eliminate persistent erection.

Welliver C, McVary KT: Minimally invasive and endoscopic management of benign prostatic hyperplasia, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 105, pp 2514-1515.

Question #95

ANSWER=A

Verrucous carcinoma of the penis, also known as a Buschke-Löwenstein tumor, can be locally destructive due to compression of tissue which distinguishes it from condyloma acuminatum. However, unlike penile squamous cell carcinoma, verrucous carcinoma of the penis has a very low likelihood of metastasis. Therefore, the palpable adenopathy in this patient is very likely to be reactive and should be initially observed. Biopsy should be reserved unless the node remains persistently enlarged or grows over time. Lymphadenectomy in the context of verrucous carcinoma should be reserved for cases of biopsy-proven metastases.

Pettaway CA, Crook JM, Pagliaro LC: Tumors of the penis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 37, p 863.

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Question #96 ANSWER=D

This patient has elevated cortisol levels that are not affected by dexamethasone suppression, indicating an ACTH-independent cause of hypercortisolism. Potential etiologies include adrenocortical carcinoma (ACC) as well as ectopic ACTH production. The presence of increased ketosteroid levels and DHEA make ectopic ACTH less likely. Similarly, exogenous steroid use can cause virilization, including hirsutism, but should not elevate ketosteroid levels. Moreover, Cushing-associated virilization is more pronounced with ACC compared to functional adenomas, likely the result of co-secretion of 17-ketosteroids and DHEA, which are more characteristic of ACC than functional adenomas. Meanwhile, Cushing syndrome associated with pituitary adenoma should be ACTH-dependent and demonstrate cortisol suppression with low-dose dexamethasone.

Kutikov A, Crispen PL, Uzzo RG: Pathophysiology, evaluation, and medical management of adrenal disorders, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 65, pp 1531-1539; 1556-1557; 1571-1573.

Question #97 ANSWER=B

Occasionally, surgeons will encounter difficulty approximating an orthotopic urinary diversion to the urethral stump in a patient with a particularly deep pelvis. When the pouch includes the right colon, the surgeon may obtain additional length on the mesentery by dividing the right colic artery. This artery, along with the ileocolic, middle colic, left colic, sigmoid artery, and the three hemorrhoidal arteries, make up the arc of Drummond and provide considerable leeway when mobilizing the colon. The right colic artery often arises off the superior mesenteric artery, but can sometimes be seen arising directly from the middle colic or ileocolic artery. Division of the right colic artery can be performed safely and will often result in greater length on the mesentery of a neobladder that includes the cecum or right colon. Division of the ileocolic artery will result in ischemia and/or necrosis of the neobladder and division of the middle colic artery will not result in any additional length of the mesentery and may also compromise the bowel anastomosis. Alternate diversions should not be considered until all possible options have been exhausted.

Dahl DM: Use of intestinal segments in urinary diversion, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 97, p 2281.e1-2.

Question #98 ANSWER=D

There is substantial evidence demonstrating that a low calcium diet in the absence

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of other specific dietary measures is associated with an increased risk of stone formation. In the case of calcium oxalate stone formers, a potential mechanism to explain this apparent paradox is that lower calcium intake results in insufficient calcium to bind dietary oxalate in the gut, thereby increasing oxalate absorption and urinary oxalate excretion. In contrast, a diet containing at least 1000 mg/day of calcium was shown to be associated with a reduced risk of stone formation. Dietary calcium restriction will not typically affect urinary citrate or urine pH.

Lipkin ME, Ferrandino MN, Preminger GM: Evaluation and medical management of urinary lithiasis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 52, pp 1220-1221.

Question #99 ANSWER=D

Using white light cystoscopy, urologists can suspect malignancy by the visual identification of erythematous bladder lesions or papillary tumors. However, as many as 37% of biopsies of suspicious findings performed on the basis of white light cystoscopy alone result in false-negative results. In addition, random biopsies of normal-appearing areas can occasionally detect malignancy which is usually CIS. This imperfect sensitivity of cystoscopy may in part explain the high risk of cancer recurrence soon after complete removal of all visible tumors. Since photoactive porphyrins accumulate preferentially in neoplastic tissue, blue-light fluorescent cystoscopy can help in the identification of indiscernible malignant lesions. Using this technology, both small papillary tumors and almost 1/3 more cases of CIS overlooked on cystoscopy are identified. Compared to white light cystoscopy, hexaminolevulinate (HAL)–based blue-light imaging improved detection of both CIS (from 68 to 95%) and papillary tumors (from 85 to 96%). Although this has not been shown to decrease progression, the improved tumor detection with blue-light imaging appears to result in a decrease in recurrence rates. A systematic review demonstrated that non-muscle invasive bladder cancer recurrence was decreased during short-term (less than three months), intermediate-term (three months to less than one year), and long-term (greater than or equal to one year) follow-up in patients who underwent fluorescent cystoscopy with blue-light compared to white-light alone. Narrow band imaging (NBI) is an optical imaging enhancement technology and tended to improve the visibility of blood vessels inherent to neoplastic processes. However, in contrast to blue-light cystoscopy, no studies to date have been performed to investigate recurrence and/or progression after NBI cystoscopy. Bladder wash cytology, while relatively sensitive and specific for identification of CIS, has low sensitivity for the detection of lower-grade tumors. Fluorescent in-situ hybridization (FISH) has greater specificity and sensitivity for detection of CIS compared to cytology, but has not been shown to result in a decrease in recurrence.

Jones JS: Non-muscle-invasive bladder cancer (Ta, T1, and CIS), in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 93, pp 2210-2211.

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Chou R, Buckley D, Fu R, et al: EMERGING APPROACHES TO DIAGNOSIS AND TREATMENT OF NON-MUSCLE-INVASIVE BLADDER CANCER. Rockville, Maryland: Agency for Healthcare Research and Quality (US) 2015. https://www.ncbi.nlm.nih.gov/books/NBK330472

Daneshmand S, Bazargani ST, Bivalacqua TJ, et al: Blue light cystoscopy for the diagnosis of bladder cancer: Results from the US prospective multicenter registry. UROL ONCOL 36(8):361,2018.

Question #100

ANSWER=C

The AUA Medical Management of Kidney Stones Guideline states that clinicians should offer allopurinol to patients with recurrent calcium oxalate stones who have hyperuricosuria and normal urinary calcium. A prospective randomized controlled trial demonstrated that allopurinol reduced the risk of recurrent calcium oxalate stones in the setting of hyperuricosuria (urinary uric acid excretion > 800 mg/day) and normocalciuria. Whether the drug is effective in patients with hypercalciuria has not been established. Hyperuricemia is not a required criterion for allopurinol therapy. In addition to medication, specific recommendations about limiting non-dairy animal protein may maximize the efficacy of allopurinol. In the present scenario, the patient's urine oxalate is normal, so a low oxalate diet would not be expected to have a large effect on urinary oxalate. A low sodium diet for calcium oxalate stone formers is most effective in the setting of hypercalciuria, which is not present. Potassium citrate is most effective in the setting of hypocitraturia; however, this is not present. A thiazide is most effective for hypercalciuria, which is not present.

Pearle MS, Goldfarb DS, Assimos DG, et al: Medical management of kidney stones: AUA GUIDELINE. Published March 2014. Validity confirmed 2019. https://www.auanet.org/guidelines/kidney-stones-medical-mangement-guideline

Question #101

ANSWER=C

Urethral meatal warts can be treated with focal topical therapies such as podophyllin and imiquimod cream; however, neither are approved for internal use because of the potential for significant toxicity to normal tissue. Cryotherapy with liquid nitrogen can be applied topically to the urethral meatus but not within the more proximal urethra. The CO_2 laser is absorbed by water so it cannot be used through a cystoscope. The treatment of intraurethral warts is either with intraurethral 5-FU cream or Holmium laser ablation. In patients with extensive intraurethral condyloma, 5-FU would be the initial treatment of choice.

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Pontari MA: Sexually transmitted diseases, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 15, p 379.

Question #102 ANSWER=C

The optimal strategy for perioperative antibiotic prophylaxis has undergone significant change over the past 20 years. Currently, the role of mechanical bowel preparation prior to the use of intestinal segments is controversial. Also, the use of oral antibiotics prior to the use of intestinal segments is controversial. The AUA Best Practice Policy Statement on antibiotic prophylaxis states that an intravenous second or third-generation cephalosporin within one hour prior to the incision and discontinued within 24 hours is the optimal strategy. Long courses of I.V. antibiotics are associated with an increased risk of bacterial resistance and secondary infections (C. difficile or fungal infections). Acceptable alternatives include an aminoglycoside and metronidazole within one hour prior to the incision and discontinued within 24 hours.

Lightner DJ, Wymer K, Sanchez J, et al: Urologic procedures and antimicrobial prophylaxis (2019). AUA BEST PRACTICE STATEMENT.
https://www.auanet.org/guidelines/urologic-procedures-and-antimicrobial-prophylaxis-(2019)

Question #103 ANSWER=A

Unlike patients with penile cancer, a survival benefit has not been demonstrated with prophylactic inguinal lymph node dissection for patients with urethral cancer and no palpable or radiographic evidence of lymph node involvement. Since this patient is without evidence of adenopathy, observation rather than a superficial inguinal node dissection is recommended. Of note, for patients with limited inguinal nodal disease and without distant metastases, cases of curative resection with inguinal lymph node dissection have been reported. Therefore, inguinal lymphadenectomy should be considered in the presence of palpable inguinal lymph nodes in a patient without distant metastases. Chemoradiation may be used for patients with anterior urethral carcinoma as an effort for genital preservation, while multimodal therapy, including radiation and chemotherapy with surgery, is often recommended for advanced urethral tumors particularly of the proximal urethra. However, in the setting such as this patient who has a resected pendulous urethral squamous cell carcinoma without evidence of adenopathy or distant metastases, the use of additional postoperative treatment with chemotherapy, radiation, or chemoradiation does not have evidence to support an improvement in survival.

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Sharp DS, Angermeier KW: Tumors of the urethra, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 38, pp 881-882.

Question #104 ANSWER=C

Patients with erectile dysfunction (ED) and premature ejaculation should have their ED addressed first. Thus, selective serotonin reuptake inhibitors (SSRIs) and topical lidocaine would not be the first choice for therapy. Diagnosis of vasculogenic ED may be aided by penile duplex Doppler ultrasound blood flow measurements, and cavernous arterial insufficiency is suggested when peak systolic velocity (PSV) is less than 25 cm/s. Conversely, a PSV consistently greater than 35 cm/s defines normal cavernous arterial inflow. Cavernous veno-occlusive dysfunction, which refers to failure of erection maintenance despite adequate cavernous arterial inflow (i.e., failure to store), is typically present when persistent high systolic flow velocities (i.e., PSV > 25 cm/s) are combined with high end-diastolic flow velocities (EDV > 5 cm/s). According to the Doppler ultrasound results for this patient (normal hemodynamics), the ED is likely psychogenic in nature. A phosphodiesterase type 5 inhibitor is the least invasive and an appropriate therapy for ED. In addition, there is a possibility that premature ejaculation may resolve with successful treatment of ED, which is why the ED should be treated first.

McMahon CG: Disorders of male orgasm and ejaculation, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 29, p 692.

Burnett AL II: Evaluation and management of erectile dysfunction, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 27, p 652.

Question #105 ANSWER=B

Prostate cancer antigen 3 (PCA3) may be measured in the urine and is made up of non-coding messenger RNA. The test is currently approved as a biomarker for a persistently elevated PSA after a negative biopsy. The level of PCA3 has been associated with tumor volume and grade at radical prostatectomy. Prostate-specific membrane antigen (PSMA) is a ubiquitous molecule that has many potential mechanisms in prostate epithelial cell metabolism and may be involved in the development and spread of prostate cancer. Of the mentioned prostatic enzymes, it is the only one found in small bowel and is important in nutrient uptake for both benign and malignant prostate epithelial cells. Currently, PSMA is used during molecular imaging to stage prostate cancer and has greater sensitivity than conventional imaging modalities, such as bone scan or MRI. Additionally, it is used for the delivery of targeted therapeutics. Prostate stem cell antigen (PSCA) is a cell

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surface antigen that is expressed by both prostate and bladder tissue. There is a potential use of PSCA for prostate targeted imaging or therapeutics. Prostatic acid phosphatase levels are more than 200 times higher in the prostate compared to other tissues. Currently, there are no clinical applications for prostatic acid phosphatase. Prostate-specific protein is one of three predominant proteins found in the seminal fluid, with PSA and prostatic acid phosphatase being the others. Its main biological function is to inhibit FSH. Currently, there are no clinical applications involving prostate-specific protein.

Carter HB, Dall'Era MA: Active surveillance of prostate cancer, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 113, p 2635.

Morgan TM, Palapattu GS, Partin AW, Wei JT: Prostate cancer tumor markers, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 108, pp 2571-2572.

Ross AE, Rodriguez R: Development, molecular biology, and physiology of the prostate, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 102, pp 2420-2421.

Question #106 ANSWER=D

For patients who have a serum creatinine less than or equal to 2.0 mg/dL, a more detailed investigation of their renal function is necessary prior to considering any form of retentive diversion. In such patients, orthotopic diversion can be safely offered provided the creatinine clearance is > 35 mL/min, they can achieve a urine pH of = 5.8 with an ammonium challenge, and they can increase urine osmolality to 600 mOsm/kg in response to fluid restriction. It is not necessary, therefore, to insist on a non-continent conduit diversion and no advantage to plan on continent cutaneous diversion over orthotopic diversion given the patient's preference.

Dahl DM: Use of intestinal segments in urinary diversion, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 97, p 2303.

Question #107 ANSWER=E

Lower extremity neuropathy can occur following a procedure performed in the lithotomy position. Such neuropathies are characterized by paresthesia as well as pain. They will generally resolve with conservative management. Cerebrospinal fluid leak is characterized by headache. Epidural hematoma will be associated with radicular pain and is rare. While rhabdomyolysis and compartment syndrome could

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be associated with prolonged surgery and pain, there would be no radiation to the legs as seen in this patient which suggests a neurologic etiology.

Gershman B, Tollefson MK, Boorjian SA, Leibovich BC: Complications of the incision and patient positioning, in Taneja SS, Shah O (eds): TANEJA'S COMPLICATIONS OF UROLOGIC SURGERY, ed 5. Philadelphia, Elsevier 2018, chap 9, pp 109-110.

Question #108

ANSWER=B

There is continued discussion and controversy regarding the vaccination of boys prior to becoming sexually active, and the routine practice of this is relatively low in the United States. Studies would suggest that early vaccination is effective and prevents HPV infection and the development of HPV-associated genital warts as well as anal cancers. There is no effect on co-infection with HIV. It is thought, but not proven, that the herd immunity with widespread vaccination of boys will lead to reductions in penile cancer, oropharyngeal cancer, and cervical cancer in women.

The American Cancer Society: HPV VACCINES. Reviewed 2016. Revised 2018. https://www.cancer.org/cancer/cancer-causes/infectious-agents/hpv/hpv-vaccines.html

Centers for Disease Control and Prevention (CDC): HUMAN PAPILLOMAVIRUS: VACCOME FOR HPV. Reviewed August 2019.
https://www.cdc.gov/hpv/parents/vaccine.html

Pettaway CA, Crook JM, Pagliaro LC: Tumors of the penis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 37, p 846.

Question #109

ANSWER=E

Polycythemia, also known as erythrocytosis, is defined as a hematocrit > 52%. This condition can be either congenital or acquired. Acquired (secondary) polycythemia can be caused by hypoxia (tobacco use, obstructive sleep apnea, chronic obstructive pulmonary disease), living at a high altitude, paraneoplastic syndrome, polycythemia vera, and testosterone replacement therapy. After the initiation of testosterone replacement therapy, levels of hemoglobin and hematocrit tend to rise for the first six months of therapy, and then plateau. The risk of polycythemia is greatest with the intramuscular formulation (19%), followed by testosterone pellets (12.5%) and gels (5.4%). Anastrozole, clomiphene citrate, and human chorionic gonadotropin all commonly result in increased serum testosterone levels, but their associated risk of polycythemia is much lower than that of exogenous testosterone. FSH administration does not affect serum testosterone levels and does not cause polycythemia.

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Niederberger CS: Male infertility, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 24, p 556.

Parsons JK, Hsieh TC: Integrated men's health: Androgen deficiency, cardiovascular risk, and metabolic syndrome, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 23, p 538.

Mulhall JP, Trost LW, Brannigan RE, et al: Evaluation and management of testosterone deficiency: AUA GUIDELINE. Published February 2018. https://www.auanet.org/guidelines/testosterone-deficiency-guideline

Question #110 ANSWER=D

Both partial nephrectomy and thermal ablation are reasonable treatment modalities for a renal mass <3 cm. Thus, in this case, the size and location would likely make both options available. There is likely no significant difference between the two techniques with respect to renal preservation, perioperative complications (urinary fistulas or arteriovenous malformation), and cancer-specific survival. However, the accumulated evidence suggests that ablation is associated with a greater risk of local recurrence, although this can often be adequately managed with additional treatment (either re-ablation or surgical resection).

Campbell S, Uzzo RG, Allaf ME, et al: Renal mass and localized renal cancer: AUA GUIDELINE. Published 2017. https://www.auanet.org/guidelines/renal-cancer-renal-mass-and-localized-renal-cancer-guideline

Tracy CR, Cadeddu JA: Nonsurgical focal therapy for renal tumors, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 62, p 1492.

Question #111 ANSWER=C

The identification of a grade 3 varicocele is not an uncommon occurrence; however, the dilation of the pampiniform plexus should resolve when the patient is in the supine position. Failure to do so raises the suspicion for compression of the renal vein with a mass and upper tract imaging is indicated. A scrotal ultrasound would not identify a retroperitoneal mass. Semen analysis is not indicated in pre-pubertal varicocele evaluation. If the varicocele were to resolve in the supine position, then follow-up in six months would be appropriate. Treatment of the condition is not warranted in the absence of a 20% size discrepancy on serial examinations. The

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testicular volume is appropriate given Tanner stage and neither testis demonstrate hypotrophy.

Palmer LS, Palmer JS: Management of abnormalities of the external genitalia in boys, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 146, p 3368.

Question #112 ANSWER=A

School-aged children and adolescents should be provided with age-appropriate information on diagnostic and therapeutic interventions and give their assent to the recommended intervention before proceeding. Conversely, they should be able to give dissent if they do not agree to proceed. Consent must be obtained from the parent(s) or legal guardian since the patient is a minor. Shared decision making is a term that applies to providing patients (and their families) with various diagnostic and therapeutic options and together choosing a course of action when there is no clear superior intervention or guideline. Statutory minors are legally designated to make health care decisions without parental involvement, typically in issues related to reproductive health, mental health, or substance abuse. Paternalism is an ethical principle in which the concept of impairment (that others are not capable of making a sound choice) is used by the decision-maker. Non-maleficence is an ethical principle referring to the obligation to avoid or minimize harm to the patient.

Wimberly JM: Ethics: AUA UNIVERSITY CORE CURRICULUM. Updated March 2019. https://university.auanet.org/modules/webapps/core/index.cfm#/corecontent/120

https://www.aap.org/en-us/Documents/Bioethics-InformedConsent.pdf

Question #113 ANSWER=D

In multi-variable analysis of patients undergoing surgical resection of adrenocortical carcinoma, the factor most associated with overall survival is achieving negative surgical margins. Other variables in prognostic models include tumor size and nodal status. In predicting recurrence-free survival, the model included tumor size, nodal status, T stage, functional activity, and capsular invasion. Of note, while retrospective data have indicated a benefit to adjuvant mitotane after surgical resection, its use remains controversial given the potential risks and uncertain benefits of treatment.

Margonis GA, Kim Y, Prescott JD, et al: Adrenocortical carcinoma: Impact of surgical margin status on long-term outcomes. ANN SUR ONCOL 2016;23(1):134-141.

Kim Y, Margonis GA, Prescott JD, et al: Nomograms to predict recurrence-free and overall survival after curative resection of adrenocortical carcinoma. JAMA SUR 2016;151:365-373.

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Neuroendocrine tumors: NCCN GUIDELINES, 2017.
https://www.nccn.org/professionals/physician_gls/pdf/neuroendocrine.pdf

Terzolo M, Angeli A, Fassnacht M, et al: Adjuvant mitotane treatment for adrenocortical carcinoma. NEJM 2007;356:2372-2380.

Question #114 ANSWER=D

To optimally preserve antegrade ejaculation, the sympathetic chain, postganglionic efferent sympathetic fibers, and hypogastric plexus should be saved. On the right side, these nerves arise from the sympathetic trunk that lies on the anterior lateral surface of the spine, posterior to the inferior vena cava. There are normally three to four nerve trunks that travel behind the inferior vena cava and anastomose to form the superior hypogastric plexus around and below the inferior mesenteric artery on the anterior surface of the aorta. On the left side, the postganglionic fibers similarly arise from the sympathetic trunk on the anterolateral aspect of the spine and travel lateral and anterior to the aorta and anastomose to join the superior hypogastric plexus.

Rice KR, Cary CK, Masterson TA, Foster RS: Surgery of testicular tumors, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 35, pp 820-821.

Question #115 ANSWER=C

Arrhythmia is precipitated by SWL in some patients, thereby resolving with cessation of shocks. They occur more often in patients undergoing ungated procedures, and if they persist, may require conversion to gating (shock delivery synchronized to patient electrocardiogram R-wave) during the procedure. The reported rate of arrhythmia is approximately 8-21%. There has been no definitive correlation of an arrhythmia with the age or gender of the patient, presence of heart disease, size or location of the stone, presence of ureteral catheter or nephrostomy tube, number or strength of the shockwaves, or the anesthetic agent delivered.

York NE, Lingeman JE: Complications of extracorporeal shock wave lithotripsy, in Taneja SS, Shah O (eds): TANEJA'S COMPLICATIONS OF UROLOGIC SURGERY, ed 5. Philadelphia, Elsevier 2018, chap 29, p 302.

Question #116 ANSWER=D

The use of a significant section of distal ileum in urinary tract reconstruction may result in Vitamin B12 malabsorption and subsequent anemia and neurologic

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abnormalities. Low serum levels of Vitamin B12 have been described in up to 21% of children who have undergone ileocystoplasty, but clinical effects may not manifest for many years, since the liver stores enough Vitamin B12 to supply the body's requirement for three to five years without oral intake. Moreover, low serum levels of Vitamin B12 do not always correlate with metabolic deficiency. Since Vitamin B12 serves as a coenzyme in the metabolic pathways of homocysteine and methylmalonic acid, elevated levels of homocysteine serve as a sensitive indicator of whether the low Vitamin B12 level is significant. If electrolyte abnormalities are seen with ileal reconstruction, they present as a syndrome of hyperchloremia, metabolic acidosis, total-body potassium depletion, and hypocalcemia. Symptoms include fatigue, anorexia, lethargy, and weakness. Creatinine is not necessarily elevated.

Dahl DM: Use of intestinal segments in urinary diversion, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 97, p 2313.

Question #117 ANSWER=D

Stone procedures should be aborted if purulent urine is encountered during endoscopic intervention. Appropriate drainage should be established, a urine culture should be obtained and antibiotic therapy should be continued. In this case where a wire could be advanced and the patient is asymptomatic, a ureteral stent would offer adequate drainage. A nephrostomy tube is not indicated at this time unless a stent cannot be easily advanced. Removal of the wire and termination of the procedure would not drain the possibly infected upper urinary tract. Proceeding with intervention in the setting of a possible infection above the stone is discouraged and will increase the risk of postoperative sepsis.

Assimos D, Krambeck A, Miller NL, et al: Surgical management of stones: AUA/ENDOUROLOGICAL SOCIETY GUIDELINE. Published April 2016. https://www.auanet.org/guidelines/kidney-stones-surgical-management-guideline

Question #118 ANSWER=A

There is no evidence to support the position that a persistent urachal remnant in childhood increases the risk of cancer. Therefore, partial or complete removal is not recommended and small asymptomatic urachal remnant excision is not indicated as these children can be observed. A VCUG is invasive and unnecessary for an asymptomatic remnant detected by ultrasound. Antibiotics may be useful in patients that present with an infected urachal cyst, but are not indicated in this child.

Frimberger D, Kropp BP: Bladder anomalies in children, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 138, pp 3175-3176.

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Question #119 ANSWER=D

All of these factors likely increase the risk of development of prostate cancer in men. Ethnicity and family history are important factors to consider when screening men for prostate cancer. In addition, it is recognized that men with BRCA mutations as well as hereditary non-polyposis colorectal cancer (HNPCC) also known as Lynch syndrome, which includes MSH2 mutations, are also at an increased lifetime risk for prostate cancer and may deserve more intense cancer screening. However, amongst these, BRCA2 is most associated with early-onset and more aggressive disease, as well as significantly higher cancer-specific mortality. African-American men, those with a family history of prostate cancer, and germline BRCA1 mutations, all increase the risk of prostate cancer and may increase the likelihood of lethal prostate cancer, but not to the magnitude of a BRCA2 mutation.

Kim S, Chapin B, Hallman, M, Geynisman D: Prostate cancer: AUA UNIVERSITY CORE CURRICULUM. Updated February 2019.
https://university.auanet.org/modules/webapps/core/index.cfm#/corecontent/74

Stephenson AJ, Klein EA: Epidemiology, etiology, and prevention of prostate cancer, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 107, p 2547.

Question #120 ANSWER=E

Abiraterone is administered orally and selectively inhibits the cytochrome p450 isoform 17(CYP17). This also blocks 17-alpha-hydroxylase and 17,20-lyase activity, leading to secondarily increased production of mineralocorticoids. This manifests as hypertension, hypokalemia, and pedal edema which is attenuated with the addition of prednisone. Cabazitaxel was FDA-approved for the treatment of metastatic, castrate-resistant prostate cancer in 2010, and its mechanism of action is microtubule inhibition and inhibiting cell division. Side effects include hair loss, nausea, abdominal pain, blood in the urine, and stool and weakness due to anemia. Common side effects of denosumab and enzalutamide include fatigue and nausea, respectively. Sipuleucel-T is FDA-approved for metastatic castrate-resistant prostate cancer with no or few symptoms. Common side effects include chills, fatigue, fever, back pain, nausea, joint ache, and headache.

Antonarakis ES, Carducci MA, Eisenberger MA: Treatment of castration-resistant prostate cancer, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 121, pp 2808-2814.

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Question #121

ANSWER=D

The initial treatment of metastatic prostate cancer has undergone significant changes since 2015. In that year, two trials, Chemotherapy in Treating Patients with Metastatic Prostate Cancer (CHAARTED) and Systemic Therapy in Advancing or Metastatic Prostate Cancer: Evaluation of Drug Efficacy (STAMPEDE) showed androgen deprivation therapy combined with six courses of docetaxel improved survival. In 2017, a further report from the STAMPEDE investigators demonstrated abiraterone + prednisone added to androgen deprivation therapy improved overall and failure-free survival, establishing this treatment as a new standard of care. Abiraterone should be used in combination with prednisone to prevent secondary hypertension and hypokalemia due to the accumulation of mineralocorticoids resulting from CYP17 blockade. Bone targeting agents such as the bisphosphonate zoledronic acid and the RANK ligand inhibitor denosumab are approved for use in patients with castrate-resistant prostate cancer and skeletal metastases to prevent adverse skeletal events such as fractures and spinal cord compression. These agents have not been demonstrated to prevent adverse skeletal events in patients with hormone-sensitive prostate cancer. Although denosumab and zoledronic acid can be used to prevent osteoporosis associated with androgen deprivation therapy, they are not currently indicated in this man with a normal bone mineral density. Bicalutamide is an antiandrogen whose addition to LH-RH antagonists does not substantially improve prognosis as compared to the addition of abiraterone or docetaxel.

Sartor O, de Bono JS: Metastatic prostate cancer. NEJM 2018;378:645-657.

Nelson JB: Hormonal therapy for prostate cancer, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 120, p 2792.

Question #122

ANSWER=A

The renal pelvis/bladder differential pressure cutoffs during a Whitaker test are: normal < 14 cm of H_2O; mild obstruction 14-20 cm H_2O; moderate obstruction 21-34 cm H_2O; and severe obstruction > 35 cm H_2O. This patient's Whitaker test is normal and observation or evaluation for other sources of non-urologic pain is appropriate. A diuretic is not used with a Whitaker test. Further evaluation with diagnostic ureteroscopy or surgical intervention with endopyelotomy or pyeloplasty is not indicated based on the normal Whitaker test results.

Bresler L: Renal, upper tract obstruction: AUA UNIVERSITY CORE CURRICULUM. Updated September 14, 2018.
https://university.auanet.org/core_topic.cfm?coreID=62

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Question #123 ANSWER=D

In a horseshoe kidney, calyces are normal in number and point posteriorly as the kidney fails to rotate. This consideration is relevant as this anatomical feature guides the technique of percutaneous access. The ureter usually inserts in a normal position on the bladder. Renal pelvises are also anteriorly placed, not posterior due to failure of rotation. The isthmus is inferiorly placed, just below the inferior mesenteric artery, adjacent to L3 or L4.

Shapiro E, Telegrafi S: Anomalies of the upper urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 130, p 2975.

Question #124 ANSWER=B

The AUA Best Practice Statement on Male Infertility states that sperm retrieval with IVF/ICSI is preferred to surgical reconstruction of the vas deferens after vasectomy when "(1) advanced female age is present, (2) female factors requiring IVF are present, (3) the chance for success with sperm retrieval/ICSI exceeds the chance for success with surgical treatment, or (4) sperm retrieval/ICSI is preferred by the couple for financial reasons." Female reproductive potential decreases with advancing age, with more steep declines seen after age 35. The element of time is further compounded by the fact that the average time to pregnancy after vasectomy reversal is 12 months. For these reasons, the statement notes that couples "may consider sperm retrieval with ICSI when the female partner is greater than 37 years of age." The document also cautions that in couples with female partner age approaching 40, the success rate of IVF with or without ICSI decreases dramatically as well. Advanced paternal age and lack of prior conception by either parent are not independent indications for sperm retrieval and IVF/ICSI over vasectomy reversal. Sperm granulomas are not predictive of success rates with vasectomy reversal and are not criteria to consider when deciding between sperm extraction with IVF/ICSI or vasectomy reversal.

Jarow J, Sigman M, Kolettis PN, et al: The management of obstructive azoospermia: AUA BEST PRACTICE STATEMENT. Validity confirmed 2011. Updated May 2017. https://www.auanet.org/guidelines/obstructive-azoospermia-best-practice-statement

Question #125 ANSWER=D

This patient has secondary hypogonadotropic hypogonadism and a normal serum prolactin level. The AUA Best Practice Statement regarding The Evaluation of the Azoospermic Male as well as the AUA Guideline on the Evaluation and Management of Testosterone Deficiency state that such patients should be evaluated for

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functioning and non-functioning pituitary tumors by imaging of the pituitary gland. Clomiphene citrate blocks estradiol negative feedback at the level of the hypothalamus and pituitary gland and will likely not be effective in the setting of a structural pituitary defect. FSH and human chorionic gonadotropin (LH agonist) are options for treating hypogonadal men with gonadotropin deficiency, but they are not the next step in this case. TRUS is not indicated in this case as the patient has normal ejaculate volume; therefore, ejaculatory duct obstruction is not suspected.

Jarow J, Sigman, M, Kolettis PN, et al: The evaluation of the azoospermic male: AUA BEST PRACTICE STATEMENT. Updated May 2017.
https://www.auanet.org/guidelines/obstructive-azoospermia-best-practice-statement

Mulhall JP, Trost LW, Brannigan RE, et al: Evaluation and management of testosterone deficiency: AUA GUIDELINE. Published February 2018.
https://www.auanet.org/guidelines/testosterone-deficiency-guideline

Question #126 ANSWER=A

This patient has a more extensive stricture than simply meatal stenosis. Once it is clear that the wrong diagnosis has been made, one should not continue to extend the urethrotomy. It is possible that the stricture extends throughout the entire urethra and he could be left with a disfiguring surgery that he did not consent to. More information is necessary before proceeding with additional therapy. Even dilation is not appropriate until the full length of the stricture is known. A retrograde urethrogram is the most appropriate next step. Urethral biopsy is not necessary for first-time strictures. He was not consented for suprapubic cystostomy, and it is not necessary at this time because his stream is only moderately slow and he is not in retention. There is no evidence that steroid ointment improves outcomes of urethral dilation.

Wessells H, Angermeier KW, Elliott SP, et al: Male urethral stricture: AUA GUIDELINE. Published 2016.
https://www.auanet.org/guidelines/urethral-stricture-guideline

Question #127 ANSWER=B

Important physiologic changes occur to the kidney during pregnancy. These include increases in renal blood flow which will increase the filtered loads of calcium, sodium, and uric acid. Hypercalciuria is further increased by placental production of 1,25(OH) Vitamin D3, which will increase calcium absorption by the intestine and suppress PTH. Simultaneously, pregnant women increase the excretion of stone inhibitors such as citrate, magnesium, and uric acid. Therefore, her overall risk of stone formation during pregnancy is unchanged.

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Pearle MS, Antonelli JA, Lotan Y: Urinary lithiasis: Etiology, epidemiology, and pathogenesis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 51, p 1199.

Question #128 ANSWER=A

This patient has non-metastatic castration-resistant prostate cancer (CRPC), defined by a confirmed rise in PSA, castrate levels of testosterone, and no radiographic evidence of metastatic disease. Standard treatment for such a patient at high-risk for developing metastatic disease per AUA Guidelines is to offer apalutamide or enzalutamide (or darolutamide, which is likely to be approved in 2019-2020). Apalutamide is a non-steroidal anti-androgen that binds directly to the ligand-binding domain of the androgen receptor (AR) and inhibits AR nuclear translocation, DNA binding, and transcription. The efficacy of apalutamide among patients with non-metastatic CRPC was demonstrated in the Phase 3 SPARTAN trial, in which the median metastases-free survival was 40.5 months with apalutamide versus 16.2 months in the placebo group (HR 0.28; 95% CI 0.23-0.35; p0.001). As a result, the agent has been FDA approved for use in this setting. Although first-generation anti-androgens, such as bicalutamide, have historically been used in this setting, potential benefits appear modest, and no randomized trials have compared these agents to observation in order to demonstrate a meaningful clinical benefit. In the absence of definitive evidence regarding efficacy for bicalutamide, and given that treatment may entail side effects, apalutamide would represent a better option. Importantly, the AUA Guidelines specifically recommend against systemic chemotherapy (i.e., docetaxel) or immunotherapy (i.e., sipuleucel-T) for patients with non-metastatic CRPC outside of the context of a clinical trial due to the concern regarding the risk of serious adverse events without high-quality evidence supporting efficacy. Further, although denosumab has been shown in a prospective randomized trial to increase bone-metastases-free survival versus placebo (by 4.2 months) for patients with non-metastatic CRPC, no significant improvement in overall survival was noted, and the agent has not received FDA approval in this setting.

Lowrance WT, Murad MH, Oh WK, et al: Castration-resistant prostate cancer: AUA Guideline Amendment 2018. J UROL 2018;200:1264-1272.

Smith MR, Saad F, Chowdhury S, et al: Apalutamide treatment and metastasis-free survival in prostate cancer. NEJM 2018;378:1408-1418.

Cookson MS, Roth BJ, Dahm P, et al: Castration-resistant prostate cancer: AUA GUIDELINE. Published 2013. Amended 2018.
https://www.auanet.org/guidelines/prostate-cancer-castration-resistant-guideline

Smith MR, Saad F, Coleman R, et al: Denosumab and bone-metastasis-free survival in men with castration-resistant prostate cancer: Results of a Phase 3, randomised, placebo-controlled trial. LANCET 2012;379:39-46.

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Question #129 ANSWER=A

This patient has multiple calculi and a high normal serum calcium in a limited stone evaluation. These stones may represent the first sign of hyperparathyroidism. Given these findings, a serum PTH level is indicated. The likelihood of having hyperuricemia is quite low given her state of health (no gout, no malignancy), age, and urine pH; therefore, serum uric acid levels may not be helpful. A 24-hour urine study would be useful to evaluate for hypercalciuria and may help confirm the diagnosis. Increasing fluid intake is good advice for any stone former and should be considered, but a 24-hour urine study and increased fluids are not the initial steps. While her other calculi may require therapy, the current goal is to prevent future stone formation.

Lipkin ME, Ferrandino MN, Preminger GM: Evaluation and medical management of urinary lithiasis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 52, pp 1209-1210.

Pearle MS, Goldfarb DS, Assimos DG, et al: Medical management of kidney stones: AUA GUIDELINE. Published March 2014. Validity confirmed 2019. https://www.auanet.org/guidelines/kidney-stones-medical-mangement-guideline

Question #130 ANSWER=B

If the robotic instrument becomes stuck and unresponsive, the robot must be placed in fault state by pressing the emergency stop button. The sterile tool wrench is then inserted into the hole on the robotic instrument's emergency grip release socket. The wrench is turned counter-clockwise one-quarter turn to open the bipolar grasper jaw. This releases the tissue from the jaw. The robotic grasper may then be removed. The emergency release wrench should be re-sterilized and placed in an accessible location. The other maneuvers do not result in instrument release. Dissecting tissue to facilitate disengagement is premature at this point and may not allow instrument release. Moreover, conversion to open surgery should not be considered before attempts with the emergency release tool wrench.

https://www.davincisurgerycommunity.com/Training (Da Vinci surgeon in-service guide, p. 54 tab1=TR).

Singh S, Bora GS, Devana SS, et al: Instrument malfunction during robotic surgery: A case report. INDIAN J UROL 2016;32:159–160.

Question #131 ANSWER=B

The Checkmate-214 trial compared the combination of nivolumab and ipilimumab versus sunitinib in the front-line treatment of patients with metastatic clear cell RCC.

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Over 75% of patients were either intermediate or poor-risk in these groups. The nivolumab/ipilimumab arm had a significantly greater overall response (42%) compared with sunitinib (27%). The median duration of response was not reached in the immunotherapy arm and was 18.2 months for sunitinib. Interestingly, the complete response rate was 9% in the nivolumab/ipilimumab group, similar to that for high-dose IL-2 (5-10%) but only 1% for sunitinib, consistent with prior observations for TKI and mTOR inhibitors. FDA approval for this indication was given in 2018.

Srinivasan R, Linehan WM: Treatment of advanced renal cell carcinoma, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 63, p 1503.

Motzer RJ, Tannir NM, McDermott DF, et al: Nivolumab plus ipilimumab versus sunitinib in advanced renal-cell carcinoma. NEJM 2018;378:1277-1290.

Question #132 ANSWER=D

This patient most likely has detrusor sphincter dyssynergia (DSD) and is demonstrating complications of DSD with new onset VUR. Therapy for DSD is to minimize sphincteric activity or to bypass/overcome the sphincter. CIC, in combination with antimuscarinics, is the most commonly used therapy for patients with DSD. In this patient who refuses CIC, other choices include sphincterotomy, stent placement across the sphincter (uncommonly used due to complications), injection of onabotulinumtoxinA into the sphincter, and continuous indwelling catheterization. Urinary diversion is an option, but it may be useful to allow this adolescent to mature prior to embarking on an extensive surgery. Continuous indwelling catheter drainage may be a good short-term solution until the patient becomes more involved in their care. Smooth muscle relaxation is produced by blocking alpha-1-adrenoceptors in the bladder neck and prostate, but they do not affect the striated sphincter. Intradetrusor onabotulinumtoxinA will decrease bladder pressure but will not facilitate bladder emptying. Similarly, a condom catheter will only collect urine overflow.

Wein AJ, Dmochowski RR: Neuromuscular dysfunction of the lower urinary tract, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 75, p 1787.

Question #133 ANSWER=E

Renal stone rates are seven to eight times higher in spinal cord injury (SCI) patients than in the general population. UTIs and chronic bacteriuria (especially with urea-splitting organisms) are significant risk factors for stone formation in this population. As such, reducing bacteriuria will minimize the risk of struvite stone formation. Daily

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suppressive antibiotics are not enough, and eliminating any potential nidus for infection is necessary. This patient cannot perform CIC on his own and any indwelling urinary catheter, whether it is a larger urethral catheter or a suprapubic tube, will be associated with colonization and bacteriuria. Of the options given, sphincterotomy with condom catheter drainage is his best chance of minimizing chronic bacteriuria; however, long-term outcomes with sphincterotomy are sub-optimal, with the potential for continued issues with incomplete emptying. Although ileal conduit urinary diversion would allow the best long-term solution, most patients initially opt for sphincterotomy as a less-invasive option.

Kreydin E, Welk B, Chung D, et al: Surveillance and management of urologic complications after spinal cord injury. WORLD J UROL 2018;36:1545-1553.

Question #134 ANSWER=B

The goal of therapy for a ureterovaginal fistula is the expeditious resolution of urinary leakage, avoidance of urosepsis, and preservation of renal function. Once the diagnosis is made, prompt drainage of the affected upper urinary tract is essential. Observation in this setting is highly unlikely to result in resolution of the symptoms. In general, if ureteral continuity can be demonstrated on imaging, retrograde placement of a stent is often possible and should be attempted first. In some cases, an antegrade stent placement will be successful where a retrograde attempt had failed. If ureteral stenting is unsuccessful owing to complete ureteral occlusion or if prolonged leakage persists despite stenting, then a temporizing nephrostomy tube should be placed while awaiting formal surgical repair. Surgical repair would not be recommended at this time. When repair is performed, this patient would likely benefit from ureteroneocystostomy with possible psoas hitch. A Boari flap will usually not be needed for an injury 6 cm above the bladder.

Badlani GH, De Ridder DJMK, Mettu JR, Rovner ES: Urinary tract fistulae, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 89, pp 2121-2122.

Question #135 ANSWER=E

In 2016, the AUA endorsed the Centers for Disease Control Guideline for prescribing opioids for chronic pain. Familiarity with this guideline is important for urologists, given that urologists commonly treat patients with chronic pain conditions (i.e., chronic pelvic pain syndrome) and manage acute and chronic pain in postoperative patients who are already being treated with opioids. In recent years, the "opioid epidemic" has become a substantial public health problem, with a large increase in opioid abuse, addiction, and overdose deaths. For this reason, prior to initiating opioid treatment for chronic pain, the guideline calls for urine drug testing to assess for prescribed medications, controlled agents (including opioids), and illicit drugs.

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The guideline makes no recommendations for either EMG or EEG testing, and although the cytochrome P450 system is involved in opioid metabolism, cytochrome P450 pharmacogenomic testing has not yet demonstrated clear clinical efficacy for chronic pain patients. While sleep apnea testing should be considered for patients suspected of having undiagnosed sleep apnea or other forms of sleep-disordered breathing, this testing is not otherwise routinely recommended prior to prescribing opioids for chronic pain. Finally, it is important for urologists to understand the importance of multimodal therapy, including the use of NSAIDS and acetaminophen, in combination with opioids in order to facilitate minimization of opiate dosage.

Dowell D, Haegerich TM, Chou R: CDC guideline for prescribing opioids for chronic pain-United States. JAMA 2016;315:1624-1645.

Dowell D, Haegerich TM, Chou R: CDC guideline for prescribing opioids for chronic pain-United States. PREVENTION. MORBIDITY AND MORTALITY WEEKLY REPORT 2016;18;65:1-49.

Question #136 ANSWER=B

The three modifiable Holmium laser settings are pulse energy, frequency, and pulse width. Decreasing pulse energy and a longer pulse width have the most effect on reducing retropulsion. Frequency has less impact on retropulsion overall, but increasing frequency will typically decrease retropulsion. Of the settings listed, the one which will lead to less retropulsion has a lower pulse energy with a long pulse width.

Aldhouki AH: Emerging laser techniques for the management of stones. UROL CLIN OF N AM 2019;46:193-205.

Sea J: Optimal power settings for Holmium:YAG lithotripsy. J UROL 2012;187:914-919.

Li R: High-frequency dusting versus conventional holmium laser lithotripsy for intrarenal and ureteral calculi. J ENDOUROL 2017;31:272-277.

Kamal W: Stone retropulsion with Ho: YAG and Tm: YAG Lasers: A clinical practice-oriented experimental study. J ENDOUROL 2016;30:1145-1149.

Sroka R: Impact of pulse duration on Ho:YAG laser lithotripsy: Treatment aspects on the single-pulse level. WORLD J UROL 2015;33:479-485.

Question #137 ANSWER=E

In the scenario described, the group design is such that the dependent variable is a

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binary variable, so the chi-square test will indicate if there are significant differences in the percentage in each group. Fisher's exact test should be used when the number of subjects in any subgroup is below five. On the other hand, if the dependent variable is a continuous variable, and the design is a group design, the t-tests (if there are two groups) or Analysis of Variance (ANOVA) if more than two groups are considered. If an independent variable is added to the dependent variable in the scenario above, then a logistic regression would be used.

Statistics: AUA UNIVERSITY CORE CURRICULUM. Updated September 14, 2018 https://university.auanet.org/modules/webapps/core/index.cfm#/corecontent/122

Question #138 ANSWER=E

Floseal® and Surgiflo® are both hemostatic agents that contain bovine or porcine-derived gelatin matrix. Therefore, anaphylactic reactions have been described with their usage. Similarly, Tisseel® contains aprotinin, which is a bovine-derived hemostatic agent and allergic reactions have been described in up to 5% of patients. Bioglue®, which also contains bovine-derived components, is a tissue sealant and cannot be applied on a bloody surface as a hemostatic agent. Evicel® is the only fibrin-based hemostatic agent that does not contain aprotinin and is derived from human fibrinogen. It is the safest hemostatic agent to use in patients with known allergies to red meat. The incidence of red meat allergies has been increasing. It has recently been reported that a bite from the Lone Star tick can lead to the development of a red meat allergy.

Ordon M, Eichel L, Landman J: Fundamentals of laparoscopic and robotic urologic surgery, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 10, p 207.

Question #139 ANSWER=D

Ureteral reconstruction in a radiated field requires reestablishment of ureteral drainage in a non-radiated area. This would best be accomplished in this case by a transureteroureterostomy (TUU). A Boari flap would not be indicated following pelvic radiation. The distal segment would not be of adequate length to bridge a long gap with an ipsilateral ureteroureterostomy. Proximal diversion with a nephrostomy tube is only temporary and associated with complications. Because of potential radiation injury to the bowel, ileal ureter would not be the first choice unless TUU was not technically feasible.

Husmann DA: Pediatric genitourinary trauma, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 154, p 3538.

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Adams MC, Joseph DB, Thomas JC: Urinary tract reconstruction in children, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 4, chap 145, p 3334.

Question #140 ANSWER=C

The first randomized controlled trial of preoperative prophylactic antibiotics prior to PCNL demonstrated no advantage in reducing the risk of sepsis by providing one week of preoperative oral antibiotics in patients at low risk for infectious complications. The authors concluded that antibiotics according to the AUA Best Practice Statement of less than 24 hours perioperatively appear sufficient in this low-risk population. Additionally, compliance with the AUA Best Practice Statement has also been retrospectively shown to not increase the risk of postoperative infection in low-risk patients undergoing PCNL; therefore, in this low-risk patient with a negative urine culture and without an indwelling ureteral stent or nephrostomy tube, starting antibiotics one week preoperatively is not recommended. Additionally, prolonged postoperative antibiotics should only be administered if the patient has signs or symptoms of infection following surgery.

Chew BH: A randomized controlled trial of preoperative prophylactic antibiotics prior to percutaneous nephrolithotomy in a low infectious risk population: A report from the EDGE Consortium. J UROL 2018;200:801-808.

Desmukh S: Compliance with American Urological Association Guidelines for post-percutaneous nephrolithotomy antibiotics does not appear to increase rates of infection. J UROL 2015;194:992-996.

Jarow J, Sigman M, Kolettis PN, et al: The optimal evaluation of the infertile male: AUA BEST PRACTICE STATEMENT. Updated 2017.
https://www.auanet.org/guidelines/male-infertility-optimal-evaluation-best-practice-statement

Question #141 ANSWER=D

The patient has a new diagnosis of IMDC (International Metastatic Renal Cell Carcinoma Database Consortium) intermediate-risk metastatic renal cancer. Several recent trials have informed and changed the management of newly diagnosed metastatic renal cancer. In 2013, the COMPARZ study showed that pazopanib (a tyrosine kinase inhibitor) had a superior side effect profile and was not inferior to sunitinib (a tyrosine kinase inhibitor) in a 1,110 patient study. The median progression-free survival in the pazopanib arm was 10.5 months. In 2018, the CHECKMATE 214 study showed that the combination of nivolumab (a PD-1 inhibitor) plus ipilimumab (an anti-CTLA-4 antibody) was superior to sunitinib in a 1,096 patient trial. The median progression-free survival in the nivolumab plus ipilimumab

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arm was 11.6 months. In 2019, the KEYNOTE 426 trial showed that the combination of pembrolizumab (a PD-1 inhibitor) and axitinib (a selective VEGFR inhibitor) was superior to sunitinib alone in an 861 patient trial. The median progression-free survival in the pembrolizumab and axitinib arm was 15.1 months. In the same issue of the New England Journal of Medicine, the JAVELIN Renal 101 trial reported that the combination of avelumab (an anti-PDL-1 ligand antibody) and axitinib were superior to sunitinib alone in an 886 patient trial. The median progression-free survival in the avelumab and axitinib arm was 13.8 months. The 2018 CARMENA trial showed that sunitinib alone was not inferior to nephrectomy followed by sunitinib in patients with metastatic RCC who were classified as having intermediate-risk or poor-risk disease. Among 450 enrolled patients, the median overall survival was 18.4 months in the sunitinib-alone group and 13.9 months in the nephrectomy-sunitinib group. No significant differences in response rate or progression-free survival were observed. Cabozantinib (a multi-targeted tyrosine kinase inhibitor) has been shown to prolong survival when compared to everolimus in patients who have progressed after prior tyrosine kinase inhibitor treatment. The combination of cabozantinib and ipilimumab has not been tested in a phase III trial. Although the optimal therapy of newly diagnosed intermediate risk metastatic renal cancer continues to be debated in the scenario presented, an upfront cytoreductive nephrectomy is not indicated as the patient has an asymptomatic primary tumor but symptomatic metastatic disease. Therapy with pembrolizumab and axitinib, cabozantinib, or nivolumab and ipilimumab would all be reasonable options and preferred over pazopanib or sunitinib alone. Of the choices presented, pembrolizumab and axitinib is the best option.

Motzer RJ, Hutson TE, Cella D, et al: Pazopanib versus sunitinib in metastatic renal-cell carcinoma. NEJM 2013;369(8):722-731.

Méjean A, Ravaud A, Thezenas S: Sunitinib alone or after nephrectomy in metastatic renal-cell carcinoma. NEJM 2018;379:417-427.

Motzer RJ, Penkov K, Haanen J, et al: Avelumab plus Axitinib versus Sunitinib for Advanced Renal-Cell Carcinoma. NEJM 2019; Feb 16.

Rini BI, Plimack ER, Stus V, et al: KEYNOTE-426 Investigators. Pembrolizumab plus axitinib versus sunitinib for advanced renal-cell carcinoma. NEJM 2019;Feb 16.

Motzer RJ, Tannir NM, McDermott DF, et al: CheckMate 214 Investigators. Nivolumab plus ipilimumab versus sunitinib in advanced renal-cell carcinoma. NEJM 2018;378:1277-1290.

Srinivasan R, Linehan WM: Treatment of advanced renal cell carcinoma, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 63, p 1503.

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Question #142 ANSWER=D

Conservative management can be undertaken if the stone is small, < 4-5 mm in size, and if the renal function is near baseline. A stone size > 1.5 cm is a practical indication for percutaneous nephrolithotripsy (PCNL). Flexible ureteroscopy can be used to access smaller stones. SWL is discouraged as the initial approach because roughly 50% or more of patients require an additional procedure to achieve stone-free status. Pyelolithotomy is not indicated.

Gritsch HA: Renal transplant: AUA UNIVERSITY CORE CURRICULUM. Updated February 2019.
https://university.auanet.org/modules/webapps/core/index.cfm#/corecontent/85

Question #143 ANSWER=B

Fibromuscular dysplasia (FMD) is a non-atherosclerotic, non-inflammatory vascular disease. It mostly involves the mid to distal renal artery and can affect segmental renal artery branches. FMD has a female predominance and typically presents in patients between 20-60 years of age. The most common symptomatic presentation is a middle-aged woman with new-onset or difficult to control hypertension. Asymptomatic patients are most often diagnosed on imaging studies. Patients in whom hypertension has been present for many years should be continued on anti-hypertensive medications as long as blood pressure control is satisfactory. Duplex Doppler ultrasound surveillance of kidney length and cortical thickness should be done once or twice a year. If blood pressure control becomes difficult, medication side effects become intolerable or renal size or function decrease, percutaneous transluminal renal artery angioplasty (PTRA) should be performed. Surgical revascularization is reserved for cases not amenable to percutaneous approaches such as those with FMD involving distal branches. Renal scintigraphy is no longer recommended as a screening test for renovascular hypertension.

Gulmi FA, Reiser IW, Spitalewitz S: Renovascular hypertension and ischemic nephropathy, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 45, pp 1036-1040.

Gritsch HA: Renovascular diseases: AUA CORE CURRICULUM. Updated February 2019.
https://university.auanet.org/modules/webapps/core/index.cfm#/corecontent/86

Question #144 ANSWER=E

Since the bladder should be adequately drained with an indwelling catheter, the exact cause of upper tract deterioration in this cohort is unclear. It is postulated that upper tract changes are related to a functional obstruction manifested by chronic

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subclinical detrusor overactivity (DO) in the face of sphincter dyssynergia. Regardless of the cause, the development of low bladder compliance on urodynamics has been associated with VUR, radiographic upper tract abnormalities, clinical pyelonephritis, and upper tract calculi. Hence, maintaining high compliance and suppressing DO in chronically-catheterized patients may prevent or delay renal deterioration. This can usually be achieved with the use of antimuscarinic or beta-3-agonist medications in patients with indwelling catheters or with intravesical onabotulinumtoxinA injections. Prophylactic antibiotics are to be avoided in chronically-catheterized patients and upsizing the indwelling urethral catheter, changing it more frequently, or switching to a suprapubic tube are unlikely to improve long-term detrusor compliance.

Boone TB, Stewart JN: Additional therapies for storage and emptying failure, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 3, chap 87, p 2077.

Question #145 ANSWER=E

It is important to counsel patients about to undergo penile prosthesis surgery that the preoperative length of the fully stretched flaccid penis is typically the maximal length that can be obtained after penile implant placement and that the procedure may result in a degree of penile shortening and glans softening. The other statements among the provided choices have not been demonstrated. Although the exact penile length may indeed be difficult to predict, eventual length has not been conclusively shown to be impacted by the duration of ED.

Eid JF: Surgery for erectile dysfunction, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 30, p 709.

Question #146 ANSWER=A

According to the AUA BPH guidelines, the next step in uncomplicated and minimally symptomatic LUTS are watchful waiting and re-evaluation in one year. PVR and uroflowmetry are not recommended in the evaluation of uncomplicated LUTS but are optional in the evaluation of complicated LUTS or LUTS that is progressive or bothersome. Factors that indicate complicated LUTS include: suspicious DRE, hematuria, abnormal PSA, pain, infection, palpable bladder, or neurologic disease. This patient scenario represents uncomplicated LUTS and can be observed without alpha-blockers or antimuscarinics, especially given that his urinary specific quality of life is reported as excellent. Observation should only be pursued after a thorough discussion with the patient.

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McVary KT, Roehrborn CG, Avins AL, et al: Management of benign prostatic hyperplasia: AUA GUIDELINE. Updated December 2016.
http://www.auanet.org/documents/education/clinical-guidance/Benign-Prostatic-Hyperplasia.pdf Appendix A7: P2-5.

Question #147 ANSWER=A

This patient has evidence of pelvic floor muscle dysfunction. The most common urodynamic finding is outlet obstruction due to dysfunctional voiding (spasms of the external sphincter during voiding) which would result in a low flow rate and an intermittent voiding pattern. This is not detrusor sphincter dyssynergia because there is no spinal cord injury. This condition is not typically associated with detrusor overactivity, poor compliance, or large bladder capacity unless the condition is chronic over several years.

Nickel JC: Inflammatory and pain conditions of the male genitourinary tract: Prostatitis and related pain conditions, orchitis, and epididymitis, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 13, p 307.

Question #148 ANSWER=C

Retrograde ejaculation is a potential sequela of any treatment that decreases tone at the bladder neck and this must be taken into account when considering surgical therapy for male LUTS. Both prostatic urethral lift (UroLift™) and water vapor therapy (Rezum™) are actually associated with preservation of sexual and ejaculatory function, and are given conditional recommendations (based on Grade C evidence) by the AUA Guideline Panel on Surgical Management of Lower Urinary Tract Symptoms Attributed to Benign Prostatic Hyperplasia. However, as this patient has a large median lobe, water vapor therapy is a better choice than Urolift™. TURP, holmium laser enucleation of the prostate, and transurethral vaporization of the prostate are all associated with significant ejaculatory dysfunction.

Foster HE, Barry MJ, Gandhi MC, et al: Benign prostatic hyperplasia: Surgical management of benign prostatic hyperplasia/lower urinary tract symptoms: AUA GUIDELINE. Published 2018. Amended 2019.
https://www.auanet.org/guidelines/benign-prostatic-hyperplasia-(bph)-guideline

Question #149 ANSWER=B

Sperm undergo a number of maturational changes as they transit through the epididymis, including increasing motility and alterations in membrane structure,

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both which facilitate subsequent oocyte fertilization. A distal epididymovasostomy site facilitates sperm transit through more of the epididymis, where this maturation occurs. As a result, distal epididymovasostomy sites are associated with higher pregnancy rates than more proximal sites, regardless of the epididymovasostomy technique used. A distal epididymovasostomy site is commonly more challenging to perform than a more proximal site, given the extra distance that must be traversed to achieve the anastomosis. There is no reported difference in the literature regarding patency rates, antisperm antibody formation rates, late stenosis rates, or operative times when comparing more proximal vs. more distal epididymovasostomy anastomotic sites.

Goldstein M: Surgical management of male infertility, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 1, chap 25, p 599.

Question #150

ANSWER=D

The patient likely is suffering from nephrogenic systemic fibrosis (NSF) that has resulted from the administration of gadolinium contrast in a patient with compromised renal function as a result of the diabetes mellitus. The manifestation of the disease presents with fibrosis in the skin (tightness) and subcutaneous tissue (decreased range of motion). Appropriate treatment is hemodialysis. This is not an acute reaction, thus epinephrine, corticosteroids, and diphenhydramine are not appropriate. Although hyperglycemia may be present, the administration of insulin would not improve NSF.

Campbell SC, Lane BR: Malignant renal tumors, in Wein AJ, Kavoussi LR, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 11. Philadelphia, Elsevier, 2015, vol 2, chap 57, p 1314.

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