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FREQUENTLY ENCOUNTERED UROLOGIC PROBLEMS AFTER CARDIOVASCULAR SURGERY

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The column in this issue is supplied by David Goldfarb, M.D., a urologist in private practice at Houston Metro Urology in Houston Methodist Hospital. He is a graduate of Tulane University, Summa Cum Laude, and earned his medical degree from Baylor College of Medicine in Houston, where he also completed his residency in the Scott Department of Urology. The following are his suggested points to remember about potential urological problems associated with cardiovascular surgery.

Benign Prostatic Hyperplasia and Retention

Benign prostatic hypertrophy (BPH) is a frequent complication in aging cardiac patients. Increased bladder outlet resistance in BPH can occur from increased tone of prostatic smooth muscle or prostatic growth into the lumen of the urethra.

Acute urinary retention (AUR) is frequently seen after surgery when the bladder is unable to empty. This can be caused by bladder outlet obstruction or from myogenic, neurogenic, or medication-induced bladder decompensation.

AUR is best treated with "bladder rest" by decompressing the bladder with an indwelling catheter for several days and relaxing the prostate/bladder outlet with an alpha blocker such as Flomax. This treatment algorithm is effective in both men and women, and most patients do not require continued treatment after their bladder recovers.

Those who fail multiple voiding trials and are suitable candidates can typically be managed with an endoscopic transurethral resection of the prostate (TURP).

Because alpha blockers cause vasodilation, doses of coadministered antihypertensives might have to be adjusted (Table 1).

The ALLHAT study demonstrated that men with hypertension and one other heart disease risk factor who were treated with doxazosin had only a higher incidence of congestive heart failure, cerebrovascular accident, and angina. Caution should be used if considering the use of an alpha blocker to treat hypertension.

Urinary Tract Infections and Catheterization Issues

A urinary tract infection (UTI) diagnosis is based on voiding symptoms and exhibiting one of the following parameters:

- Voided urine: one bacteria strain and count > 100,000 cfu/mL
- Catheterized urine: one bacteria strain and count > 100 cfu/mL

Hypertension medications	Dihydropyridine calcium channel blockers
	Hydralazine
Arrhythmia medications	Procainamide
	Disopyramide
	Quinidine
Sympathomimetics	Alpha adrenergic agents:
	Phenylephrine
	Pseudoephedrine
	Beta adrenergic agents:
	Isoproterenol
	Terbutaline
Pain medications	Narcotics

Figure 1. Frequently used cardiopulmonary drugs that increase the risk of retention.

Complicated UTI is diagnosed as a UTI with any of the following criteria:

- Immunosuppressed
- Pregnancy
- Male
- Pediatric
- Indwelling catheter
- Anatomic structural abnormality
- Obstruction
- Renal insufficiency
- Presence of calculi in genitourinary tract

Uncomplicated UTI is diagnosed as a urinary infection in a female without any of the above criteria.

The risk of bacteriuria with an indwelling catheter is 5% per day. Almost all patients have bacteriuria by 20 days after catheter insertion.

Asymptomatic bacteriuria does not have to be treated unless the patient is pregnant or is undergoing an invasive genitourinary procedure.

Shorter duration of a temporary indwelling catheter is associated with a decreased risk of UTI, therefore discontinue as soon as possible.

Changing the catheter and/or drainage bag regularly does not prevent a UTI.

There is no evidence that daily prophylactic antibiotics or cranberry juice decrease UTIs in patients with an indwelling Foley catheter.

Treatment of UTIs (not asymptomatic bacteriuria) typically consists of 7 days of antibiotic therapy.

The complications of an indwelling catheter include:

- Chronic infection, stone formation
- Tissue erosion (traumatic hypospadias, bladder neck/urethral destruction)
- Bladder wall fibrosis, urothelial neoplasia
- Vesicoureteral reflux, hydronephrosis
- Nephrolithiasis, renal failure

Avoid permanent indwelling catheterization except as a last resort; clean intermittent catheterization (CIC) is always better. In cases where CIC is not feasible, suprapubic tube placement is often preferable over a urethral catheter since it reduces the risk of infection including UTI, epididymitis, and orchitis. A suprapubic tube also decreases risk of urethral erosion compared to a urethral catheter.

Hematuria

Cardiac patients are often placed on blood thinners that can unmask underlying abnormalities.

Gross hematuria is usually due to bladder/urethral trauma from an inflated catheter. If hematuria persists following the initial Foley insertion, an evaluation would be prudent. High-risk patients such as smokers should have a lower threshold for workup.

Workup consists of culture, cytology, cystoscopy, and upper tract imaging.

Urologic malignancy is seen in 25% of those with gross hematuria and 5% of those with microhematuria.

In adults whose initial evaluation fails to identify the etiology of hematuria, 1% of those with microscopic and 20% of those with gross hematuria eventually develop malignancy.

Initial management includes irrigation of clots, continuous bladder irrigation, and possibly operative fulguration of bleeding.

Abdominal Compartment Syndrome

Abdominal compartment syndrome (ACS) is defined as organ dysfunction caused by sustained elevated intra-abdominal pressure (> 20 mm Hg). The most common cause of ACS is trauma. Other causes include fluid resuscitation associated with third spacing of fluids and tissue edema. Retroperitoneal causes such as a ruptured abdominal aortic aneurism can also lead to ACS.

Risk factors for ACS include high central venous pressure, positive fluid balance, extracorporeal circulation, use of vasoactive drugs, and acute kidney injury. Patients with these risk factors warrant close perioperative monitoring.

Sequelae include decreased cardiac function and venous return, increased peak inspiratory pressures, renal impairment, decreased mesenteric perfusion and bowel ischemia, and increased intracranial pressures.

Clinically, the patient will present with abdominal distension, oliguria, and increased ventilatory requirements.

Management involves reducing intra-abdominal volume by evacuating the bowel contents, removing space-occupying pathology, improving abdominal wall compliance, and in some cases opening the abdominal wall surgically.

Mortality from ACS ranges from 40% to 100%.