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“Tubes inside Tubes”

As a medical student, one thing I liked about Urology was the brilliant design of the urinary tract: a “factory” (kidneys) to filter blood into urine; two tubes (ureters) to move the urine to a storage container (bladder); and another tube (urethra) for final elimination.

Disorders of the urinary tract (male and female) involving blockages and diminution of function sometimes require the placement of tubes to facilitate movement of urine to the outside. Obstructions can be between the kidneys and bladder or below the bladder (e.g., prostate) involving the urethra.

“Stagnation” of the urine in the kidneys or bladder may not cause any harm--or may result in pain, infection and damage (including renal failure), sometimes permanent. A good urologist can determine whether an ultrasonic or radiographic finding of poor urinary drainage really does need decompression with a tube.

There are many roles for tubes within the body’s urinary tubes and storage containers. Tubes, including catheters and stents, should be used when necessary--but only with good justification and only for a limited amount of time, if the underlying condition is correctable. Tubes, usually made of naturally occurring or synthetic plastic/rubber (e.g., latex and silicone), are never “all good” for the urinary tract and in time, will cause problems, the most common of which is infection. Other complications include episodic bleeding from irritation of the urinary tract lining, pain/spasms, and stone formation. External tubes such as Foley catheters and suprapubic tubes (to drain bladder urine via urethra or through a skin puncture in lower abdomen); as well as percutaneous nephrostomy tubes (placed to drain urine via the back out of a blocked kidney) are universally associated with bacteria in the urine. Such bacteria often cause cloudy and malodorous urine. Some consider this to be infection and in fact, if associated with proven bacterial growth on a urine culture (lab test), this is probably true. However in such cases, if the doctor has a low threshold for

treating this with antibiotics, chances are the tradeoff for the patient's health will be bad—and temporary clearing of the odor will only lead to more serious infections with highly resistant and potentially dangerous bacteria. Lesson is: as long as the tube is in you, put up with minor symptoms and avoid being treated with antibiotics for “low grade” infections.

Acute blockage of the bladder, sometimes related to prostate enlargement in men, is painful and may require a catheter placed in the office or ER. Since temporary does not equate to permanent obstruction, an attempt should be made to get the catheter taken out, usually within a week or so of its being placed, for what is called a “trial of voiding”. During this period of observation, the doctor may prescribe medicines (e.g., alpha-blockers such as tamsulosin or doxazosin) to allow proper bladder function; and the patient keeps an itemized record of all fluid intake and all urine output (“I&O” diary). When I am involved in this, I may have the catheter removed in the morning and ask the patient to return late that same day to see if another catheter is needed. If there continues to be symptomatic urinary retention and surgery is either not an option--or is to be delayed, so-called “intermittent catheterization” can be taught to the patient/family, to be done usually 4x/day (depends a lot on fluid intake). This will effectively empty the bladder and avoid a “foreign body” residing in the urinary tract around-the-clock. If this procedure is done with good technique and without friction (by generous lubrication of each catheter), even if catheters are re-used (“clean” technique), this is generally safer and better in terms of infection versus an indwelling catheter. Patients requiring chronic self-catheterization can often, however, qualify through insurance for use of a new/disposable catheter for each insertion.

Tubes can also decompress the kidneys, if the ureters are occluded from within (far more likely from a ureteral stone than a tumor) or from outside (compression by scar tissue or tumor, especially a urologic or non-urologic cancer spread to pelvic lymph nodes). Back-up of urine into the kidney(s) is called “hydronephrosis”. The best drainage is afforded by internal self-retaining tubes called “double-J” or “JJ” stents. These are placed by us under anesthesia using a cystoscope to visualize the ureteral orifices (look like “golf holes” in the

bladder); and navigating the tube beyond the obstruction onto the kidney. Under certain circumstances, our Interventional Radiology colleagues are asked by us to do the same, only via a “percutaneous” access as opposed to through an endoscope in the bladder. An external tube is placed under local anesthetic (sometimes with sedation) into the distended kidney through the skin/muscles of the back--and via this manmade temporary tract, the internal “JJ” stent is placed in an antegrade fashion immediately or after a delay of a few days. The stent would be removed if the underlying process is temporary and/or treatable (stone passes or is removed; ureter and or its kidney removed for ureteral tumor; ureter freed from scar tissue). If the disease process is more serious or not easily corrected, a “JJ” stent is changed by us under anesthesia about every 6 months; failure to do so can lead to brittle/calcified stents that are harder to remove without traumatizing the tissues; and which can even fracture upon “late” removal.

Urinary tubes can sometimes be helpful in other circumstances. Postoperatively for bladder or prostate surgery, an indwelling catheter is often needed until the area is healed enough so that the chance of bleeding (e.g., from over distention of a biopsy site) or leakage of urine outside the bladder is minimized. In some cases of heavy urinary bleeding especially with retained urine, decompression of the bladder can allow the body’s clotting mechanisms to work better. Occasionally with heavy bleeding from the bladder (sometime seen years after radiation to the pelvis e.g. for treatment of prostate cancer), I have asked the interventional radiologist to place external tubes into both kidneys so as to short circuit urine away from the bladder for a period of weeks, thus putting the bladder “to rest” and often allowing the bleeding to stop [without doing anything directly to the bladder]. When we are treating larger stones in the kidneys or ureters, we not infrequently place a “JJ” ureteral stent in advance of or during the definitive procedure (shockwave lithotripsy, ureteroscopic stone removal) to prevent the multitude of fragments generated from acting like “wet mud” and obstructing the ureter—which would cause pain, possible infection, and hospitalization).

It is always prudent to question your doctor about the necessity of a urinary tube; what is its purpose; what are the risks; and under what conditions it will be removed and/or replaced. Tube decompression of the urinary tract is relatively easy-to-do and can be great in relieving symptoms/preventing more serious problems; but should not be viewed as a panacea.

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