

Pediatric Urology Associates, Ltd.

& Pediatric Enuresis Center of Arizona

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BLADDER AUGMENTATION & SUBSTITUTION

Reasons for these operations:

In some conditions (such as spina bifida or myelomeningocele, posterior urethral valves, bladder exstrophy), the bladder becomes very small and holds the urine at high pressures. Incontinence and kidney damage are typical results of such abnormal bladders. For these patients, relief of their symptoms and protection of the kidneys requires that the bladder be increased in size (bladder augmentation).

In some patients, removal of the bladder is required. This would most commonly be needed to treat a cancer of the bladder or other pelvic organs. For these patients, a new reservoir must be created (bladder substitution) with a pathway for drainage of the urine either through the normal channel (urethra) or through a new channel (stoma).

Enlarging or replacing the bladder requires major surgery. These operations require the use of intestine to replace the bladder. The intestine is opened and reconfigured to create a normal appearing bladder. After surgery, the bowel needs to rest for several days before the patient can be fed. This usually requires a tube placed down the nose into the stomach to drain intestinal fluids and air.

Problems of bladder augmentation and substitution:

1. Catheterization

The intestine doesn't function like the normal bladder. All patients need to use intermittent catheterization to empty their bladder.

2. Mucus Formation

The intestine produces mucus. The normal bladder does not. This mucus can create several problems. The mucus can cause obstruction of the catheters that are draining the bladder immediately after surgery. The catheters are irrigated several times daily to prevent this occurrence. Long term, the mucus needs to be evacuated daily from the bladder. Otherwise, the mucus that stays in the bladder is a source for development of bladder stones. It can also promote infection of the bladder. Over time, the mucus production will decrease but it will always be present.

3. Intestinal Complications

Early after surgery, the patient is at risk for leakage of intestinal contents. This is a very rare event that can lead to serious infection. The other major risk of intestinal surgery is bowel obstruction. This can be the cause of severe abdominal pain and cramping. Any of these symptoms should receive prompt attention.

4. *Bladder Rupture/Perforation*

One of the most serious complications after surgery for bladder augmentation is rupture of the bladder. This is not common but can lead to severe abdominal infection and even death. Most cases of bladder rupture are due to failure to perform catheterization on a regular basis. This leads to chronic overdistention of the bladder and weakens the bladder wall due to ischemia. The symptoms are that of abdominal pain, fever and generalized infection. The patients and their family members need to be acutely aware of the risk for perforation so that they can alert other physicians that may be treating them to the possibility of this complication. Many clinicians are not as likely as urologists to suspect this diagnosis in a patient who has undergone augmentation.

5. *Bladder Cancer*

Patients that are on intermittent catheterization for neurogenic bladder do have an increased risk for bladder cancer. Patients who have undergone bladder augmentation also have a risk for bladder cancer. Only a few cases have been reported, but we recommend lifelong surveillance. Beginning 10 years after bladder augmentation, it is recommended that all patients have an annual cystoscopy where the bladder can be inspected for early development of tumors.