

Bladder Augmentation

When is bladder augmentation necessary?

Some conditions (such as myelomeningocele, posterior urethral valves, radiation therapy, certain types of chemotherapy, tuberculosis, or interstitial cystitis) cause the bladder to become very small and hold a limited volume of urine at high pressures. The inability to hold the urine and kidney damage are typical results of dysfunctional bladders. People with small bladders may need bladder augmentation surgery to increase their bladder size. This will protect their kidneys and relieve symptoms that occur when bladders are too small and store urine at high pressures.

In other situations, such as surgery for cancer, the bladder must be removed. 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 passage (stoma).

Bladder reconfigurations are big operations and usually require a piece of the intestine to enlarge the bladder. In some cases, a complete pouch needs to be fashioned from the bowel to hold the urine. The area where the intestine piece is taken from will be reconnected to allow normal digestion and passage of stool. The entire intestine (gut) will be put on rest for several days. During this time, until the intestines resume their normal function, your child may have a nasogastric tube in place to continuously drain the stomach of secretions and swallowed air.

What are some problems associated with bladder augmentation and substitution?

Catheterization: The intestine does not function like a normal bladder and many people need to use intermittent catheterization to empty their bladders. Some people develop difficulty with catheterization late after reconstruction and may need to have their bladders examined with a scope through the urethra (cystoscopy) or a stoma operation.

Mucous formation: The intestine produces mucus, whereas the normal bladder does not. Sometimes the mucus production is excessive and causes a blockage. This is usually treated by medicines put into the bladder or reservoir to decrease mucous formation with the urine.

Intestinal complications: Leaking intestinal contents (peritonitis) is a potential early complication and blockage (bowel obstruction) can occur just after surgery or even years later. Abdominal (belly) pain, cramps, diarrhea, or constipation should always receive prompt attention and usually requires surgery.

Urinary complications: Early after surgery, urinary leakage through the wound (fistula) is a risk. This is not common, but if it occurs it may require further surgery. Infection, stone formation, blood in the urine and blockage of flow from kidneys or the bladder reservoir are potential problems in people with reconfigured urinary tracts. Any changes in the urine or any new pains should be evaluated promptly.

Metabolic acidosis: One important job of the kidney is removing waste products, including acids. The bladder normally does not reabsorb the waste products, but the intestine can reabsorb some waste products (especially acids) and return them to the body's circulation. Metabolic acidosis is a likely result of this. It is detected by simple blood tests and corrected by daily medicine. Sometimes, changes in body salts, minerals and fluids can affect bone growth

and cause kidney or gall stones.

Urinary incontinence: This may be related to pressure within the augmented or substituted bladder. Other causes include nonworking normal or reconstructed valves (sphincters), urinary infection, bladder stones, or excessive times between intermittent catheterization. Any new urinary leakage should be evaluated promptly.

Perforation: Among people with augmented and substituted bladders, there has been a small percentage with spontaneous perforation (a hole or tear). This may be due to over-stretching (too long between catheterizations), puncture by a catheter, an issue with the stitches, or weakness in a part of the bowel wall. Side effects of perforation are abdomen or shoulder pain, blood in the urine, fever, or generalized "sickness." This is a life-threatening complication that requires urgent evaluation and surgical repair may be necessary.

Malignancy: Cancers can form in any person's normal intestine and they occasionally occur in the intestine used for urinary tract reconstruction. In addition, the abnormal bladder can also develop a malignancy (cancer). Preventative bladder monitoring with urine analysis, cytology, ultrasound, X-ray cystogram, and cystoscopy are usually performed for the rest of the person's life.

The final word for people with urinary tract reconfiguration is lifelong monitoring. We recommend getting your catheterization routine and bladder ability tested yearly - in addition to general checkups. This means getting blood pressure, urine analysis, and blood tests (CBC, creatinine, and electrolytes) taken. Urinary tracts should be monitored by yearly ultrasound. In older people, bladder cells should be checked, and periodic inspection of the bladder (or its

substitute) via scope would be wise. Any change in status or new symptoms must be evaluated promptly.

What is the process for postoperative bladder care?

After the operation, there will be several tubes. When you are all healed the last tube will come out. You will have to irrigate the bladder regularly - if there is a lot of mucus you may have to do so each day or if the urine is clear, you may need to do so only once a week. You will need to be regularly followed by your doctor at least once a year.

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