

Name of Operation: **Mitrofanoff Procedure**
(continent catheterisable channel from bladder to front of tummy)

Relevant issues:

- Site of wound(s).
- Dissolving stitches (no need to remove).
- 2 drainage-tubes (“catheters”) in the bladder, attached to bags, may be needed for up to 6 weeks afterwards: 1 in the Mitrofanoff channel, and the other in either the pee-pipe (“urethra”) or the tummy (“suprapubic”).
- Likely post-operative schedule and recovery-time.
- Occasionally, admission to the Paediatric Intensive Care Unit (PICU) is needed for a while after the operation.
- *Must* catheterise regularly, or the Mitrofanoff hole may close over.

Intended benefits:

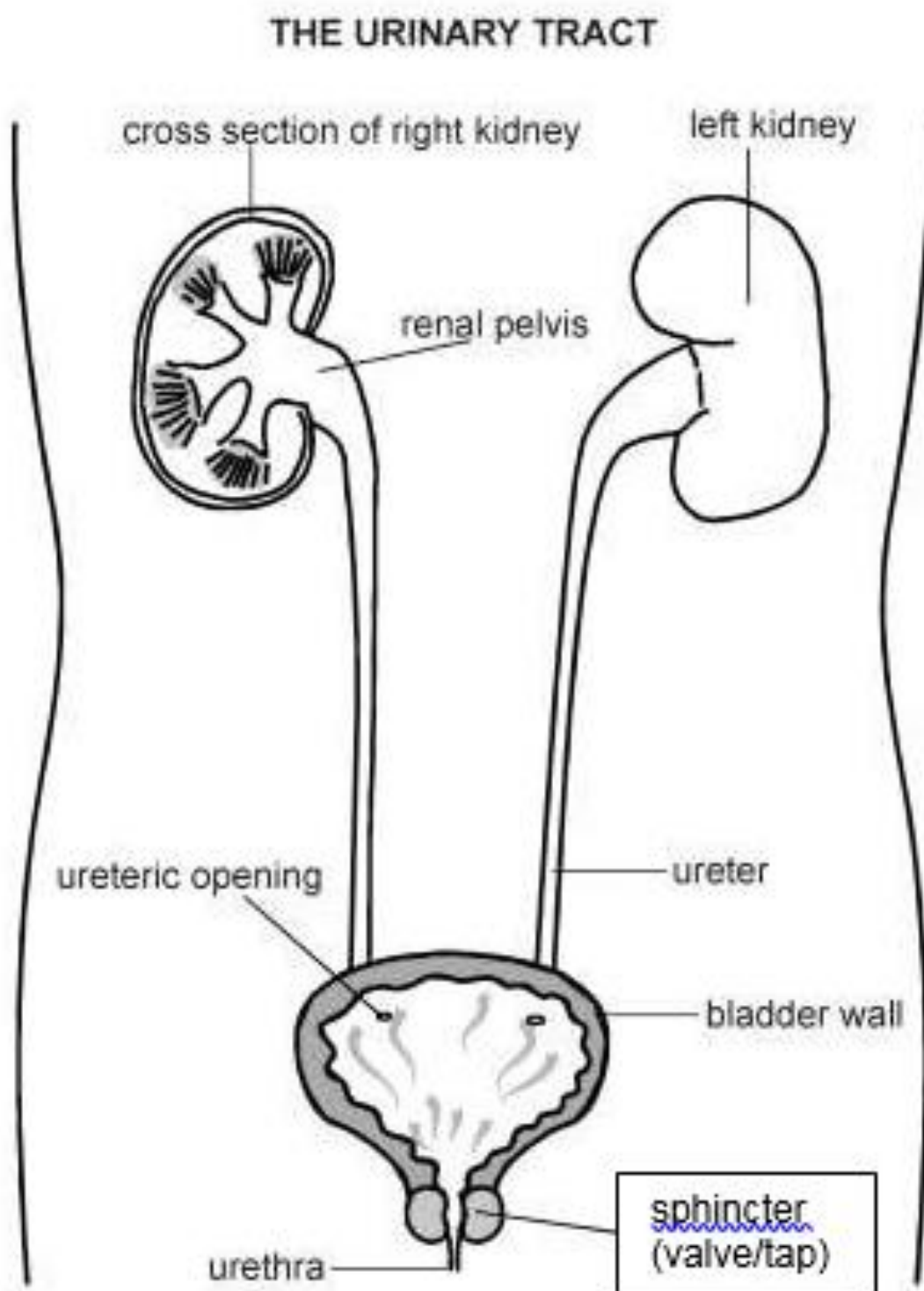
- To help make it easier to empty the bladder regularly with a catheter.
- This should reduce the risk of damage to the bladder and kidneys, and of urine infection, urinary stones, and leakage of urine.

Common or serious risks:

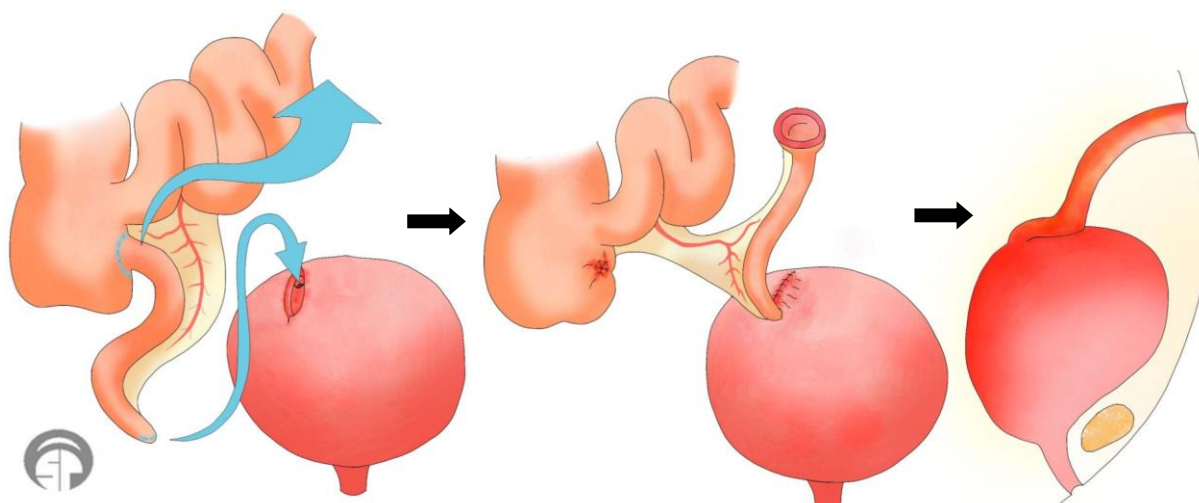
- Overall success in 4 out of 5 children (80 %).
- Bleeding: rarely serious, but the urine in the drainage-bags may look quite heavily blood-stained for the first week or so. This usually settles as your child drinks plenty, or with the drip running. If blood appears in the urine a week or so later, a urine sample should be checked for infection via your family-doctor.
- Infection (in urine, wounds, tummy, bloodstream, or any hydrocephalus-shunt): usually prevented by the antibiotics given in hospital, and by the preventative antibiotic your child will go home on. If you are worried, a urine sample should be checked for infection via your family-doctor or, if your child is very unwell, via your local hospital (sometimes such an infection can be quite serious).
- Damage to the bowel, bladder, ureters (urine-tubes running from the kidneys to the bladder), urethra (pee-pipe from the bladder to the outside-world), or any hydrocephalus-shunt: rarely serious, but occasionally may need further urgent surgery.

Common or serious risks (cont'd):

- Early leak of poo, or later narrowing, where the bowel is stitched: unusual, but may need further urgent surgery.
- Leak of urine from where the bladder is stitched: unusual, and should settle with the catheters, but occasionally needs further surgery.
- Irritation of the skin around the Mitrofanoff stoma (opening on the tummy), if there is any leakage of urine or mucus (the normal "slime" in the bowel that usually helps lubricate the poo). The skin can usually be protected instead with barrier-creams.
- Problems with the Mitrofanoff stoma: narrowing in 1 out of 3 children, leading to difficult or painful catheterising. This can often be dealt with by different catheters or a "stopper" for a while, but sometimes may need further surgery.
- Problems with the Mitrofanoff channel: urine may leak onto the tummy between catheterisations. This often settles in the early days but, if not, may need further surgery to control it. Occasionally the Mitrofanoff channel can shrivel up, or be burst (perforated) by the catheter, in which case further surgery will usually be needed.
- The bowel in the Mitrofanoff channel continues to make a little mucus. This can mark clothing, irritate the skin, or collect inside the bladder, where it can block the catheters, or lead to urine infections or bladder stones. If mucus in the bladder causes problems, you will be shown how to washout the bladder via your catheter.
- Problems getting the bladder to empty completely with the catheter: this can usually be overcome with practice, patience and perseverance (and monitoring with scans).
- Poor healing of the wound: unusual, but occasionally may need later surgery.
- Problems with abdominal adhesions (scar tissue that forms inside the tummy after an operation, and which sometimes can cause blockage or damage of the bowel, even many years later).
- Anaesthetic problems (rarely serious, but around 1 in 250,000 general anaesthetics in children can be fatal).



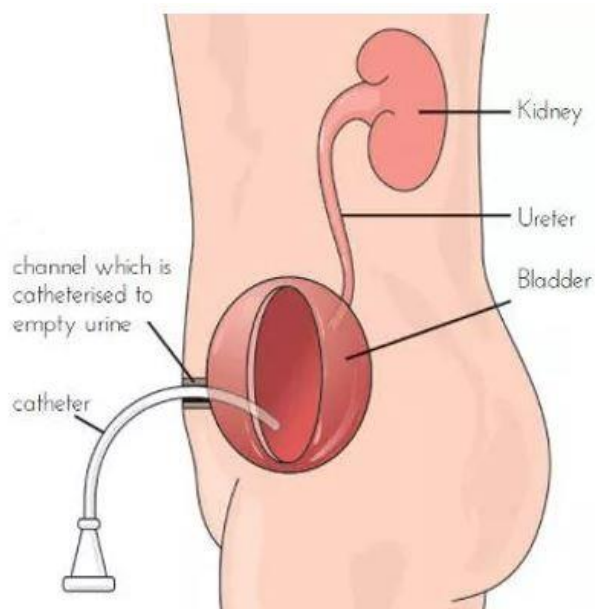
1. A diagram of normal waterworks (based on www.fermelumic.com/urinary.html#)



2. A diagram of how a Mitrofanoff channel is made inside the tummy: firstly, the appendix is separated from where it belongs on the bowel; secondly, one end of it is stitched into the bladder with a one-way valve-system; thirdly (shown in cross-section), the other end is stitched to the front of the tummy (from M. Breen et al., *Pediatr Radiol*, 2015, 45: 1440–1447. <https://doi.org/10.1007/s00247-015-3349-1>)



3. A diagram of a child draining urine from their bladder using a catheter in a Mitrofanoff channel (from www.aboutkidshealth.ca/Article?contentid=1008&language=English)



4. A cross-sectional diagram of a catheter going into a Mitrofanoff channel from the front of the tummy to inside the bladder (from www.mitrofanoffsupport.org.uk/mitrofanoff-procedure)