Children’s Services

Ureteroscopic stone removal in children

Information for parents/carers

What is the evidence base for this information?
This leaflet includes advice from consensus panels, the British Association of Urological Surgeons, the Department of Health and evidence based sources; it is, therefore, a reflection of best practice in the UK. It is intended to supplement any advice you may already have been given by your GP or other healthcare professionals. Alternative treatments are outlined below and can be discussed in more detail with your urologist or specialist nurse.

What is ureteroscopic stone removal?
Ureteroscopic stone removal is the telescopic fragmentation and/or removal of stones in the ureter or kidney. A telescope (called a cystoscope or ureteroscope) is inserted into the bladder. Under x-ray guidance, special tools are passed via the ureteroscope, into the affected ureter and kidney, which disintegrate the stone(s) and then extract them (see section below; ‘what happens during the procedure’ for more information.)

What are the alternatives to this procedure?
Alternative procedures will be discussed with you by your child’s urologist. These include the following:

- Observation and monitoring to assess if the stone will pass by itself
- External shock wave treatment. This involves the use of ultrasound waves to break down the stone so the smaller pieces can then be passed naturally. We have a separate information leaflet regarding this; please ask for a copy if this is something that your urologist has suggested may be possible for your child
- Open surgical removal of stones; this means undertaking a ‘traditional’ operation whereby a cut (‘incision’) is made on your child’s back over the site of the kidney, the kidney is then also incised and the stone removed before the wounds are stitched again.

What should I expect before the procedure?

- Scans and investigations
  Your child will have undergone different scans (such as x rays and ultrasound scans which help identify the position of the stones and nuclear medicine scans which identify the function of the kidneys) and investigations (such as blood tests).

- Preoperative assessment
Children will usually be reviewed seven to 14 days prior to admission in our 'preoperative assessment clinic.' The purpose of the clinic is to ensure you and your child are fully informed and to ensure your child’s hospital stay is as straightforward and seamless as possible. At the preoperative assessment clinic your child will be examined, a urine specimen will need to be provided and sometimes blood tests will be needed. Swabs will be taken to screen for MRSA. The operation will be explained to you in detail and a consent form provided for you to sign.

- Purchasing suitable painkillers
  It is important that you purchase some children's painkillers such as Paracetamol (eg Calpol) before admission to hospital so that you have these available at home after discharge. If it is likely that your child will need ‘stronger’ painkillers these will be supplied via the hospital and this will be discussed with you during the preoperative assessment clinic. To prevent delays at the time of discharge we will weigh your child during the preoperative assessment and aim to order such medication in advance.

- If your child becomes unwell
  If your child has a cold, cough or illness such as chickenpox the operation will need to be postponed to avoid complications. Please telephone us (the telephone number is provided at the end of this leaflet) to discuss, prior to coming to hospital.

- Starvation times
  Your child will not be able to eat and drink before the operation. Specific advice about this will be given on the day before your child’s surgery when you telephone the ward to confirm bed availability (for children attending one of our children’s wards) or during the preoperative assessment. Usually children need to stop having food or milk six hours before surgery but can continue to drink clear fluids (water or weak squash) until two hours before surgery.

What happens when my child is admitted to hospital?
You will be asked to bring your child to one of our children’s wards, usually early in the morning on the day of surgery. When you arrive you will be seen by the nursing staff plus a doctor and an anaesthetist (if not seen by these persons at the preoperative assessment clinic).

An x-ray may be taken in advance of surgery to confirm the position of your child’s stone(s).

A parent will be able to accompany your child when she/he goes to the anaesthetic room to go to sleep for the operation and also be present in the recovery area when she/he wakes. A bed will be provided for a parent to stay next to your child’s bed.

What happens during the procedure?
A general anaesthetic is given so your child will be asleep throughout the procedure. Injectable antibiotics are usually given and then the procedure commences.
Firstly, a telescope (called a ‘cystoscope’ or ‘ureteroscope’) is passed via the urethra (the tube through which urine passes from your body) and into the bladder.

Under x ray screening, a flexible guidewire is inserted through the cystoscope and into the affected ureter up to the kidney. A longer telescope (either rigid or flexible) is then inserted into the ureter and passed up to the kidney. The stone is disintegrated using a mechanical probe or laser and the fragments extracted with special retrieval devices.

At the end of the procedure the following tubes may be left in place:
• A ureteric stent – this is a tube which is temporarily left in the ureter to help urine drain from the kidney into the bladder. The stent will be removed at a later date under another anaesthetic.

• Urinary bladder catheter – this is a tube which drains the urine from the bladder and into an external urine drainage bag. The urinary catheter can be removed by a nurse on the ward once it is no longer required.

What happens immediately after the procedure?
You will be able to be with your child once they start to wake in the paediatric recovery area. Your child will be monitored in the recovery area before then being transferred to one of the children’s wards. Your child will be able to eat and drink as soon as she/he feels they want to but your child may also have intravenous fluids (called a ‘drip’) to provide them with fluids to ensure the kidney is flushed. It is important that, when your child is fully awake, they are encouraged to drink. A nurse will carefully monitor your child’s fluid intake and also measure the urine output. The urine often appears blood stained but will clear as increased fluids are taken.

If a urinary bladder catheter has been inserted, this is usually removed on the day after surgery by a nurse on the ward.

Your child will be able to go home once passing urine normally. Most children who have not needed a bladder catheter will be able to go home on the evening of the same day as surgery. Children who have needed a bladder catheter usually stay overnight and are then usually discharged home the following day after the catheter has been removed and the child has passed urine normally again.

Your child will be on antibiotics for one week after the operation. This may initially be given via a drip directly into a vein, but once your child is eating and drinking normally it will be given by mouth.

Are there any complications?
Most procedures have a potential for complications. You should be reassured that, although all these complications are well recognised, the majority of patients do not suffer any problems after a urological procedure.

Common (greater than one in 10)
• Mild burning or bleeding on passing urine for short period after operation
• Temporary insertion of a bladder catheter
• Insertion of a ureteric stent with a further procedure to remove it
• The stent may cause pain, frequency and bleeding in the urine

Occasional (between one in 10 and one in 50)
• Inability to retrieve the stone or movement of the stone back into kidney where it is not retrievable
• Kidney damage or infection needing further treatment
• Failure to pass the telescope if the ureter is narrow
• Recurrence of stones
Rare (less than one in 50)
- Damage to the ureter with the need for an open operation or tube placed into the kidney directly from your child’s back to allow any leak to heal
- Very rarely, scarring or stricture of the ureter requiring further procedures

Hospital-acquired infection; (overall risk for Addenbrooke’s)
- Colonisation with MRSA (0.02%, one in 5,000)
- Clostridium difficile bowel infection (0.04%; one in 2,500)
- MRSA bloodstream infection (0.01%; one in 10,000)

(These rates may be greater in high risk patients eg with long term drainage tubes, after removal of the bladder for cancer, after previous infections, after prolonged hospitalisation or after multiple admissions.)

What should I expect when I get home?
When you leave hospital, a discharge summary will be provided for your child’s GP.

Urine may be slightly blood stained for a few days, particularly in the morning but this should clear as the day progresses if sufficient fluid is being taken orally.

When you get home, your child must be encouraged to drink clear fluids such as water or squash. To flush through the renal system and minimise any bleeding we recommend that your child drinks twice as much fluid as they normally would for two weeks after discharge. In the long term your child should aim to keep their urine permanently colourless to minimise the risk of further stone formation.

Your child may experience pain in the kidney over the first 24 to 72 hours, due to the swelling caused by insertion of the instrument or by the presence of a stent. Anti-inflammatory painkillers will help this pain which normally settles after 72 hours.

It is important that your child takes painkillers as advised by your child’s nurses and doctors at discharge.

It usually takes seven to 10 days to recover fully from the operation so children will need to be off school for this period of time. Resuming physically strenuous activity such as sport should be undertaken from two weeks after surgery.

What else should I look out for?
Small blood clots or stone fragments may pass down the ureter from the kidney which can be very painful (called ‘renal colic’). It is important that your child takes the painkillers provided as advised.

If your child develops any of the following you should contact your GP immediately:
- fever
- severe pain on passing urine
- inability to pass urine
- worsening bleeding
Are there any other important points?

If a stent has been inserted, you will be informed before your child’s discharge when the stent needs to be removed. Ureteric stents are removed under general anaesthetic in the day surgery unit or following admission to the children’s day ward.

You can prevent your child from further stone recurrence by implementing changes to your child’s diet and fluid intake. If you have not already received a written leaflet about this, your child’s ward nurse, clinic nurse, Specialist Nurse or your Consultant can provide one. We can also arrange for a paediatric dietician to see you and provide further advice.

Is there any research being carried out in this field at Addenbrooke’s Hospital?

There is no specific research in this area at the moment but all operative procedures performed in the department are subject to rigorous audit at a monthly audit and clinical governance meeting.

Who shall I contact if I have any queries, concerns or questions?

For further information/queries please contact:

Your nurse specialist (Mon to Fri 08:00 to 18:00hrs)…01223 586973………………...
The ward you were on………………………………………………………………

We are now a smoke-free site: smoking will not be allowed anywhere on the hospital site.
For advice and support in quitting, contact your GP or the free NHS stop smoking helpline on 0800 169 0 169.

Other formats:

If you would like this information in another language, large print or audio, please ask the department where you are being treated, to contact the patient information team: patient.information@addenbrookes.nhs.uk.

Please note: We do not currently hold many leaflets in other languages; written translation requests are funded and agreed by the department who has authored the leaflet.

Document history

Authors: Clinical Nurse Specialist
Pharmacist: N/A
Department: Cambridge University Hospitals NHS Foundation Trust, Hills Road, Cambridge, CB2 0QQ www.cuh.org.uk
Contact number: 01223 245151
Publish/Review date: January 2018/January 2021
File name: Ureteroscopic_stone_removal_in_children.doc
Version number/Ref: 2/PIN3692/34479