

# ANAESTHESIA FOR HYPOSPADIAS REPAIR

Tutorial of the week 119

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Please answer the following true or false questions to see how much you already know of the topic. Answers are given at the end.

- 1) The incidence of hypospadias is almost equal in both the sexes.
- 2) When the child grows up, presence of hypospadias can cause psychosocial problems.
- 3) Surgical correction should be done as early as possible, preferably in the neonatal period.
- 4) Regional anaesthesia alone in the form of caudal epidural is the anaesthesia of choice.
- 5) Children may require sedative premedication before hypospadias surgery.
- 6) Intubation and controlled ventilation is a good technique for the procedure.
- 7) Adding clonidine to the caudal epidural prolongs the action of bupivacaine.
- 8) For a 10kg child: 10 mg of morphine diluted in 50 ml saline would give an effective dilution of 20 microgram/kg/ml.

## INTRODUCTION

Normally in males, the urethra begins from the neck of the bladder and runs along the inferior surface of the shaft of the penis and opens at the tip of the penis. Sometimes the urethra opens proximally along its course. This condition is called hypospadias and occurs in approximately 1:350 male births. The word is coined from two Greek words that mean underneath and rip. In girls, the condition is very rare and rarely requires surgery. If it occurs, the opening of the urethra is into the vagina.

Reasons for correcting a hypospadias:

- The urinary stream can be deviated, making it difficult to pass urine in the standing up position as it may wet the clothes.
- Cosmesis. The penis looks different to normal.
- To maintain gender identity. Severe forms of hypospadias give the genitalia an ambiguous look
- Sometimes along with hypospadias, the tip of the penis may be bent ventrally during erection. This condition, called chordee, can cause difficulty in having sexual intercourse.
- All of the above may cause parental concern initially and psychosocial problems for the child as he grows up.

## SURGICAL MANAGEMENT

Most centres recommend corrective surgery between 12 to 18 months of age when there is sufficient penile material. Mild hypospadias may be corrected as a single stage procedure. Severe hypospadias may require a two-stage procedure. During the first stage the penis is laid open and a new urethra is formed using preputial mucosa, during the second stage the new urethra is tubularised. Recurrent urethral fistulae may require grafts to be taken from behind the ear or by using buccal mucosa. The surgical procedure takes between 30 minutes to 3 hours, depending on severity of the condition. General anaesthesia supplemented by caudal analgesia is the technique of choice.

## ANAESTHETIC MANAGEMENT

Routine pre-operative assessment should be performed. Associated congenital abnormalities are rare and renal function is almost invariably normal. The child may be emotionally upset due to repeated visits to the theatre for the staged procedure or due to complications such as fistula formation or urethral stenosis. In these circumstances, premedication may make the procedure easier for the child. Midazolam 0.5mg/kg by mouth 30 minutes prior to surgery is commonly used. Other premedication is discussed in Update in Anaesthesia ([www.worldanaesthesia.org](http://www.worldanaesthesia.org) Paediatric anaesthesia Update 19)

Inhalational or intravenous agents may be used for induction of anaesthesia. Maintenance is usually by a spontaneously breathing technique using a laryngeal mask and volatile agent, but when the surgical procedure is likely to take several hours, intubation and ventilation may be preferred. If the surgeon is planning to take a graft from the buccal mucosa, a throat pack keeps the tracheal tube secure from movement and prevents blood soiling the airway.

General anaesthesia combined with a regional anaesthesia technique provides the best operating conditions and post-operative pain relief. Per-operative penile erection can make the surgical procedure difficult and this can be avoided by a good regional block and sufficient depth of anaesthesia. A caudal epidural with 0.5 ml/kg of 0.25% L- bupivacaine as a single shot gives good pain relief. The analgesia can be prolonged by adding 1-2 microgram/kg of clonidine or 0.5 mg/kg of preservative free ketamine to the local anaesthetic or by using a continuous caudal catheter with an infusion of local anaesthetic. When there is only a distal penile hypospadias, a penile block may be sufficient. Intra operative blood loss is minimal and blood transfusion is rarely required. As with all paediatric procedures, meticulous fluid balance and temperature management is required. Please see our tutorial on Paediatric Fluid Management in [www.worldanaesthesia.org](http://www.worldanaesthesia.org) for further reading on fluid management.

## POST OPERATIVE CARE

At the end of surgery the penis is usually protected with a foam dressing. A urethral stent or suprapubic catheter may be left in place for one to five days. Oral intake is usually resumed within hours of surgery and postoperative intravenous fluids are not generally required.

Post-operative pain is managed with regular paracetamol, a non-steroidal analgesic (NSAID) and oral opioids if required. For more extensive procedures, some units suggest a continuous epidural technique or a morphine nurse controlled analgesia.

### Drug doses

- Paracetamol: loading dose of 20mg/kg p.o., 15mg/kg i.v., or 40 mg/kg p.r. followed by 15mg/kg p.o./p.r 4 hourly, maximum 90 mg/kg/day.
- Ibuprofen: 5-10 mg/kg 6 hourly p.o up to a maximum 30 mg/kg /2.4 g in 24 hours *or* diclofenac 1 mg/kg p.o/p.r 8 hourly.
- Codeine phosphate: 0.5- 1 mg/kg p.o. 4-6 hourly.
- Oral morphine: 0.2mg/kg p.o. 4 hourly
- Morphine nurse controlled analgesia: 1mg/kg of morphine sulphate diluted in 50 ml normal saline gives a dilution of 20mcg/kg/ml of morphine for the patient. The infusion may be run at a rate of 0.2ml/hr (4 mcg/kg/hour), bolus dose of 1 ml (20 mcg/kg), lockout 20 minutes.

Pain from bladder spasms can be problematic if a catheter is left in situ. This can be treated with oxybutynin 1.25 – 2.5 mg/kg p.o.

After complex staged procedures, sutures will be required to be removed under anaesthesia on the 5<sup>th</sup>-7<sup>th</sup> post operative day.

## REFERENCES:

1. Oxford Specialist Handbooks in Anaesthesia - Paediatric Anaesthesia. Oxford University press 2007.
2. BNF for Children 2007. BMJ Publishing Group, London.
3. Hatch and Sumner's Textbook of Paediatric anaesthesia. Third edition Ed Bingham R, Lloyd-Thomas A, Sury M. Hodder Arnold. London 2008

## ANSWERS :

- 1) F
- 2) T
- 3) F
- 4) F
- 5) T
- 6) T
- 7) T
- 8) T