Phimosis and Paraphimosis

Phimosis

Almost all boys have a non-retractile foreskin at birth. The inner foreskin is attached to the glans. Foreskin adhesions break down and form smegma pearls (white cysts under the foreskin) which are then extruded. The foreskin does not retract before the age of 2 years. The process of retractility is spontaneous and does not require manipulation. This is known as physiological phimosis. Phimosis is not a problem unless it causes difficulties such as urinary obstruction, haematuria or local pain.

The condition of pathological phimosis is also recognised. This usually results from episodes of foreskin infection (balanoposthitis). A vicious cycle is set up in which repeated attacks of infection lead to scarring which results in further infections.

Epidemiology

- The majority of boys will have a retractile foreskin by 10 years of age and nearly all will have a retractile foreskin by 16-17 years of age. Phimosis can occur at any age.
- Phimosis results when the prepuce is tight and is unable to be pulled back over the glans. This is often the result of chronic infection caused by poor hygiene.
- Poor hygiene and enthusiastic attempts to correct congenital phimosis increase the risk of developing pathological phimosis.
- Phimosis usually occurs in uncircumcised males but can occur after circumcision where any excessive skin becomes sclerotic.
- In older diabetic patients it often results from chronic balanoposthitis that is inflammation of the glans and prepuce.
- Female phimosis is an uncommon and poorly recognised condition. A study from a sexual dysfunction clinic found that clitoral phimosis was present in 22% [1]. This may have been contributing to dyspareunia. It can occasionally be caused by lichen sclerosus [2].
- The incidence of phimosis is 8% in 6- to 7-year-olds decreasing to 1% in males aged 16-18 years [3].

Presentation[3]

In physiological phimosis, parents may bring their son in for consultation, concerned that his foreskin may not yet be retracting. They may have noticed the naturally occurring adhesions or may be anxious about ballooning during micturition. Problems relating to physiological phimosis may include recurrent balanoposthitis and recurrent urinary tract infections.

Pathological phimosis may present as painful erections, haematuria, recurrent urinary tract infections, preputial pain and weak urinary stream.

There may be swelling, redness and tenderness of the prepuce with purulent discharge. Adhesions may be seen between the inner surface of the prepuce and the glans or the frenulum. The frenulum itself may be shortened and retraction of the foreskin may lead to ventral distortion of the glans. In physiological phimosis the meatus will appear healthy and unscarred. In pathological phimosis the meatus may appear scarred, with a fibrous white ring forming around the preputial orifice.

Investigations

A swab may be taken to confirm the nature of infection but attention is towards physical cleaning rather than antibiotics.

Management

Various guidelines have been issued concerning the management of phimosis [3]. From a primary care point of view, the approach should be to find out why the patient has presented at this time and what problems the condition is causing. Both patient and parental expectations should be explored and the options explained.

- If the issue is a non-retractile foreskin and/or ballooning during micturition in a child aged under 2 years, an expectant approach should be taken in case this is physiological phimosis which will resolve in time.
- Avoid forcible retraction of a congenital phimosis, as this can result in scar formation and an acquired phimosis.
- Personal hygiene is very important. Advise cleaning under a retractable foreskin and always reduce it to cover the glans after cleaning.
- Topical steroid application to the preputial ring to treat 'phimosis' has reported success rates between 33-95%.
- Phimosis persisting after the age of 2 years may be considered for further treatment, particularly if recurrent balanoposthitis or urinary tract infections are occurring. The options are plastic surgery or circumcision.

Plastic surgery

Various procedures may be needed, including dorsal incision of the foreskin, partial circumcision, release of adhesions, division of a short frenulum and meatooplasty. The advantage of this approach is that the foreskin, or much of it, can be preserved. The disadvantage is that phimosis can recur [4].

Circumcision

See the separate Circumcision article for indications and complications.
Intralesional steroid injection, long-term antibiotics, carbon dioxide laser therapy, radial preputioplasty alone or with intralesional injection of steroid have all been described but there are no randomised trials of efficacy and long-term outcome.

**Complications of phimosis**
- Phimosis is a risk factor for penile carcinoma.
- Circumcision has a beneficial effect on the incidence of invasive penile cancer but not carcinoma in situ.
- Balanitis xerotica obliterans may require not just circumcision but dilatation of the urethral meatus or meatoplasty.
- There is no evidence that smegma is a carcinogen and the association between smegma accumulation and penile carcinoma may be due to associated infection.

**Paraphimosis**
This occurs when a tight prepuce is retracted and then unable to be replaced as the glans swells. This is a urological emergency. Always check there is no encircling foreign body constricting venous return, such as a ring, rubber band or hair.

**Risk factors**
- A tight prepuce causes swelling when it is retracted. This may occur after failing to pull the foreskin forward to its natural position after cleaning or catheterisation.
- Scarring of the prepuce after repeated forcible retraction in an attempt to ‘cure’ a physiological phimosis.
- Vigorous sexual activity.
- Chronic balanoposthitis (typically in patients with diabetes).
- Penile piercing can lead to paraphimosis but the most common cause is urinary catheterisation when, after inserting the catheter, there is failure to replace the foreskin over the glans after the procedure.

**Presentation**
- There is oedema around the constricting band that is usually the prepuce.
- There may be pain on erection.
- Infants may present just with irritability.
- A carer may discover the condition incidentally in a debilitated patient.
- In later stages, the glans may develop a blue or black colour due to necrosis.

**Management**
- Gentle compression with a saline-soaked swab followed by reduction of the prepuce over the glans is usually successful.
- Gradual manual reduction of the prepuce over the glans is done by placing both index fingers on the dorsal border of the penis and thumbs on the glans. The glans is pushed back while the index fingers pull the prepuce back over the glans.
- This technique can be facilitated by trying to achieve reduction of swelling first. Ice may be applied. Manual compression is achieved by asking the patient to squeeze the glans for anything from 5 to 30 minutes. Osmotic reduction involves application of a swab soaked in 50% dextrose to the swollen area for an hour.
- Alternatives include multiple punctures in the oedematous foreskin or injection of hyaluronidase prior to compression reduction. General anaesthesia may be required.
- If local anaesthetic is required it must not contain adrenaline (epinephrine).
- Dorsal incision is occasionally required.
- There is no consensus regarding circumcision after paraphimosis. Some authorities maintain that since the foreskin continues to develop normally after reduction this should not be necessary. However, if dorsal incision is required, circumcision is sometimes advocated.

**Complications of paraphimosis**
Failure to remove the constricting band of paraphimosis will result in necrosis of the glans.

**Further reading & references**
- EAU Paediatric Urology Guidelines. Edn. presented at the EAU Annual Congress Copenhagen; European Association of Urology, 2018

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