3.1.2 ***Classification and diagnostic evaluation***

In order to determine which cases require treatment, phimosis should be divided into a physiological and pathological type. Physiological phimosis is most likely to resolve over time without intervention, whereas pathological phimosis may not.

In physiological phimosis there is no sign of scarring, and upon retraction the inner prepuce is seen bulging outward from the narrow ring in the prepuce ("pouting"). In pathological or secondary phimosis there is scarring, the narrow ring in the prepuce is fibrous, often white and thickened, and the inner layer of the prepuce is not seen coming out [28]. Balanitis xerotica obliterans is a special form of pathological phimosis.

The diagnosis of adhesions, phimosis and paraphimosis is made by physical examination alone, and this can differentiate between physiological variations or pathological abnormalities. If the prepuce is not retractable, or only partly retractable, and shows a constrictive ring upon retraction back over the glans penis, a disproportion between the width of the foreskin and the diameter of the glans penis has to be assumed. In addition to the constricted foreskin, the inner prepuce may be adherend to the glans and/or frenulum breve.

Balanitis xerotica obliterans remains a histopathological diagnosis as clinically discerning BXO from simple pathological phimosis by may be difficult, particularly to the untrained eye. Histopathological examination of resected foreskin is warranted due to the consequences of this diagnosis with regards to follow-up [29, 30].

In buried penis, the shaft itself appears shorter upon inspection but is of normal size upon palpation, hence the name. In megaprepuce the shaft may have a normal appearance or it may resemble buried penis. The diagnosis is made based on the aspect of the penis during voiding. When the enlarged space between shaft and inner prepuce fills up with urine during voiding, this causes the entire penis to swell. Megaprepuce can be discerned from regular phimosis, in which only the tip of the penis may demonstrate ballooning. It may be helpful if caregivers show a photo or even video of the aspect of the penis during voiding.

3.1.3 ***Management***

Hygiene

The foreskin should not be retracted for cleaning until this can be done easily. It should be stressed to parents/caregivers that forced retraction of a narrow foreskin may cause scar formation resulting in secondary pathological phimosis [31]. Care should be taken to reduce the foreskin back down over the glans to prevent paraphimosis. Once the foreskin is retractable this may be regularly done during bathing and becomes necessary for hygienic reasons from puberty. The production of smegma appears to increase at puberty, coinciding with the age at which most boys can retract their foreskin [28].

Conservative/medical management

Physiological phimosis and adhesions do not need treatment, unless there are accompanying urogenital abnormalities. Conservative medical treatment is a valid option for primary pathological phimosis. Class 4 corticosteroid therapies were more effective over placebo and manual stretching [32]. Topical corticoid (0.05-0.1%) can be administered twice a day over a period of four to eight weeks with a success rate of > 80% [32-35]. A publication showed that lower class corticosteroids may be almost equally effective [36]. A recurrence rate of up to 17% can be expected [37]. Effectivity of topical corticosteroids is likely to be influenced by correct application, which must be directly onto the narrow ring under gentle retraction. Similarly, after finishing the corticosteroid treatment recurrence should be prevented by continuing daily retraction of the prepuce [38]. While all types of phimosis may respond to corticosteroid treatment, the success rate may be lower in pathological phimosis. If BXO is suspected, consultation with a dermatologist should be considered [39].

Corticosteroid treatment has no systemic side effects and mean blood cortisol levels are not significantly different from an untreated group of patients [40]. The hypothalamic pituitary-adrenal axis was not influenced by local corticoid treatment [41]. However, if treatment is continued for too long or too much product is used this may cause focal atrophy and vulnerability of the skin. In general, cream may be associated with dryness and irritation, due to the nature of the product compared to ointment. Adhesion of the foreskin to the glans does not respond to corticosteroid treatment [33].

Operative management

Circumcision for non-medical reasons, such as routine circumcision for cultural, religious or hygienic considerations, is not discussed in this chapter.

Medical indications for surgical intervention for phimosis are recurrent balanoposthitis or symptomatic therapy-resistant phimosis. Simple ballooning of the foreskin during micturition is not an indication for surgery per se. Several indications for circumcision in the absence of symptomatic phimosis have