Emergency management of paraphimosis

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Objective: To review the treatment modalities available for paraphimosis, with special emphasis on those applicable to the emergency department. ***Data source:*** Relevant medical literature was searched through MEDLINE, EMBASE, CINAHL, and Cochrane Database. Manual search was performed in books on Urology, General Surgery and Emergency Medicine available in the Hospital Library. Further information was obtained through the Internet at <www.infoseek.com>. References cited in articles were also retrieved. ***Study selection:*** Key words for the literature, Internet and textbook search were 'paraphimosis' and 'treatment'. All available years of study were reviewed. ***Data extraction:*** Relevant full text articles were obtained through the hospital library network. Original articles, review papers, medical practice, case reports, and relevant book chapters were reviewed. ***Data synthesis:*** There were no prospective, randomised, controlled studies available. The majority were case series and expert experience or opinions only. Currently, a multitude of non-invasive and invasive treatment options are available, including manual reduction, help of non-crushing tissue forceps, puncture technique and dorsal slit. ***Conclusion:*** All treatment methods are within the capability of the emergency physician. Hospitalization should rarely be required, unless there are serious complications. (*Hong Kong j.emerg.med.* 2003;10:253-257)

Keywords: Circumcision, dorsal slit, hyaluronoglucosaminidase, punctures

Introduction

Paraphimosis is a relatively uncommon condition.[1] It is the entrapment of a retracted prepuce behind the coronal sulcus, and inability to reduce the retracted prepuce over the glans penis into its naturally occurring position.[2] It occurs only in the uncircumcised or incompletely circumcised.[2-4] The tight ring of retracted preputial skin constricts the distal penis much like a tourniquet, resulting in pain, oedematous swelling and venous engorgement of both the glans and the collar of 'inner' prepuce behind the coronal sulcus.[3] Ulceration or posthitis may result. Infants and children may present with obstructive voiding symptoms and, when severe, acute urinary obstruction.[3,4] Rarely, arterial occlusion might result in necrosis of the glans and penile autoamputation, if not dealt with quickly.[2,3,5-7] The remainder of the penile shaft is flaccid and unremarkable.[2,3]

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Etiology

Phimosis, congenital or acquired, is the prerequisite of paraphimosis. Congenital phimosis occurs in young children.[2] Acquired phimosis is more common in the elderly, as a result of poor hygiene, chronic balano-posthitis, or forceful retraction of the prepuce, leading to a tight fibrotic ring.[2] Paraphimosis is precipitated by procedures such as penile examination, bladder catheterisation, cystoscopy, or endoscopic surgery of the bladder or urethra without replacing the prepuce in its reduced position afterwards.[3] With the rising incidence of planting body rings, those having penile or urethral piercing are at increased risk of paraphimosis.[2,3,8] Erection[2,9] and vigorous sexual activity[2] have been reported to predispose to paraphimosis.

Differential diagnosis

Other causes of preputial and penile swelling should be considered, including urticaria, penile haematoma, penile fracture, and idiopathic penile oedema. Presence of an encircling foreign body, such as hair, clothing, thread, metallic object, or rubber band has to be excluded.[2]

Anaesthesia

Pain may not always be present.[3] For simple manual reduction, anaesthesia is seldom required. When necessary, procedures can be facilitated by the use of analgesics or narcotics.[3] Topical local anaesthesia using 2% lignocaine jelly or EMLA cream (eutetic mixture of local anaesthetics – 2.5% lignocaine and 2.5% prilocaine) has been advocated.[1] In case of pain and difficulty or more invasive procedures, a dorsal penile nerve block using lignocaine hydrochloride without epinephrine in combination with a ring block around the base of the penis should provide adequate local anaesthesia in all circumstances.[1,10,11] (Figure 1) Anesthetic injected directly into the dorsal slit incision line will also work.[1] Occasionally, some children may require conscious sedation.[2]

Reduction methods

The treatment of paraphimosis essentially involves reducing the penile oedema and restoring the prepuce to its original position, covering the glans penis. It can be either noninvasive or invasive. There are no prospective, randomised, controlled studies comparing the efficacy of currently available options.[3] The majority were case series and expert experience or opinions only. All have been claimed to be highly successful. Manual reduction of the prepuce should first be attempted by displacing the oedematous fluid out of the glans and prepuce, and then manipulation of the constricting band over the glans. Invasive procedures are indicated only after simple manual reduction has failed. Circumcision should be carried out at a later date when all oedema and inflammation have resolved because paraphimosis tends to recur.[5,12]

Manual reduction

After determining the absence of an encircling foreign body, one may proceed to urgent reduction.[2] Simple manual reduction is achieved by mechanical compression and dispersion of the oedematous fluids and manipulation of the constricting band over the glans penis.[3,13] A gloved hand is encircled around the distal penis to apply gentle circumferential pressure for about five minutes, steadily compressing and firmly squeezing the oedematous fluid out of the glans and prepuce.[3,5]

The compression may be facilitated by using the 'turban' technique.[5,14] The penis is wrapped around circumferentially with a compressive dressing[1] or elastic bandage[2,5,15] from the glans to the base of the penis, applying more pressure distally and less when moving proximally. Wait about five to ten minutes before removing the bandage.[3,13,14]

The use of ice on the prepuce and glans may help decrease the amount of oedema prior to manual reduction.[2] The penis is first wrapped in plastic, with ice packs applied intermittently until the swelling subsides.[1,3,13]

Oedema may also be reduced by osmosis. One method is by applying granulated sugar generously to the surface of the glans and prepuce and covering them with a glove or a condom.[1-3,11,16,17] Wrapping in gauze swab soaked in hypertonic dextrose and left in situ for a period of at least one hour is an alternative.[18]

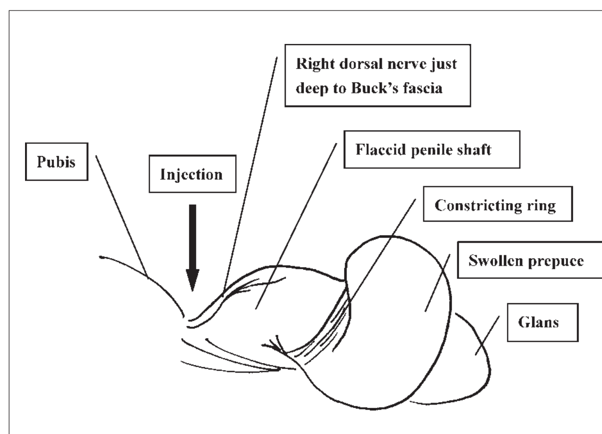

Figure 1. Dorsal penile nerve block.

After dispersing the oedema, the glans is compressed and elongated by applying pressure and forward traction with the thumb and first two fingers of the right hand and an attempt is made to draw the constricting ring forward over it with the thumb and fingers of the other hand, in the same direction.[19] (Figure 2) It is a mistake to try counterpressure, by pushing the glans upwards with thumbs and pulling the constricting ring down over the glans with fingers, as mentioned in some textbooks and journals.[1,20] The process may be facilitated by lubrication with vaseline[13] or lignocaine jelly. The addition of a gauze pad may also facilitate traction on the prepuce. Adequate analgesia and patience are the keys to success.[5]

Non-crushing clamps

The use of non-crushing Babcock tissue forceps on each quadrant of the constricting ring of the prepuce may facilitate reduction if manual reduction fails. After placement of the forceps, apply gentle continuous symmetrical traction until the prepuce is reduced over the glans.[2,13,21] (Figure 3)

Puncture technique

The puncture technique was initially reported in the European literature in 1990. An 18-25G needle is used to puncture one or several openings into the oedematous prepuce distal to the constricting ring to allow oedematous fluid to escape from the puncture sites with manual compression of the glans and prepuce.[2,22-26] (Figure 4) External drainage of the trapped fluid results in effective diminution of the swelling, facilitating subsequent manual reduction.[3,6,13,25] After reduction, topical and oral antibiotics have been suggested.[5]

Hyaluronidase

The injection of hyaluronidase into one or more sites of the oedematous prepuce has been claimed to facilitate reduction of paraphimosis.[2,22,27,28] It is thought that hyaluronidase disperses extracellular oedema by modifying the permeability of intercellular ground substance in connective tissue, enhancing diffusion of trapped fluid between the tissue planes to decrease the preputial swelling.[2,3,29] Some consider the key to this method of reduction is not the effects

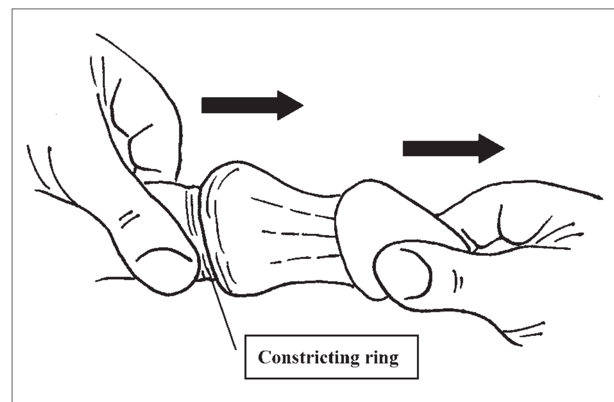

Figure 2. Manual reduction of paraphimosis.

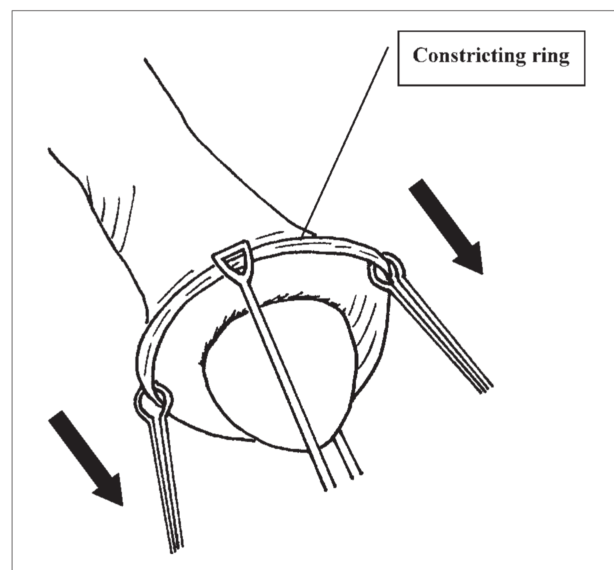

Figure 3. Help of Babcock tissue forceps.

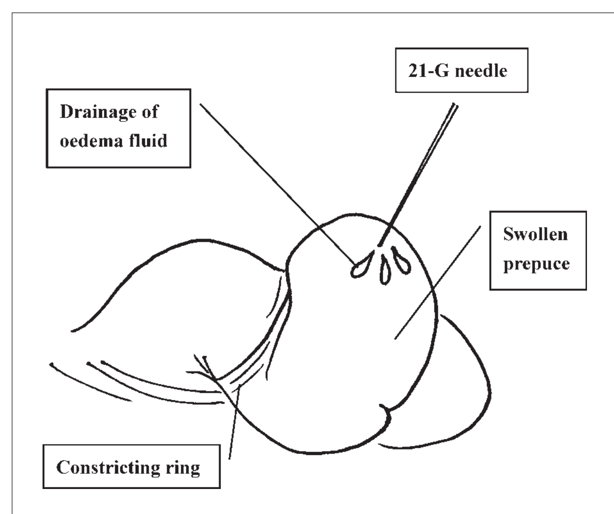

Figure 4. Puncture technique.

of the hyaluronidase, but rather, the punctures made by the syringe needle.[2,22,27] It is contraindicated in the presence of infection.[2] Uncommon reported side effects associated with the use of hyaluronidase include ecchymosis, anaphylaxis, shock, and hypovolemia when given intravascularly accidentally.[2]

Dorsal slit

If manipulation fails, the constricting ring should be divided with a short longitudinal dorsal incision after which the prepuce can easily be drawn over.[2,13] Using 1% lignocaine penile block or direct infiltration of the incision line, the constricting preputial band is identified at the 12-o'clock position, perpendicular to the corona, and sharply incised.[1] (Figures 5a & 5b) The incision is left unsutured. (Figure 6) Ventral incision has also been suggested, but has rarely been performed. After reduction, topical and oral antibiotics should be considered.[5] The patient can then be discharged and referred to the surgeon for elective circumcision, with instructions for out-patient dressing change in the meantime.

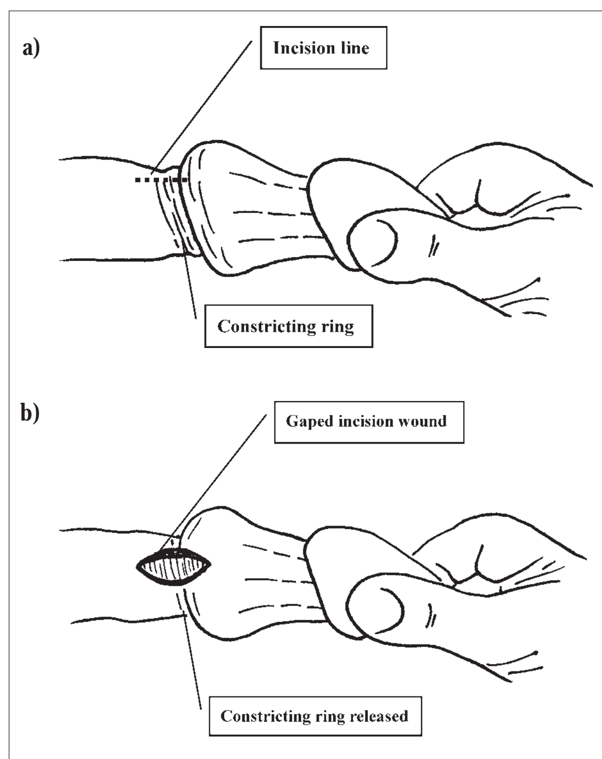

Figure 5. Dorsal slit. a) Site of incision. b) After incision.

Emergent circumcision

Circumcision should be carried out at a later date when all oedema and inflammation have resolved, usually after six weeks.[5,12] There is no need or role for emergent circumcision[2,13] at the acute inflammatory stage.

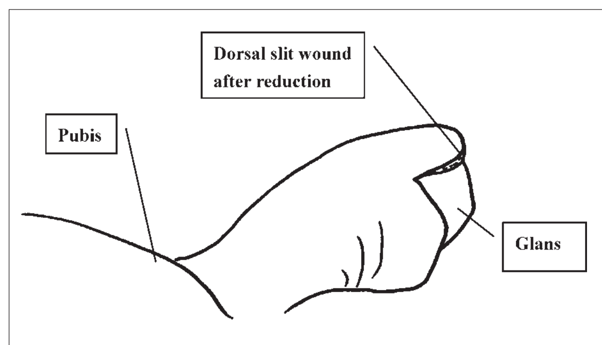

Figure 6. Reduction of paraphimosis after dorsal slit.

Aspiration technique

After penile block, a rubber tourniquet is applied to the base of the penis. An 18 or 20-gauge needle is used to aspirate corporal blood from the glans, parallel to the urethra, until it collapses. The constricting ring is then gently reduced over the shrunken glans.[1,3,30]

Conclusion

Currently, there are a multitude of both non-operative and operative reduction treatment options available, but there are no prospective, randomised, controlled studies comparing their efficacy.[3] Manual reduction, with or without the ancillary methods mentioned, should be successful in nearly all cases. If it fails, dorsal slit under dorsal penile block should be well within the capability of the emergency physician. Hospitalisation should rarely be required, unless there are serious complications.

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