Inconspicuous Penis

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Inconspicuous penis refers to a constellation of conditions that make the penis look diminutive and small. This could be secondary to short penile shaft often termed as micropenis. But more commonly, this inconspicuous appearance is secondary to other causes ranging from congenital conditions such as penoscrotal webbing or megaprepuce, developmental conditions like prepubic adiposity that overhang the penis, and iatrogenic causes like trapped penis after adhesions secondary to circumcision. In this paper, we propose to define these entities and provide their descriptions and then to describe their management including surgical correction.

KEYWORDS: child, penis, micropenis, inconspicuous

1. INTRODUCTION

The term “inconspicuous penis” was first used in the literature by Bergeson et al. [1] in 1993. This term includes all the conditions described by Maizels et al. [2] in their seminal article which proposed a classification system for inconspicuous penis and defined them in terms that we use to this date. According to this classification, the reason for inconspicuous penis could be a short penile shaft, that is, micropenis, or more commonly due to abnormalities of the investing structures. The latter group is further divided as buried penis, webbed penis, and trapped penis. The primary aim of this paper is to describe these entities and discuss their treatment.

An inconspicuous penis could be a source of constant concern for both parents and children. Young boys might have the fear of discovery and teasing by classmates, and this may even result in depression and anxiety [3]. Parents may worry about future sexual and reproductive function. Hence, this condition commonly results in consultation medical help. It is important for primary care providers pediatricians to have adequate knowledge of these conditions so that they can reassure parents or refer them for surgical evaluation.

2. ANATOMICAL CONSIDERATIONS

The suspension of the penis and the attachments of its skin and subcutaneous fascia are described well in the literature. The superficial Scarpa’s fascia covers the anterior abdominal wall and is continuous with the superficial fascia of the penis and scrotum to the external genitalia called the dartos fascia. This superficial fascia extends into the preputial skin and is fixed at the base of the glans penis in the coronal sulcus. At the level of the symphysis pubis, there is fat overlying the Scarpa’s fascia which itself is relatively adherent to the deeper fascia. The dartos fascia overlies Buck’s fascia and is loosely attached to it. Fat is almost absent in between the dartos fascia and penile skin. The shaft of the penis itself is suspended by suspensory ligaments that extend from the inferior aspect of the pubic arch to the base of the penis in the dorsal aspect. In the ventral aspect, the superficial fascia of the penis along with the skin makes a well-defined penoscrotal angle below which the dartos fascia starts getting incorporated with more smooth muscle fibers and is closely adherent to the skin of the scrotal wall.

This anatomical setting lends itself to possible problems that may hence make the penis look diminutive and forms the basis for Maizel’s classification. An excess of suprapubic fat that normally stops at the base of the penis, could extend and stretch the skin of the penis thus obliterating the penopubic junction making the penis look shorter by hiding part of the shaft of the penis. On the other hand, if the superficial fascia adherent to the deeper fascia is more lax normal at the base of the penis, this makes the penile skin look redundant and overhang the penis thus burying the penis. Webbed penis is the result of the improper definition of the penoscrotal angle in the dorsum of the penis resulting in a short penis appearance. Congenital megaprepuce is a condition where the infrapreputial skin is lifted off its attachments to deep fascia due to an extraordinarily bulky preputial tissue. Hence, it is very important to accurately identify the anatomical problem to successfully treat it.

3. BURIED PENIS

Buried penis, as defined by Maizels et al. [2], is hidden below the preputial skin. This could be because of excessive fat in the prepubic area of the anterior abdominal wall or because of lack of anchoring of the superficial fascia and skin to the deeper fascia at the base of the penis (Figure 1). The term “buried penis” was first used by Keyes in 1919 [4]. Crawford distinguished buried penis secondary to excessive suprapubic fat that could get better with age [5] from a penis that was buried secondary to superficial fascial laxity, which commonly needs surgical correction. Abnormal bands between the Scarpa’s fascia and Buck’s fascia binding the penis have also been described [2, 6]. Large scrotal masses like hernias and/or hydroceles could also bury the penis. Excessive preputial skin, megaprepuce, is another entity, where the penis looks

FIGURE 1: Buried penis. 2-year-old boy with a hidden penis secondary to laxity or absence of penoscrotal fixation and some contribution from protuberant suprapubic fat.

buried under a large amount of foreskin. It is important to remember that the penile shaft in these boys is normal and the excessive redundancy or abnormal anchoring of the surrounding tissue makes the penis look relatively diminutive.

Physical examination of the genitalia provides the diagnosis. The excessive presence of the prepubic fat is easily discernible on inspection and seems to hang over the base of the penis. This is more commonly seen in older children and obese adolescents. When these children are examined lying down and the excessive adiposity pressed down, one could clearly demonstrate to the parents and to the patient the normal size of the penis in most cases. But in extreme cases, this may not be possible and necessitate surgical correction.

In children with excessively lax penile shaft skin or with abnormal attachments, the clinician could clearly feel the normal size of the penile shaft after reduction of the excess skin. The penile length in both instances could be clearly demonstrated by stretching the penis out and reducing the lax skin. In uncircumcised boys with megaprepuce, an excessive amount of the preputial skin could be demonstrated. Scrotal and inguinal masses like a large hernia or hydrocele should be looked for, since these sometimes could make the penis look relatively small due to the distortion of the area.

3.1. Treatment

Many prepubertal children with buried penis secondary to excessive suprapubic or prepubic fat do not need surgical correction. Most of these boys will lose their excessive fat pad with growth and by puberty appear normal. In excessively obese individuals who are postpubertal, surgical correction may be needed to ensure psychological confidence. Liposuction has been helpful in severe cases [2, 7]. Abdominoplasty and suprapubic lipectomy [8] has been reported in the literature and may be needed in extremely rare instances.

Buried penis secondary to lax penile skin or abnormal bands is corrected surgically. A variety of procedures has been described in the literature. The intent in most of these procedures is the following: (1) mobilize the penis by completely degloving the penis to its base, (2) fix the penile skin dermis and dartos fascia to deeper fascia, (3) re-establish the penopubic angle and the penoscrotal angle (4) use the preputial skin to provide skin cover particularly on the ventral side.

Initial reports by Crawford [5] used an S-shaped incision on the dorsum of the penis to free the penis and fix the penis. The two U-shaped skin flaps were then used to provide skin cover. Subsequently, surgeons have transitioned over to Z-plasty performed at the penoscrotal junction in the ventral aspect and in the lateral penile shaft skin. This is done to provide skin coverage which could be an issue in some of these patients. The penoscrotal and the penopubic angle are fixed to Buck's fascia with nonabsorbable sutures. In severe cases where there is a paucity of skin, split skin grafts have been reported to be used to provide skin cover [9]. The suspensory ligament can be divided in severe cases to ensure adequate mobility [10]. Borsellino et al. reported completely delivering the degloved penis through a separate scrotal raphe incision [11]. This, according to the authors, provided more complete resection of the dartos bands without cutting

FIGURE 2: Webbed penis. (a) Lateral view of a young boy with mild-moderate penoscrotal webbing. In mild cases, fixation of the angle to Buck's fascia of the penis can reconstruct the angle and the penis refashioned with the residual skin. In more severe cases (b), the webbing is divided and the skin reapproximated in the ventral midline for penile skin coverage.

the ventral shaft skin; tacking sutures were then placed to establish penile angles at the base. The penis was then delivered back into the skin cylinder with intact ventral skin.

A combination of some or all of these innovative techniques can be utilized to aid surgical correction of buried penis. Previous reports on outcomes show an excellent result with parental and patient satisfaction in the majority of these patients [12].

4. WEBBED PENIS (Figure 2)

This is normally the result of abnormal dartos bands anchoring the penile skin on the surface of the scrotum. This results in the obliteration of ventral penoscrotal angle and resultant appearance of a short penis. It has also been referred to as penis palmatus [13]. It is considered to be a form of aberrant preputial formation leading to varying visualization of the ventral aspect of the penis [14]. It can exist in isolation but can also occur with hypospadias, chordee, and micropenis [1, 14, 15].

Physical examination of these boys will show lifting up of scrotal skin when the penis is moved to lie flat on the anterior abdominal wall. The penoscrotal fusion could extend from the preputial skin to the scrotal wall. It is important to rule out the presence of hypospadias and chordee in these boys. The cosmetic appearance is often unacceptable, and hence requires surgical correction.

4.1. Treatment

Repair of webbed penis depends on associated abnormalities like hypospadias or chordee and is better performed earlier in the child's life. Initial repairs as described by Perlmutter and Chamberlain [14] corrected webbed penis without chordee by two parallel incisions on either side of the penis, mobilizing skin flaps, and closing them ventrally of the penis and the anterior surface of the scrotum. Shapiro utilized a transverse incision across the penoscrotal web and closing it in vertical manner thus utilizing the Heinecke-Mikulicz principle to repair webbed penis [16]. A more significant defect could be fixed by a rotational flap of the foreskin to the ventral aspect of the penis or even utilizing Byar's flaps. In patients with associated chordee and/or hypospadias, more extensive urethral reconstruction with correction of chordee is needed. Radhakrishnan et al. [17] described a modified V-Y plasty to correct webbed penis which was a modification of a technique originally described Redman [15].

FIGURE 3: Trapped penis. This boy had a trapped penis, where a scar had formed over the penis. A conservative approach was taken, and no surgery was required. The skin now comes over the glans.

5. TRAPPED PENIS

This is an acquired form of inconspicuous penis, where the penile skin after circumcision has formed a circumferential scar distal to or at the level of the glans and traps the penis within the scar embedded in prepubic fat or scrotum (Figure 3). This can happen with exuberant circumcision, or circumcision in a child with a webbed penis, where the webbing was not addressed. It can also happen when circumcision was performed in a child with scrotal swelling, where in the early postoperative period, the scrotal skin develops adhesions with the dorsal skin due to its redundancy and results in a trapped penis. Blalock et al. reported that 2.9% of neonatal circumcisions end up with secondary phimosis with a trapped penis [18].

These boys may present with recurrent UTI, phimosis with ballooning during urination, or even urinary retention [19]. The physical examination reveals scar tissue from previous procedure with abnormal adhesions. The glans may not be visible in these patients or may be seen with deforming adhesions or scar tissue.

5.1. Treatment

Previously, the management of the trapped penis had been primarily surgical, but this has become less necessary with the use of topical steroids. In some cases of trapped penis, and application of topical steroids may help. The authors reported their experience using betmethasone in 14 boys diagnosed with a trapped penis within one month of circumcision. In 11 boys, no further treatment was needed, 2 needed simple incision of the scar and only 3 required surgical correction [20]. Failure of conservative management is an indication for surgical correction. Repair of the trapped penis depends on the extent of scarring and the amount of loss of skin. It might entail just adhesiolysis and recircumcision to extensive reconstructive techniques to provide for skin cover. Z-plasty [15] and opposing U-plasty [21] were some of the other procedures described in the literature for trapped penis with good cosmetic outcomes.

6. CONCLUSION

Inconspicuous penis is a very common condition presenting to a pediatric urologist for surgical correction. Reconstruction is warranted in appropriate cases to avoid future psychosexual issues and provide the child with normal functional anatomy. Although the classification system to an extent is artificial and considerable overlap is present, it is useful in determining the primary anatomic issue and thus determines treatment. Diagnosis should be made on anatomical considerations and treatment individualized to the patients based on residual anatomy, type of deformity, and the amount of skin cover available.

REFERENCES

- [1] P. S. Bergeson, R. J. Hopkin, R. B. Bailey, L. C. McGill, and J. P. Piatt, "The inconspicuous penis," *Pediatrics*, vol. 92, no. 6, pp. 794–799, 1993.
- [2] M. Maizels, M. Zaontz, and J. Donovan, "Surgical correction of the buried penis: description of a classification system and a technique to correct the disorder," *Journal of Urology*, vol. 136, no. 1, pp. 268–271, 1986.
- [3] L. Cytryn, E. Cytryn, and R. E. Rieger, "Psychological implications of cryptorchism," *Journal of the American Academy of Child Psychiatry*, vol. 6, no. 1, pp. 131–165, 1967.
- [4] E. L. Keyes Jr., "Phimosis-paraphimosis-tumours of the penis," in *Urology*, p. 649, D. Appleton & Company, New York, NY, USA, 1919.
- [5] B. S. Crawford, "Buried penis," *British Journal of Plastic Surgery*, vol. 30, no. 1, pp. 96–99, 1977.
- [6] J. H. Johnston, "Other penile abnormalities," in *Surgical Pediatric Urology*, E. B. Eckstein, R. Hohenfellner, and D. I. Williams, Eds., p. 406, WB Saunders, Philadelphia, Pa, USA, 1977.
- [7] M. U. Shenoy, J. Srinivasan, L. Sully, and C. H. Rance, "Buried penis: surgical correction using liposuction and realignment of skin," *BJU International*, vol. 86, no. 4, pp. 527–530, 2000.
- [8] C. E. Horton, B. Vorstman, D. Teasley, and B. Winslow, "Hidden penis release: adjunctive suprapubic lipectomy," *Annals of Plastic Surgery*, vol. 19, no. 2, pp. 131–134, 1987.
- [9] M. D. Gillett, S. R. Rathbun, D. A. Husmann, R. P. Clay, and S. A. Kramer, "Split-thickness skin graft for the management of concealed penis," *Journal of Urology*, vol. 173, no. 2, pp. 579–582, 2005.
- [10] J. S. Elder, "Circumcision, urethral prolapsed, penile torsion, buried penis, webbed penis and megalourethra," in *Operative Pediatric Urology*, J. D. Frank, J. P. Gearheart, and H. M. Snyder III, Eds., pp. 273–285, Churchill Livingstone, London, UK, 2nd edition, 2001.
- [11] A. Borsellino, A. Spagnoli, S. Vallasciani, L. Martini, and F. Ferro, "Surgical approach to concealed penis: technical refinements and outcome," *Urology*, vol. 69, no. 6, pp. 1195–1198, 2007.
- [12] A. J. Casale, S. D. Beck, M. P. Cain, M. C. Adams, and R. C. Rink, "Concealed penis in childhood: a spectrum of etiology and treatment," *Journal of Urology*, vol. 162, no. 3, pp. 1165–1168, 1999.
- [13] B. K. Masih and S. A. Brosman, "Webbed penis," *Journal of Urology*, vol. 111, no. 5, pp. 690–692, 1974.
- [14] A. D. Perlmutter and J. W. Chamberlain, "Webbed penis without chordee," *Journal of Urology*, vol. 107, no. 2, pp. 320–321, 1972.
- [15] J. F. Redman, "A technique for the correction of penoscrotal fusion," *Journal of Urology*, vol. 133, no. 3, pp. 432–433, 1985.
- [16] S. R. Shapiro, "Surgical treatment of the "buried" penis," *Urology*, vol. 30, no. 6, pp. 554–559, 1987.
- [17] J. Radhakrishnan, A. Razzaq, and K. Manickam, "Concealed penis," *Pediatric Surgery International*, vol. 18, no. 8, pp. 668–672, 2002.
- [18] H. J. Blalock, V. Vemulakonda, M. L. Ritchey, and M. Ribbeck, "Outpatient management of phimosis following newborn circumcision," *Journal of Urology*, vol. 169, no. 6, pp. 2332–2334, 2003.
- [19] J. S. Elder, "Abnormalities of the genitalia in boys and their surgical management," in *Campbell-Walsh Urology*, A. J. Wein, L. R. Kavoussi, A. C. Novick, A. W. Partin, and C. A. Peters, Eds., pp. 3745–3760, Saunders, Philadelphia, Pa, USA, 9th edition, 2007.
- [20] J. S. Palmer, J. S. Elder, and L. S. Palmer, "The use of betamethasone to manage the trapped penis following neonatal circumcision," *Journal of Urology*, vol. 174, no. 4, pp. 1577–1578, 2005.
- [21] J. Radhakrishnan and H. M. Reyes, "Penoplasty for buried penis secondary to "radical" circumcision," *Journal of Pediatric Surgery*, vol. 19, no. 6, pp. 629–631, 1984.

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