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Buried Penis in Infants and Children, Management and Outcome

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ABSTRACT

Objective: To describe surgical approach and its outcome in patients with buried penis (BP).

Methodology: This retrospective descriptive study was Conducted at department of pediatric and neonatal surgery Bahawal Victoria Hospital from September 2017 to September 2022. Twenty-three patients with buried penis having age 8 months to 13 years were studied and were reviewed for results. All the patients underwent degloving, excision of dysdenetic dartos fascia and phallopexy at dorsal 2 and 10 o clock and ventral sites 4 and 8 o clock. patients with hypospadias /epispadias were excluded from study.

Results: out of 23 patients, 4 patients were of trapped penis. Satisfactory results were found in all grade 1 patients, and trapped penis patients whereas patients with excess pre pubic fat redo surgery was performed in 1, hematma developed in 1 pt which was dealt with by drainage.

Conclusion: BP is characterised by dysgenetic dartos fascia, short penile length, abnormal suspensory/fundiform ligament and sometimes excess pre pubic fat. So penile degloving and phalopexy(penile tunica albuginea fixation to penile skin)has a good success rate to avoid retraction of penis and minimal post op complications. A long term follow up and multicentre studies are required to generally recommend this technique.

Key words; buried penis, retained penis, fundiform ligament, pre pubic fat, phallopexy.

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Introduction

Buried penis(BP) , an uncommon congenital condition of the penis , in which the penile skin is short and the penis lies buried underneath the integument of abdomen, scrotum / thigh.[1] BP and related conditions have been classified into several categories but none is accepted as universal.[2] Miguel C D, et al described this condition as concealed penis , trapped penis, buried penis according to the etiology.[3] Hadidi AT classified BP into 3 grades according to the etiology, Grade 1 An abnormal Long inner prepuce (LIP),Grade 2. LIP and abnormal attachment of the fundiform/ suspensory ligaments into the mid penile shaft. Grade 3 There were LIP, abnormal attachment of the ligaments and excess pre pubic fat . Many etiologies have been associated in BP which play their role in characteristic appearance of the penis and these include inelastic dortos fascia, loss of attachment of skin to underlying fascia, surplus fat at suprapubic area.[4] Many authors agree with the etiology of abnormal bands causing tethering of the dartos fascia and Buck's fascia leading to BP.[5] Absent attachment of skin to penile shaft has been implicated, as well as paucity of shaft skin, excessive prepubic fat and abnormal displacement of penis in ventral direction are considered as etiological factors.[2,5] However this should not be mixed with "micropenis" which is a normally developed penis but the size of penis is less than 2 standard deviation below the mean size of the stretched Length of penis.[3] The children presents usually by parental concerns about the size of penis and associated urinary problems like retention of urine, soiling during urination, recurrent urinary tract infections.[6] Early diagnosis and management of these symptoms are essential to reconstruct the penis which should appear and function normal.

The aim of surgical management is to reconstruct a penis which functionally and aesthetically appears normal. Many authors have explained several surgical procedures having variable long term results, but there is no standard reference for treatment. The main principle is to deglove the penis, anchor the buck's fascia to the pubis and repair the prepuce.[7] We present our study in which after proximal penis is fixed to pre pubic fascia, penile base (tunica albuginea) is sutured to the penile skin at two point dorsally and ventrally.

Methodology

After taking approval from ethical review committee study was conducted at department of pediatric and neonatal surgery from September 2017 to September 2022. patients needing correction of the short appearing penis which was hidden under the short penile skin /excess pre pubic fat or was circumcised and after that penis was trapped in skin, were included in the study. Patients having other concomitant genital anomalies like epispadias, hypospadias and micropenis were excluded from the study. Age range was 10-month to 13 years. Consent for surgical procedure was taken from the parents of the children undergoing surgery. Follow up of these patients was for up to 1 year. During that period, the physical appearance and the length of penis was observed. Complications like wound infection, voiding difficulty, erection and any trapping of the penis in scarred tissue was noted. All data were presented as means with standard deviations. Statistical analysis was carried out with the *t* test in the SPSS statistical software package. A *P* value of less than .05 was considered as statistically significant.

The procedure is done under G A. after aseptic measures the area is draped, penile block with 1 to 2 ml of lidocaine with adrenaline (1:200,000) injection is used at the base of penis. R on the dorsal surface it is injected at the level of pubic symphysis and on the ventral surface at penoscrotal junction. The foreskin is retracted and a stay suture is placed in the glans for traction. A circumferential subcoronal incision is marked with marker leaving a 3 mm mucosal margin and is extended downward ventrally in the median raphe. The mucosa then is divided and skin incision as marked is divided up to the penile base. As the incision is midline it does not hamper the vascularity or lymphatics of the penile shaft. Over the distal cut edge 3 traction sutures of silk 5/0 are applied and the preputial skin is unfurled by sharp dissection. The degloving of the penis is done up to penile base(pubic bone) dorsally and penile scrotal junction ventrally with blunt and sharp dissection of the dysgenetic dortos fascia between skin and penis with care of the urethra on the ventral side and neurovascular entry at base of penis dorsally. Sometimes after degloving the penis still retracts under the pubis then the suspensory ligaments are divided in midline with care of neurovascular bundle which enter the penile corpora at 2 and 10 o'clock position. If there is excess prepubic fat (grade 3 BP), the excess fat is excised by retracting the penile shaft caudally and the skin flap cranially. Hemostasis is secured by diathermy.

Pre pubic fascia is sutured with proximal tunica albuginea with 4-0 vicryl at 12 o' clock, 2 and 10 o'clock positions just distal to the split of the corpus cavernosum. Dartos fascia dissection and these 3 sutures are necessary to lengthen the penis and helps shaft skin to adhere to the penis. Now the skin is sutured at the base of penis with 5-0 vicryl. The suture is passed through skin crease at level of base of penis then through tunica albuginea at penile shaft base and then out through the skin leaving a abridge of skin about 2 mm between entry and exit site. The placement of these suture is special i.e. On the dorsal surface at 2 and 10 o'clock position with care of neurovascular and ventrally at 4, and 8 o'clock position with care of urethra in midline. All these sutures are tied over the skin. The ventral median raphe incision is closed with 5-0 vicryl. each suture takes a small bite of tunica albuginea to tether the skin to penile shaft. Any redundant skin is excised. Penile shaft skin is sutured to circumcoronal skin. A light compression dressing is applied. occasionally a catheter is placed for 24 hours.

Results

All patients had a good to excellent outcome. Mean age at presentation was 5.3 years (range 1.2 to 11.7 year). the dartos fascia was loosely attached to penile shaft in all cases. Sixteen patients were of grade 1 BP out of which 5 were retained penis after circumcision, four grade 2 and 3 of grade 3 BP. (Table 1) The mean penile shaft exposed length before and after surgery was 2.63± 0.59 cm and 4.33 ± 0.51 cm, respectively ($P < 0.05$). The inner preputial skin length was 2.8 cm (range 2.3 to 4.2 cm). long inner prepuce (LIP) was present in every case. the excision of inner prepuce and fixation of skin to tunica albuginea was done in every patient. on follow up 1 patient developed hematoma which was dealt with hematoma drainage by opening few stiches and re stitching of the wound. On continued follow up1 patients developed recurrence from

grade 3. (Table II) all the patients were followed up for 1 to 3 years.

Table I: Distribution of patients. According to grade of BP. (N 23)

Grade of BP	No of patients	%
1	16 (retained penis 5)	70
2	4	17
3	3	13
Total	23	100

Table II: Post op. Complications. (n 23)

complication	No. of patients	%age
Recurrence	1	4.3
Hematoma	1	4.3
P value < 0 .05		

Discussion

BP is a condition in which a normal-sized penis is not visualized because it is hidden by the abnormal attachment of penile skin, subcutaneous tissue, or prepubic fat. This lack of visibility causes parents to worry and be concerned about their child's future sexual life. Another reason for concern is poor cosmesis, voiding difficulty, and repeated urinary tract infections.[8] That's why timely management is necessary to avoid such complications.

Many techniques have been described for the correction of BP. In our study, we released the dysgenetic dartos fascia, performed penile fixation with the prepubic fascia, and fixed the skin to the penile base dorsally and ventrally at two points. The dissection of the dysgenetic dartos fascia has been done in many previous studies.[3,9] Overall, the results of our study showed a success rate of 96.7%. Penile fixation for the management of BP has been described with good results in the literature by many authors, as stated by Ci Zhang et al.[10] A study conducted by Elrouby A in Egypt, who performed phallopexy, showed a 96.1% success rate.[5] Another study conducted by Aydin et al., who performed phallopexy at the 5 and 7 o'clock positions instead of the 4 and 8 o'clock positions, also reported good results.[11]

The recurrence rate in our study was 4.3%, which was comparable to the studies conducted by Elrouby A and Aydin et al. Alter et al.[5,11] described the importance of phallopexy in his study, mentioning that inadequate fixation of the penile skin to Buck's fascia is the main reason for BP, which leads to the proximal telescoping of the corporal bodies under the pubis and scrotum. Hence, the major step in the management is phallopexy.[5] Another study conducted by Joseph also explained that complete penile degloving and excision of abnormally tethered dartos fascia are the main steps, with phallopexy necessary for good results.[12]

Conclusion

BP is characterized by dysgenetic dartos fascia, short penile length, abnormal suspensory/fundiform ligament and sometimes excess pre pubic fat. So penile degloving and phalopexy (penile tunica albuginea fixation to penile skin)has a good success rate to avoid retraction of penis and minimal post op complications. A long term follow up and multicentre studies are required to generally recommend this technique

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