

# Early Surgical Repair of Congenital Completely Buried Penis in Children – Report of 103 Cases and Review of Literature

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## Abstract

**Objectives:** The aim of this study is to present single surgeon's experience in the early surgical repair of Congenital Completely Buried Penis (CCBP) in a series of 103 boys and review of literature.

**Methods:** This is a retrospective study of management of patients of CCBP at the median age of 28 months between May, 2012 and March, 2019. All the children were followed up for 6 months. One hundred children were between the age of 1 to 5 years and 3 children were from the age of 6 to 11 years. All the patients underwent examination to exclude associated anomalies. All children with Congenital Partially Buried Penis (CPBP) and all obese children with Body Mass Index (*BMI*) more than 85<sup>th</sup> percentile were excluded for surgical correction. The repair was done using simple technique of penile degloving, release of abnormal Dartos bands and fixation of skin dermis with Buck's fascia at 3 and 9 o'clock positions. At completion of surgery, technique of compression dressing with transparent Tegaderm<sup>TM</sup> was used for 72 hours in all patients.

**Results:** All of 103 patients had excellent cosmetic and functional outcome without any complications. Two patients had developed mild hematoma which resolved spontaneously. All parents were pleased with immediate results.

**Conclusion:** Early surgical correction of CCBP by technique of penile degloving, release of abnormal Dartos bands and fixation of skin dermis with Buck's fascia at 3 and 9 o'clock positions is simple, safe and effective. Compression dressing with transparent Tegaderm<sup>TM</sup> prevents complications of hematoma formation and wound infection.

## Introduction

Buried penis in children is a congenital anomaly characterized by a normal sized penis which is retracted within pre pubic tissue [1–3]. This condition is often due to mal-development of penile shaft skin. The penis lacks appropriate sheath of skin with abnormal lateral Dartos bands causing retraction below the skin [3]. It is often a cause of great concern to the parents. This condition was first described by Kayes in 1919 [1,4]. There are two types of congenital buried penis, Congenital Completely Buried (CCBP) and Congenital Partially Buried Penis (CPBP). It is widely regarded as a condition which is difficult to manage. In partial type the proximal half of the penile shaft is buried in pre-pubic tissue. In the complete type, the phallus is completely invisible [5,6]. Buried penis was first classified by Crawford into partial and complete types in 1977 [3–5]. The CPBP usually resolves spontaneously

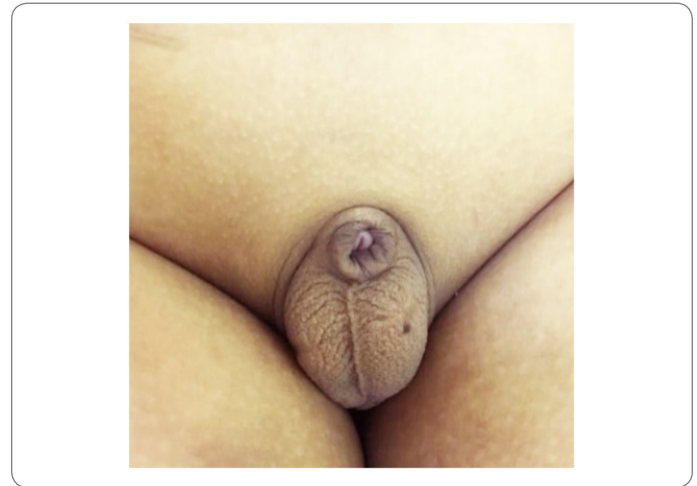
and needs delayed circumcision usually at the age of 2 years for better cosmetic results [6]. The CCBP in children is an important clinical entity as it does not resolve spontaneously with age. CCBP needs early surgical correction in children [7–9]. The patients with obesity having Body Mass Index (*BMI*) more than 85<sup>th</sup> percentile or those patients having syndromic features need dietary intervention and endocrine evaluation [7]. The CCBP may lead to many problems including obstruction of urinary stream, poor hygiene, soft tissue infection, phimosis, poor cosmeses, difficult accessibility and parental anxiety [10–12]. The etiology of CCBP is not clear. Most widely accepted hypothesis for CCBP is that the abnormal lateral Dartos bands retract the penile shaft [13–16]. The commonly performed surgical correction is based on the principle of complete degloving of penile skin along Buck's fascia to release the lateral Dartos bands which cause tethering of penis [17–20]. There is no unanimous consensus about "gold standard" surgical correction of CCBP. Different surgical techniques have been described to correct the condition [21]. We present our experience with commonly used surgical technique for correction of CCBP based on anatomical findings, with satisfactory cosmetic and functional outcome. Our mean operative duration was 50 (40–60) minutes. We used technique of compression dressing with transparent Tegaderm™ and kept it for 72 hours to avoid hematoma formation and prevention of infection due to exposure of wound to urine and stool. The patients were discharged home after removing the dressing on 3<sup>rd</sup> postoperative day and were advised daily sitz bath for 5 days at home. The follow-up appointment in outpatient clinic was given after one week and then after six months.

### Material and Methods

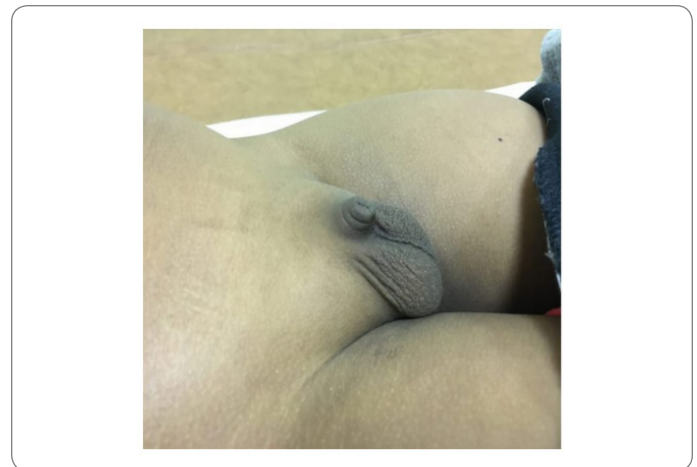
This is a retrospective study of management of 103 consecutive patients with median age of 28 months who underwent repair between May, 2012 and March, 2019 in a single institution by single pediatric surgeon. Indication of surgery was Congenital Completely Buried Penis (CCBP) and parent's concern. All the patients were referred from circumcision clinic and primary health centers. The children were otherwise healthy, non-obese with *BMI* ranging from 5<sup>th</sup> percentile to below 85<sup>th</sup> percentile. The patients did not have any syndromic features. All patients underwent complete local examination to exclude any associated anomalies such as hypospadias, chordee and severe torsion. All the obese boys with *BMI* more than 85<sup>th</sup> percentile were excluded for surgical correction. Congenital Partially Buried Penis (CPBP) and patients with syndromic features were also excluded for surgical treatment. The relevant investigations were within normal range. One hundred children were between the ages of 1 year to 5 years, 3 children were from age 6 years to 11 years as mentioned in (Table 1). All the children were given appointments for elective admission, through the out-patient clinic, one day prior to surgery (Figures 1–3). The repair was done under general anesthesia.

**Table 1:** One hundred children were between the ages of 1 year to 5 years, 3 children were from age 6 years to 11 years.

Age	Number of Patients
1-year-old	21
2-year-old	47
3-year-old	14
4-year-old	10
5-year-old	8
6-year to 11-year-old	3
Total	103



**Figure 1:** Congenital completely buried penis.

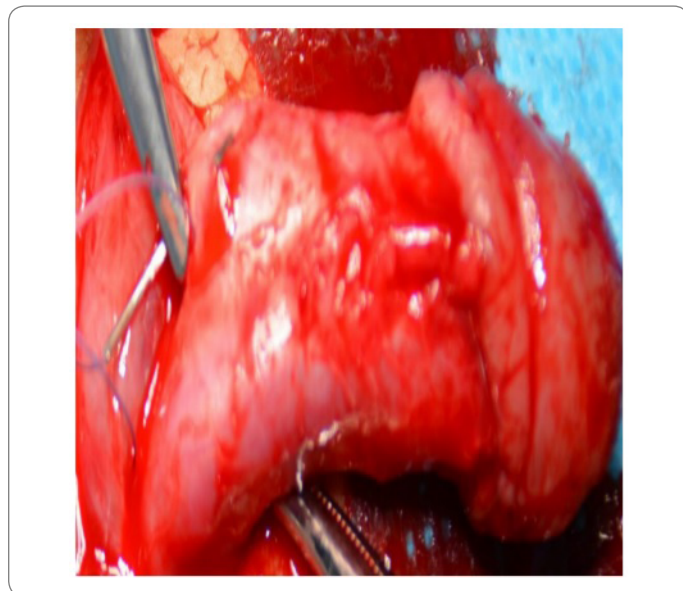


**Figure 2:** Congenital completely buried penis.

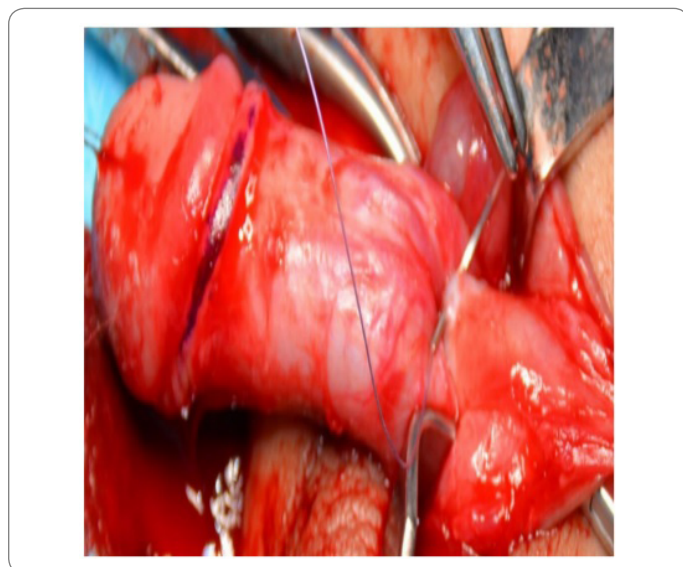


**Figure 3:** Congenital completely buried penis.

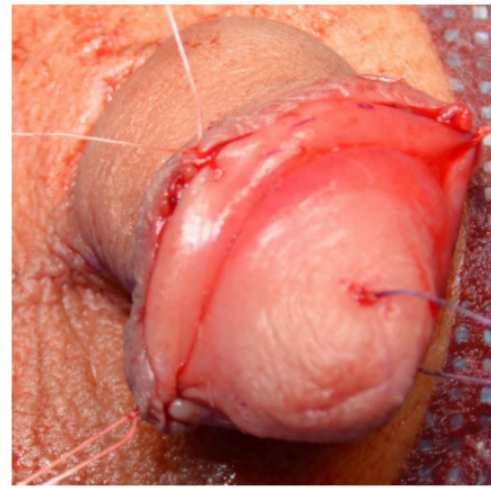
**Surgical technique:** In this series we used commonly practiced surgical technique for correction of CCBP in all boys. A stay suture with 4/0 vicryl is placed through the glans to give control and traction of the penis. Skin marking is done at the base of the penis at 3 and 9 o'clock positions and at the site of circumferential incision leaving 2 mm of Firlit collar distally. Circumferential incision is given at the previously marked site. Complete degloving of penile shaft skin is done in the sub Dartos plane to preserve dorsal neurovascular bundle. The abnormal lateral Dartos bands are sharply released. The penis is degloved to its base dorsally and to peno-scrotal junction ventrally. The author invariably uses technique of two points fixation by fixing dermis of penile shaft skin at its base with Buck's fascia at 3 and 9 o'clock positions by vertical mattress sutures with 4/0 vicryl. The extra outer prepuceal skin is marked and removed for approximation with distal Firlit collar of inner prepuce using 5/0 vicryl (Figures 4–6).



**Figure 4:** Fixation of dermis with Buck's fascia at the base of degloved penis at 3 o'clock Position.



**Figure 5:** Fixation of dermis with Buck's fascia at the base of degloved penis at 9 o'clock Position.



**Figure 6:** Approximation of shaft skin with Firlit collar after removing extra prepuceal skin.

We used technique of compression dressing with transparent Tegaderm™ in all patients at completion of surgery for 72 hours to avoid wound infection and hematoma formation (Figure 7).



**Figure 7:** Compression dressing with transparent Tegaderm™ at completion of surgery for 72 hours.

In all patients complete penile shaft coverage with skin was accomplished. We avoided circumferential incision at the base of penis which leads to postoperative lymphedema. We avoided vertical incision in median raphe of shaft skin. We avoided tacking of penis base with pre-pubic / surrounding tissue. In our patients stretched penile length ranged from 2.3 cm to 4.2 cm (mean 3.1 cm). The glans length from the tip dorsally to the corona ranged from 0.9 cm to 1.6 cm. (mean 1.2 cm) All patients received perioperative IV antibiotic and analgesia for 72 hours. The patients were discharged home on 3<sup>rd</sup> postoperative day with advice for sitz bath twice daily for 5 days. All patients were given appointments in pediatric surgical outpatient clinic after one week (Figure 8). The children remained under mean follow up for 6 months.



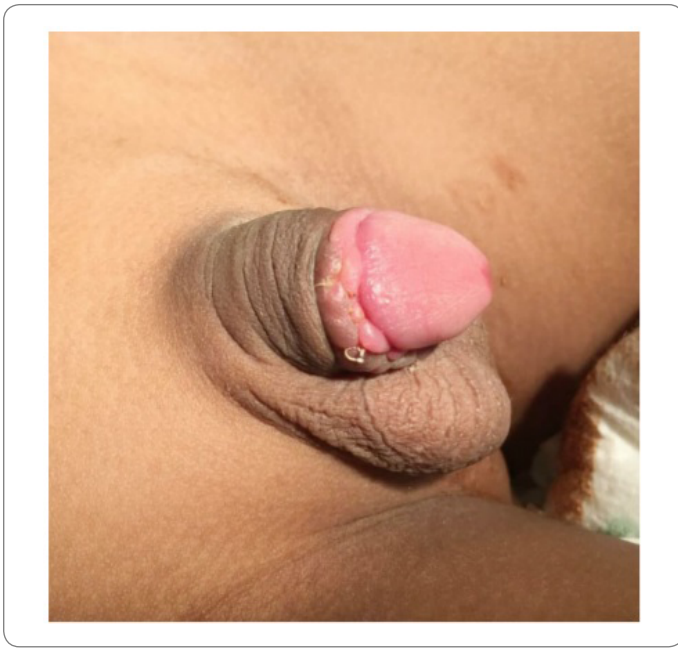


Figure 8: At follow up after 1 week.

## Results

The age of patients at operation varied from 1 year to 11 years. Median age was 28 months. All the patients had excellent outcome with uniformly improved visualization of penile shaft immediately after surgery. There were no per-operative or post-operative complications. Two patients had developed mild hematoma due to displacement of transparent Tegaderm™ transparent dressing which resolved spontaneously within few days. No revision of repair was needed in any patient. All parents were pleased with the outcome immediately after surgery and at review on follow up.

## Discussion

Congenital Completely Buried Penis (CCBP) is a condition characterized by a normal sized penis hidden below the surface of the skin due to the lack of fixation of penile shaft skin. It is retracted by abnormal Dartos bands [1–3]. This condition can lead to obstruction of urinary stream, poor hygiene, soft tissue infection and phimosis [12,13,21]. The treatment should aim to restore an aesthetic and functional penis. Literature shows wide variety of approaches to correct this condition [3,14,22]. Some authors do not recommend fixation sutures between dermis of penile shaft skin with Buck's fascia and depend upon natural fixation of skin with penis by healing [4,23]. However fixation of penile shaft skin with Buck's fascia is widely practiced [1,2,21,24]. Borsellino emphasizes that the key to correction is the release of abnormal Dartos bands and fixation of penile skin to Buck's fascia [18–20,25–27]. In a study published in the Journal of Pediatric Surgery 1995, the technique for repair of buried penis is based on the recognition that the root of the penis is displaced below its normal position resulting into enveloping of penile shaft in the surrounding fat and Dartos tissue. The procedure described for correction was dissection at the root of the penis carried out deep down to the corporal bodies. All fibrotic tissue that binds the penile

shaft is excised. The lengthened penile shaft is anchored at its base by suturing the surrounding tissue with tunica. This technique has been applied in 22 patients ranging in age from 5 months to 11 years. Apart from two patients with technical problems all other patients had satisfactory correction with good functional results [4,14,21,24,26–28]. In another technique applied in a series of 50 cases published in the Journal of Pediatric surgery in 2001 the authors avoided a circumferential incision at the base of the penis, thus decreasing post-operative edema [6,16,17,20,22,27–28]. The authors used the technique of vertical mattress sutures at the base of the penile shaft skin to the underlying corpora [6,17,20,29]. In another study published in Pediatric Surgery International in 2009 reported 100 cases. The technique used was based on a vertical incision in the median raphe, complete degloving of penis and tacking its base to the prepubic fascia. Shaft skin is attached to the base of the penis with vertical mattress sutures [6,12,14,29]. The number of fixation sutures varies among the clinicians [6,9,23]. In our series degloving of penile shaft skin was achieved through distal circumferential incision. Thus dissection is done from distal to proximal base. The lateral Dartos bands were released sharply. This enables clear and safe visualization of dissection plane protecting neurovascular structures. We used simple two point fixation by vertical mattress sutures between the dermis of penile shaft skin at the base with Buck's fascia at 3 and 9 o'clock positions to prevent retraction of penis. We used technique of compression dressing at completion of surgery with transparent Tegaderm™ for 72 hours in all our patients to avoid wound infection and hematoma formation.

## Conclusion

Congenital Completely Buried Penis (CCBP) is an important surgical entity in children and needs proper management for good cosmetic and functional outcome. Although there are different operative procedures described in the literature, in this series we found that early surgical correction of CCBP by simple technique of degloving penile shaft skin and release of abnormal lateral Dartos bands followed by two point fixation at 3 and 9 o'clock positions of the dermis of penile shaft skin at its base with Buck's fascia is simple, safe and effective. At completion of surgery, use of technique of compression dressing with transparent Tegaderm™ for 72 hours is useful to avoid wound infection and hematoma formation. No additional procedures are required to ensure successful cosmetic and functional outcome. This technique is already being widely practiced with excellent results. Patients with CPBP need only delayed circumcision. The obese or syndromic patients need dietary management and further evaluation.

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