

## Male Epispadias Repair Surgical and Functional Results with Modified Cantwell-Ransley Procedure / Case Series Study

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### **Abstract**

**Background:** epispadias is an unusual congenital malformation of the penis and is often part of the condition termed epispadias exstrophy complex. There are different surgical techniques for repair of epispadias.

**Objective:** evaluation of our experience in male epispadias repair by modified Cantwell - Ransley technique.

**Patients and Methods:** Twenty-four male patients with epispadias (eighteen cases with isolated epispadias and six cases associated with bladder Exstrophy) had undergone repair by modified Cantwell-Ransley technique in Al-Sader Medical City, Najaf. The patients age range from 1 year to 26 years with mean age 8.6 years. Primary repair was achieved in 20 patients and secondary repair was accomplished after prior unsuccessful closure in four patients.

**Results:** The patients were followed up at 3, 6 and 12 months postoperatively. No patient develops major complication like urethrocutaneous fistula or urethral stricture. One patient develops minor skin dehiscence.

**Conclusion:** Epispadias repair by modified Cantwell-Ransley technique have excellent functional and cosmetic result.

**Key words:** Cantwell-Ransley technique, epispadias repair.

**Introduction:** Isolated male epispadias is a rare anomaly, with a reported incidence of 1 in 117,000 males. (1)\_\_\_Epispadias compromise a defect in the dorsal wall of the urethra. The deranged meatus may be found on the glans, on the penile shaft, or in the

penopubic region. All the forms of epispadias are usually associated with variable degrees of a dorsal chordae. Associated anomalies in patients with epispadias are disfigured external genitalia, pubic symphysis diastasis, and

urinary incontinence. (1) The role of surgical correction is the placement of the meatus in its ordinary anatomical position and the creation of proper functional genitalia with best cosmetic outcomes. Many procedures have been described over the years; the techniques of Ransley [2], Mitchell [3] and Kelly [4] are probably the most commonly employed worldwide in specialized centers. These procedures comprise the major principles of epispadias surgery but differ in the extent of urethral mobilization. (5). Cantwell first described mobilization and ventral movement of the urethra for epispadias repair at the turn of the twentieth century. Ransley subsequently successfully modified this technique. The modified Cantwell–Ransley repair has been widely used ever since. (6).

**Patients and Methods:** A retrospective qualitative study on a twenty-four male patients with epispadias (eighteen cases with isolated epispadias and six cases associated with bladder Exstrophy) treated by modified Cantwell-Ransley technique in Al-Sader Medical City, Najaf. During the period from April 2013 to April 2016. The patient's age was ranged from 1 year to 26 years with mean age 8.6 years. Primary repair was done in 20 patients and the secondary repair was achieved after prior unsuccessful closure in four patients.

**Preoperative:**

All patients have complete evaluation by physical examination, blood biochemistry,

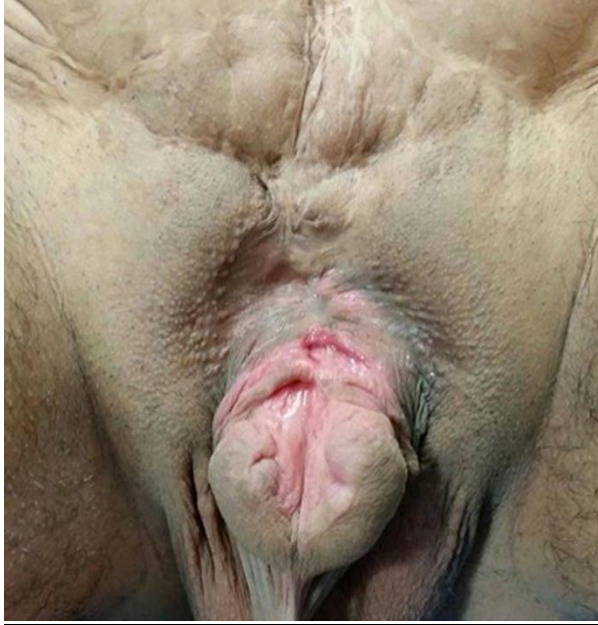
abdominal ultrasound, pelvic X-ray. Cystoscopy is mandatory in all case to assess urethral sphincter and bladder neck.

**Operative technique:**

1. Under anesthesia, supine position, insert suprapubic percutaneous catheter.
2. Place two traction sutures into each hemi glans
3. Make sub coronal a circumcising incision ventrally and outline the urethral plate dorsally. Extend the urethral plate incision proximally around the proximal urethral meatus.
4. Dissect the shaft skin off the ventral and lateral aspects of the corporeal bodies
5. Separate the corporeal bodies in the midline ventrally.
6. Dissect the urethral plate off the corporeal bodies while leaving intact the distal 1-cm attachment of the urethral mucosa to the glans. The urethral plate must be as thick as possible.
7. The urethral plate is tabularized and transferred ventrally.
8. Suture the corpora to each other dorsally.
9. Glanduloplasty is done over the urethra
10. Skin coverage of the penis.

**Postoperative:**

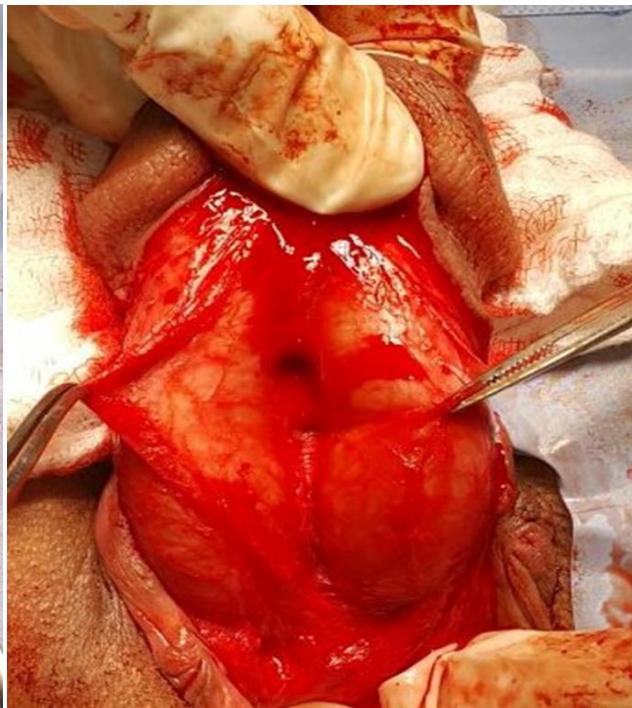
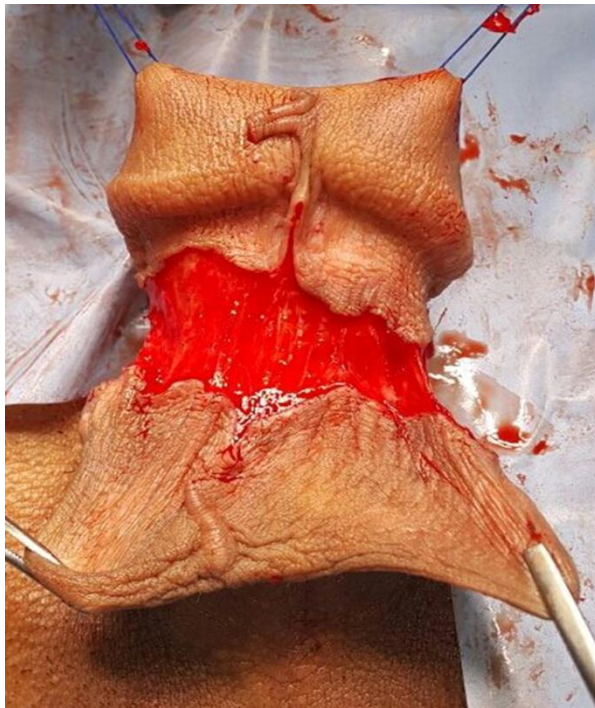
- A urethral stent is left in place for 2 to 3 weeks.
  - Antispasmodics medication to reduce bladder spasm.
  - Antibiotics to prevent infection.
- Consent was taken from patient to publish following pictures. (6)



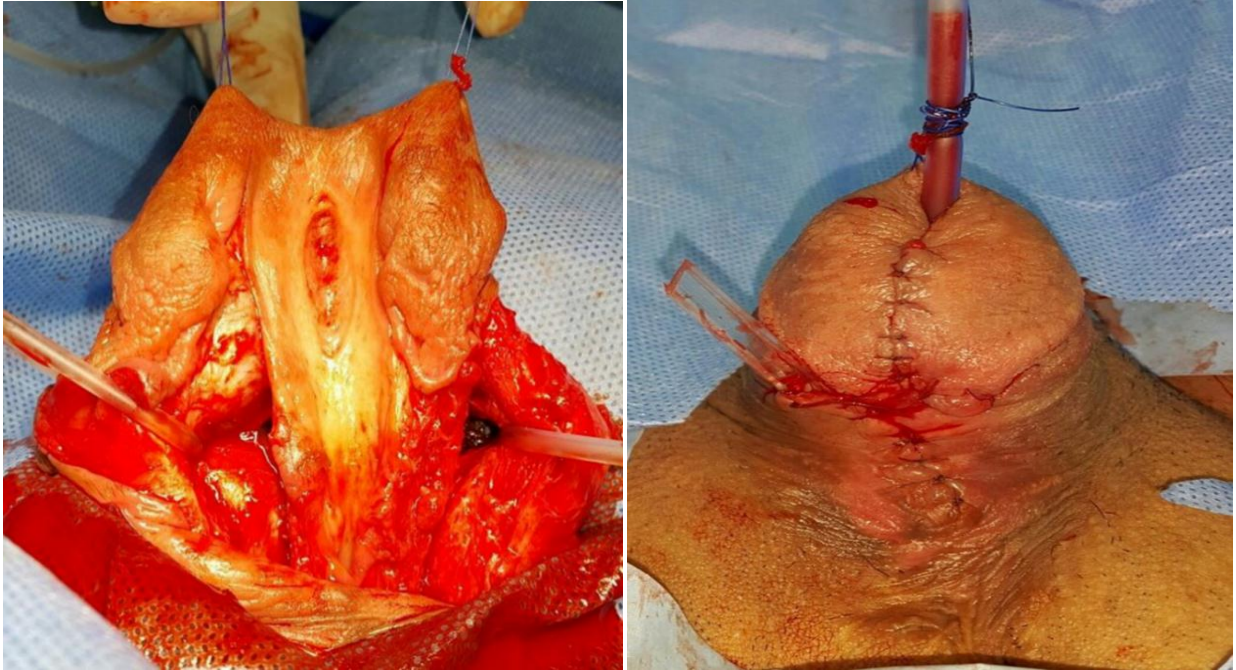
**Figure 1:** Before operation



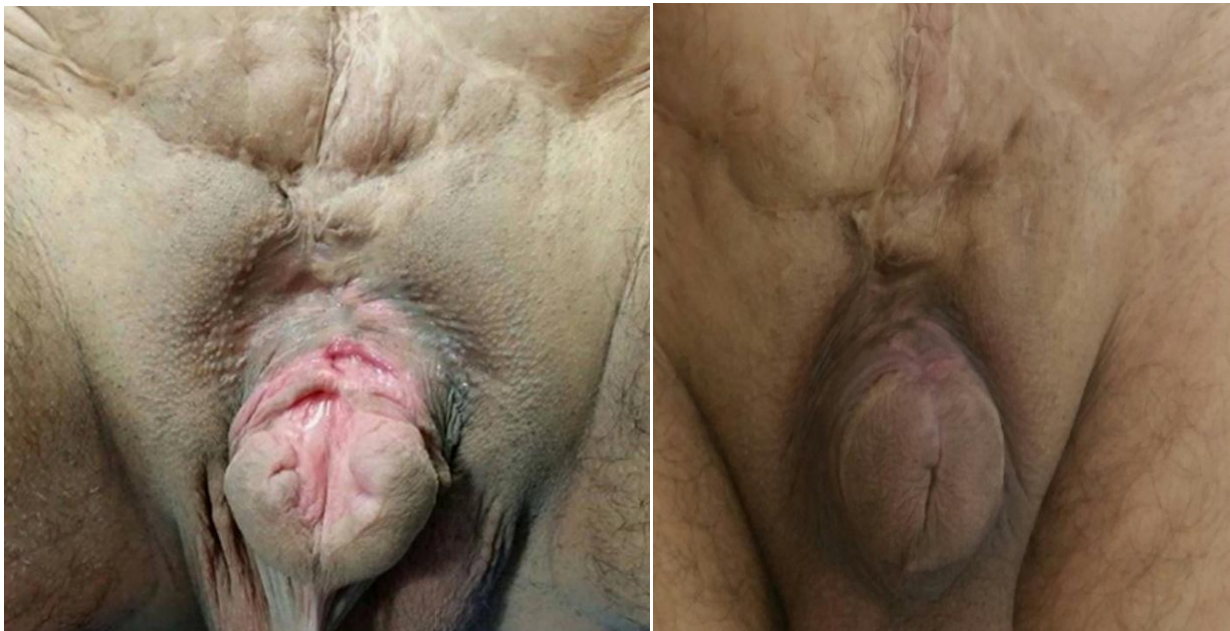
Urethral catheterizaion



**Figure 2:** Subcoronal a circumcising incision and separate the corporeal bodies in the midline ventrally.



**Figure 3:** Dissect the urethral plate off the corporeal bodies while leaving intact the distal 1-cm attachment of the urethral mucosa to the glans. The urethral plate is tabularized and transferred ventrally. Suture the corpora to each other dorsally. Glanduloplasty and skin coverage of the penis.



**Figure 4:** Before operation.

After operation.

**Results:** A total number of twenty-four male patients with epispadias were treated by modified Cantwell-Ransley technique in Al-Sader Medical City, Najaf. Eighteen cases (75%) with isolated epispadias and six cases (25%) associated with bladder Exstrophy. The patient's age was ranged from 1 year to 26 years with mean age 8.6 years (figure 5).

Primary repair was done in 20 patients (83.33%), and a secondary repair was achieved after failed primary closure in four patients (16.67%).

Postoperatively. No patient develops major complication like urethrocutaneous fistula, diverticulum, meatal stenosis or urethral stricture. Superficial wound infection was reported in two patients. One patient develops minor skin dehiscence.

The patients were regularly followed up at 3, 6 and 12 months. Follow up period shows that all patient were dry at day time, nine (37.5%) of them experienced occasional attaches of nocturnal enuresis and six patient (25%) suffer from grade one stress urinary incontinence. An excellent functional result of 100 % ( all patient) and cosmetic result of 95.8 % (23 patients) was achieved a straight erection was achieved in all patients.

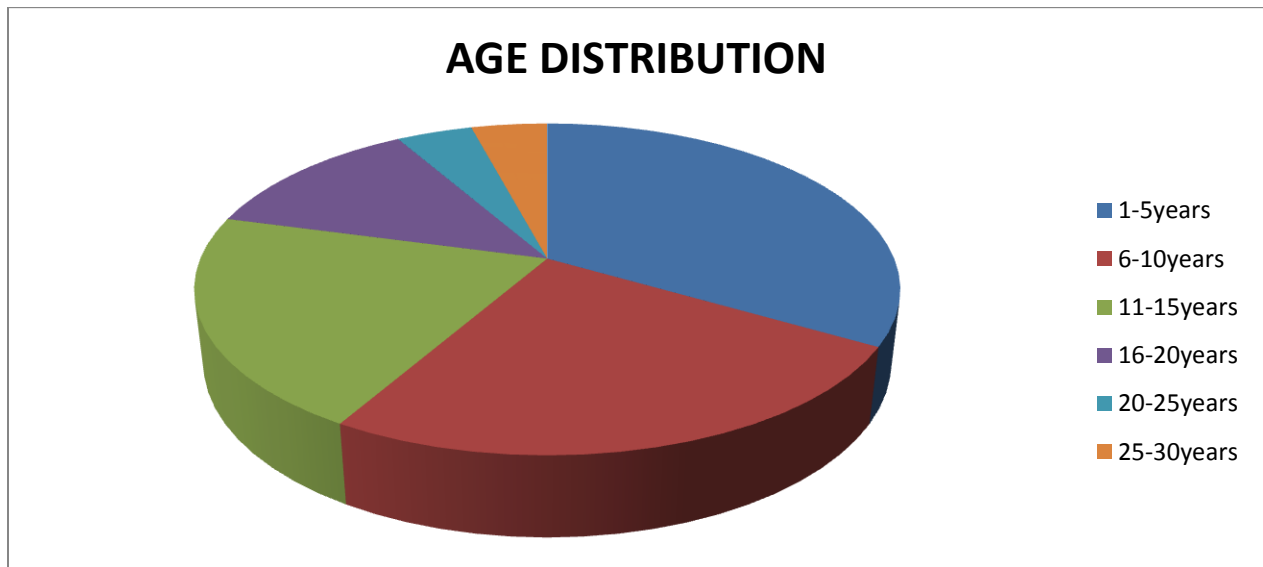


Figure (5) age distribution of patients treated by modified Cantwell-Ransley technique

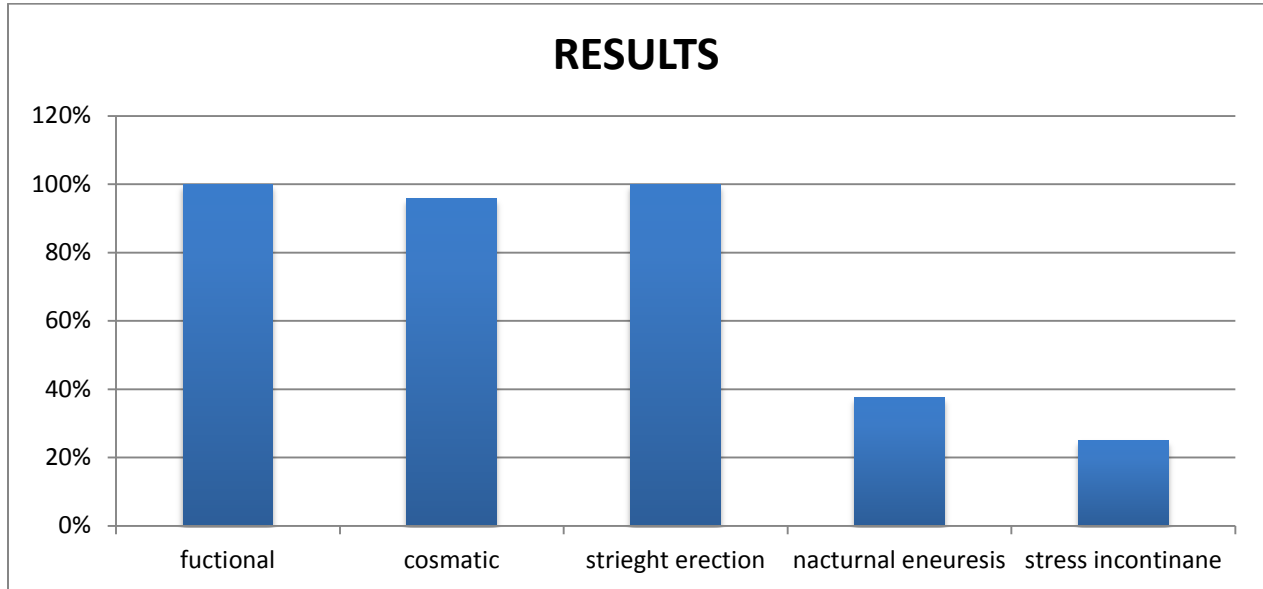


Figure (6) follow up result of patients treated by modified Cantwell-Ransley technique

**Discussion:** Isolated male epispadias is a very rare anomaly. Two different major reconstruction procedures, the Mitchell Bagli repair and the modified Cantwell-Ransley, are frequently applied in specialized centers. (5).Lottmann HB et al found that The Cantwell-Ransley technique of epispadias repair allows successful reconstruction in most patients. However, some of the postoperative complications are serious, and are more related to previous procedures that usually compromise the urethral plate blood supply than the Cantwell-Ransley technique. (7)Gearhart JP et al found the modified Cantwell-Ransley epispadias repair produces an excellent functional and cosmetic result. (8). The most frequent complications that usually following the modified Cantwell-Ransley

procedure are urethrocutaneous fistulas and urethral strictures. Ransley and colleagues had been reported a rate of urethral stricture of 5.3 % and fistula rate of about 4% (5). Surer and associates evaluated their patients 3 months following operation and they found that the rate of fistula was 19% and rate of stricture was 10% (9), although our series was small but no patients developed urethrocutaneous fistula or stricture.

Baird et al., assessed and updated their long-term results of applying this technique on 129 boys (ninety-seven of them had classical bladder exstrophy and thirty-two had complete epispadias). Urethrocutaneous fistulae were noted in 16% and 33% after primary and

repeat urethral repair, respectively.  
(10).

**Conclusion:** Epispadias repair by modified Cantwell-Ransley technique have excellent functional and cosmetic result.

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## إصلاح المبال العلوي للذكور: النتائج الجراحية والوظيفية عن طريق تعديل تقنية كانتويل - رانسلي

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### الخلاصة

**الخلفية:** المبال العلوي هو تشوه خلقي نادر من القضيب وغالبا ما يكون جزءا من الشرط الذي يطلق عليه إكشاف المثاني المعقدة. هناك تقنيات جراحية مختلفة لإصلاح المبال العلوي.

**الهدف:** تقييم تجربتنا في إصلاح المبال العلوي للذكور عن طريق تعديل تقنية كانتويل - رانسلي.

**المرضى والطرق:** تم إصلاح اثني عشر مريضا مصابا بالصلصاد (تسع حالات مع المبال العلوي معزولة وثلاث حالات مرتبطة بـ إكشاف المثاني المعقدة من خلال تقنية كانتويل-رانسولي المعدلة في مدينة الصدر الطبية في النجف. تتراوح أعمار المرضى من سنة إلى ٢٦ سنة مع متوسط العمر ٨.٦ سنة. تم إجراء الإصلاح الأساسي في ١٠ مرضى وتم إجراء الإصلاح الثانوية بعد إغلاق غير ناجحة سابقة في اثنين من المرضى.

**النتائج:** تم اتباع المرضى في ٣ و ٦ و ١٢ شهرا بعد العمل الجراحي. لم يصاب أي مريض بمضاعفات كبيرة مثل ناسور مجرى البول أو تضيق مجرى البول. مريض واحد تطور عنده فتح الجلد الثانوي.

**الخلاصة:** إن إصلاح المبال العلوي من خلال تقنية كانتويل-رانسولي المعدلة لها نتائج وظيفية وتجميلية ممتازة.

**الكلمات الرئيسية:** تقنية كانتويل-رانسولي ، إصلاح المبال العلوي.