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DUCKETT URETHROPLASTY;
TECHNIQUE IN THE MANAGEMENT OF DISTAL HYPOSPADIAS

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ABSTRACT.. **Objective.** To assess the efficacy, safety and complication of Duckett urethroplasty technique in the management of distal hypospadias. **Design:** Prospective study. **Setting:** At Urology Department, Services Hospital Lahore and larkana. **Period:** From 1998 to 2007. **Material and Methods.** Fifty patients of distal hypospadias were selected from the Urology Department,of services hospital lahore and larkana for duckett urethroplasty technique. **Results:** Age of the patients ranged from 5 to 22 years. The mean age was 10 years. forty (80%) patients belonged to urban areas while 10(20%) were of rural areas.All the patients presented with dystopia of external urethral meatus and chordee (ventral curvature). 25 (50%) presented wih misdirected stream, spraying of urine 3(5%) and narrow stream 3(5%). The subcoronal type of distal hypospadias was commonly seen in our study. Forty (80%) patients had subcoronal and 10 (20%) distal penile urethral opening. All the patients were had distal type of hypospadias associated with chordee. Following duckett technique 32(64%) patients had good result and 10(20%) patients have fair result while 8(16%) were decleared as a failed cases. **Conclusion.** There is still no operative procedure,which can be labelled as ideal operation for hypospadias.however duckett technique have lower success rate but statistically insignificant as compared to other procedures.

Key words: Distal hypospadias, Duckett Technique

INTRODUCTION

Hypospadias was first described by Galen(130-199AD) and hypospadias surgery was first documented by Heliodorous and Antyllus (100-200 AD)[1].Hypospandias is a congenital malformation of the urethra in which external urethral meatus opens on the ventral surface of the penis and it is associated with absence of distal urethra and corpus spongiosum. This result in incomplete fusion of urethral folds[2].More than 200 methods of corrective surgery for hypospadias have been described in various books. Despite the large

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number of operative techniques for hypospadeas repair, the complication rate is high. The reported complications rate was 10-15%[2,3]. These all forms of hypospadias continue to challenge the urologist[4]. The repair of hypospadias may be either multistaged or single stage repair.The main disadvantages of multistaged repair are high morbidity, longer exposure to anaesthesia, inconvenience to the patient and improper blood supply of scared skin from previous surgical procedure[1,4].The single stage was popularized nearly two decades ago with simultaneous introduction of the technique of Devine and Howerton in 1961 in this single stage repair the chordee correction and urethral reconstruction is carried out in same sitting[5].

Single stage repair is preferred to multistaged repair because of the advantage of less morbidity, short exposure to anaesthesia, good cosmetic results and unscared skin. Chordee can be perfectly released after introduction of an artificial erection technique.urethroplasty can be performed using penile or preputial skin or a free skin graft, buccal or bladder mucosa. The main object of the hypospadias repair is to provide straight penis with meatus at the tip of the glans and good cosmetic results in single stage[4,5].

In Duckett technique, after an appliance of stay suture and tourniquet. A circumferential incision was made around corona. The inner preputial island flap was mobilized away from the preputial and penile skin to make a rectangle of shiny skin. Fibrous chordee was completely excised. The pedicle based flap was mobilized down to the base of penis, the pedicle flap based used to make a tube over the stent using 4/0 vicryl suture. An oblique anastomosis was made proximally over a tube with urethral opening. Bayers flap was made to resurface the penis using 4/0 vicryl suture[6].

AIMS AND OBJECTIVES OF STUDY

The study was carried out to see the efficacy, safety and complications of Duckett Technique.

MATERIAL AND METHODS

The study was completed at Urology Department, Services Hospital Lahore from 1998 to 2007.Fifty patients of distal hypospadias were selected from the Urology Department, Services Hospital Lahore and Larkana. All patients were fully investigated like Haemoglobin (Hb%), total leukocyte count (TLC), differential leukocyte count (DLC), erytherocyte sedimentation rate (ESR). urinalysis, urine culture (if required), blood urea (if required), serum creatinine (if required), IVU (if required) and Ultrasound of urinary tract.After evaluation of patients, the procedure was performed under general anaesthesia. All the patients were placed in supine position. Preoperative antibiotic was given one hour before operation. The procedure was carried out in single stage. In this procedure orthoplasty and urethroplasty were carried out in same sitting.

In Duckett technique fibrous plaque distal to urethral opening responsible for chordee was completely excised, chordee was checked by infiltrating normal saline in carpora. urethra proximal to hypospadiac opening was extensively mobilized to gain length. Glandular wings were developed by creating a deep cleft in the glands. Ventral and dorsal flaps were sutured using 4/0 vicryl (polyglactin), the urethral extension was laid into the split glans and the meatus was brought to the tip. After that tourniquet was removed and haemostasis was secured. At the end glans wings were closed with skin closure over the tube with 4/0 vicryl which was changed 48 hours after surgery using sofratule(Fig3).

All patients were called on 10th operative day for removal of stent. At each visit history was taken and systemic and local examination were done for any urethral fistula, rotational deformity, disruption or stricture formation.

Success of procedure was assessed by following criteria.

a. Good = tube patent with no fistula
b. Fair = tube patent with fistula
c. Failure = tube disruption

Criteria for exclusion from the study

1 previous history of surgery for hypospadias.

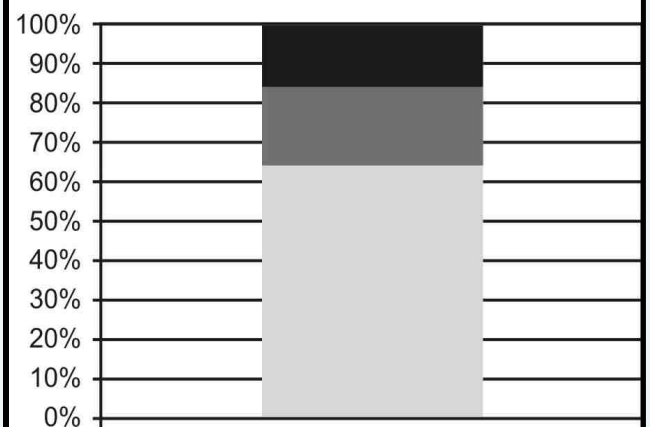
2. patients having proximal penile and posterior hypospadias.
3. micropenis and ambiguous genitalia.
4. patients without chordee.

RESULTS

Age of the patients ranged from 5 to 22 years. the mean age was 10 years. forty (80%) patients belonged to urban areas while 10(20%) were of rural areas. All the patients presented with dystopia of external urethral meatus and chordee (ventral curvature). 25(50%) presented with misdirected stream, spraying of urine 3(5%) and narrow stream 3(5%). The subcoronal type of distal hypospadias was commonly seen in our study. Thirty five (70%) patients had subcoronal and 15 (30%) distal penile urethral opening. glandular type of hypospadias was not seen. The common anomalies associated with distal type of hypospadias were not seen in our study.

Following duckett technique 32(64%) patients had good results and 10(20%) had fair results while 8(16%) patients were declared as failures (Fig1).

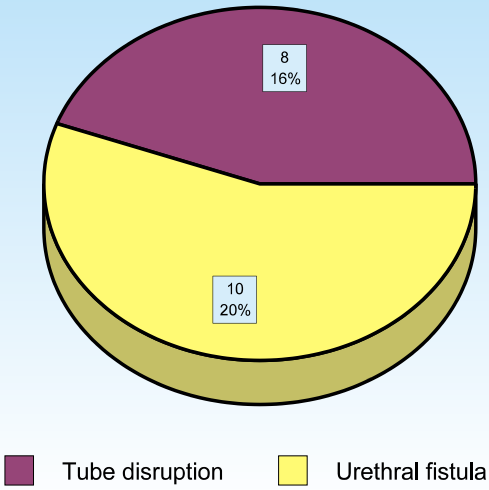
Fig-1. Overall result of Duckett Technique

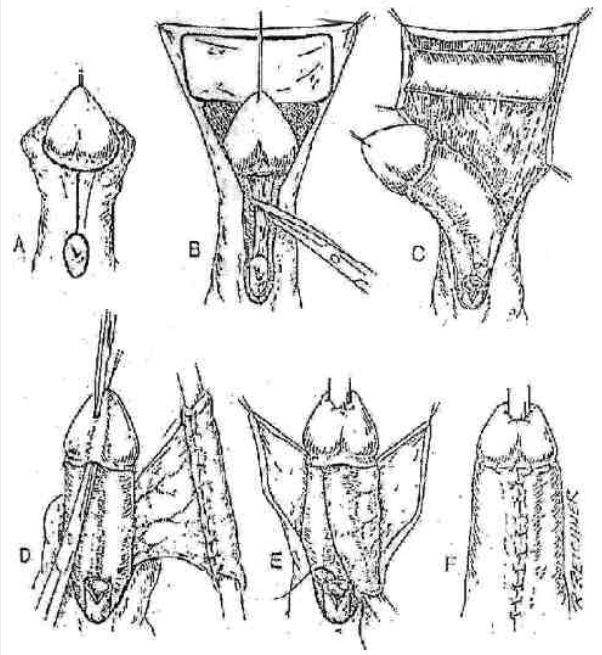


	no
Fail	8
Fair	10
Good	32

The overall morbidity rate was 36% while hospital stay was 3 days.

Fig-2. Overall morbidity rate of Duckett Technique





A. A circumferential incision was made around cornea.
B. The fibrous chordae tissue was excised.
C. The inner preputial island was mobilized away from the dorsal preputial and penile skin.
D. The pedicle was mobilized down to the base of the penis.
E. A glands channel was made underneath the skins cap out to the tip of the panis. An oblique anastomosis was made proximally over a tube.
F. Bayers flap was made to resurface the penis and urethral stent was left in (Kodama and Winlow 1991).

DISCUSSION

Anatomical anomalies in hypospadias are an abnormal ventral opening of the urethral meatus, abnormal ventral curvature of the penis and abnormal distribution of the foreskin around the glans with a ventrally deficient hooded foreskin. The techniques of hypospadias surgery continue to evolve. The current standard of care for hypospadias repair includes not only a functional penis adequate for sexual intercourse and urethral reconstruction offering the ability to stand to urinate, but also a satisfactory cosmetic result. Tubularized incised plate repair has been the mainstay for distal hypospadias. In cases of proximal hypospadias, one-stage repairs such as the Duckett repair or the Koyanagi repair have been well established[6,7]. The great possibility of variations in the clinical presentation of hypospadias, makes its therapy challenging. This has led to the development of a number of techniques for hypospadias repair. Due to the development of modern operating materials and an improvement in current surgical techniques, there has been a significant decrease in the complications rate. Nonetheless, there still is room and, therefore, need for further improvement in this field.

Above 200 reconstructive procedures for hypospadias have been described. despite large number of operative techniques for hypospadias repair, the complication rate is very high. The approaches to hypospadias surgery has changed over the past 10 years since the identification of the urethral plate as an anatomical entity, which has simplified this surgery. a few procedures using the same principles allow a single stage repair in all cases. These periods mark the history of hypospadias repair, the 19th century, where the principles of the surgery were remarkably good but the technical facilities were insufficient. Finally in 1980s where modern principles were standardized which offers better, functional and cosmetic results.

All techniques of hypospadias repair are not in common practice. Only a few of these are practiced in most of the centers. the main steps for successful hypospadias surgery are the correction of penile chordee, the reconstruction of missing urethra (urethroplasty) and the covering of the penis and fashioning of the slit shaped urethral meatus.

Fifty patients were operated and analyzed. They belonged to urban as well as rural areas. age of patients ranged from 5-22 years, the mean age was 10 years which is comparable to other study. In our study some of the patients came in adult age for infertility having hypospadias. The delay in the treatment was because of fear of surgery embarrassment and ignorance. Patient also came with history of painful erection, penile pain during intercourse to inability to penetrate the vagina which compels the patients to seek treatment[5,7]. In our study subcoronal type of distal hypospadias was commonly seen. Its incidence was 70% which is comparable to other studies[2,4].

In Duckett procedure the single stage was popularized nearly two decades ago with simultaneous introduction of the techniques of devine and howerton in 1961. In this single stage repair the chordee correction and urethral reconstruction is carried out in same sitting. Single stage is preferred to multistaged repair because of the advantage of less morbidity, short exposure to anaesthesia, good cosmetic results and unscarred skin[8].The overall success rate was is 64% and failure rate was 36%. Out of which 8(16%) had complete disruption of tube while 10(20%) developed urinary fistulae(Fig2). But other study showed 10-15% secondary surgery rate while 20% developed urinary fistulae. The higher incidence of failure in our study was due to higher wound infection, less experty, kinking of the proximal anastomosis and could be a glans channel which compresses the pedicle, hence duckett (TPIF) technique now-a-days is less used than it was in the past[8,9].

CONCLUSION

There is still no operative procedure,which can be labelled as ideal operation for hypospadias, however duckett technique have lower success rate but statistically insignificant.

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