

RECONSTRUCTION OF HYPOSPADIAS COMPARISON OF DIFFERENT TECHNIQUES (A Study of 45 Cases)

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Introduction

Hypospadias is a congenital deformity in which urethral meatus is located on ventral surface of the penis proximal to its normal position, caused by cessation of androgen production and consequent masculinization of the external genitalia. Abnormal meatus may be located at any point from perineum to the tip.

Treatment is by plastic reconstruction. There are many techniques which give varying success. The methods of Byars, Denis Browne and Cecil Culps are commonly used by majority of reconstructive surgeons in this country. We have treated 15 patients each by these three techniques. The results of treatment has been compared to find out the most suitable method of reconstruction.

Material and Method :

The following 3 techniques (Byars, Denis Browne and Cecil Culps) was used in 15 patients each. By Byars technique the operation was completed in 2 stages. In the first stage chordae was corrected by excising all fibrous tissue from meatus to the corona, and the raw area was covered by prepuceal skin, which was unfolded and split in midline and brought ventrally and sutured to have excess skin in the ventral area.

Second stage repair was done at the age of 4-5 years or six months, after the first operation in children more than 5 years of age. Urinary diversion was done by perineal urethrostomy. On the ventral surface from urethra to tip of glans a strip of skin of U shape which could form a urethra of adequate caliber was isolated and incised. It was rolled into a tube and sutured by continuous inverting 5-0 cat gut sutures. Laterally skin was undermined and sutured in 2 layers, over the urethral tube by interrupted 4-0 cat gut and nylon sutures. Dressing was done with elastoplast strips.

First stage Denis Browne procedure was completed by making a transverse incision first distal to the abnormal meatus and undermining of skin on both sides and contracted fibrous tissue between meatus and glans till bluish looking surface of corpora cavernosa become clearly visible. Transverse incision was stitched longitudinally with 4-0 silk. Catheter drainage was employed through hypospadias opening.

The second stage repair was completed at the age of 4 years. Perineal urethrostomy was done for urinary diversion. A central strip of skin was marked out from orifice to the tip of penis. Skin on the sides of the strip was raised widely by sharp dissection.

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Double stop sutures were inserted with care beads were so placed that at least an 1/8th inch of slack was left between beads and skin on each side, so that postoperative swelling might not lead to cut through by the beads. Edges of skin approximated by double stop sutures were joined by the finest possible silk suture. Relaxing incision was given on dorsum of penis. On 6th post operative day double stop sutures were removed by cutting between lead and glass beads. Skin sutures were removed on 10th day and catheter was taken out after a fortnight.

Patients undergoing Cecil Culp plastic reconstruction were repaired in 3 stages. In these patients chordae was corrected by the technique described by Nesbit in which after excising the fibrous tissue producing chordae, raw area was covered by making a button hole in the opened up prepuce carefully avoiding the blood vessels in the midline, glans was brought out through the opening in the prepuce thus bringing the prepuce ventrally to cover the ventrum.

In the 2nd stage tube was formed exactly in the same manner as in Byar's procedure except rolled tube was buried in the scrotum by incising it in midline. Penis was detached from the scrotum after 2-3 months of the 2nd stage.

Observations

Table I

Age at Urethroplasty

Age in Years	No. of Patients	Percentage
3— 5	14	31%
5—10	14	31%
Above--10	17	38%

Table II

Type of Hypospadias and Repair

Type of	Byar's	Denis Browne	Cecil Culp
1. Glandular	—	—	—
2. Penile	11(73.3%)	10(66.7%)	14(93.3%)
3. Penoscrotal	4(26.7%)	2(13.3%)	1(6.7%)
4. Perineal	—	3(20.0%)	—

The present study consist of 45 patients of hypospadias treated in SMS Medical College Hospital, Jaipur. The details of hypospadias and selection of operation is shown on table II. The complication of 1st stage operation is shown on table III. A residual chordae was the commonest complication after chordae correction by all the method. But the incidence was high (26.7 percent) in Cecil Culp's series as compared to other methods. The incidence of wound infection was equal with all techniques. The complications after definitive repair are shown on table IV.

Table III

Complications after Chordae Correction

Complications	Byar's	Dens Browne	Cecil Culp
1. Residual Chordae	2(13.3%)	3(20%)	4(26.7%)
2. Infection	1(6.6%)	1(6.6%)	1(6.6%)
3. Wound Dehiscence	—	1(6.6%)	1(6.6%)
4. Necrosis of flap	1(6.6%)	—	—

Table IV
Complications of definitive repair

	Byar's	Denis Browne	Cecil Culp
1. Complete Dehiscence	1	1	—
2. Fistulae Formation	1	1	2
3. Stricture formation	—	1	1
4. Meatal Stenosis	—	1	1
5. Tinning of Stream	1	2	3

The commonest complication was fistulae formation. Stricture formation and meatal stenosis was found in one case each in Denis Browne and Cecil Culp's technique. Diverticulum formation or necrosis of skin flaps did not occur. The stream of the urine was narrow in one case operated by Byar's, in two cases by Denis Browne and in 3 cases by Cecil Culp's technique.

Discussions

Many surgical procedures have been described for the correction of hypospadias but none give uniformly good results. For successful repair principals of reconstruction must be followed. These are correction of Chordae, construction of urethra of normal caliber which is free from fistulae, strictures and hair growth in side.

The chordae can be corrected as early as one year of the age through many surgeons (Ormond's Culp 1951, Johnson 1958) advocated chordae correction between 18 months to 2 years of age. In the present series of patients chordae was corrected before 2 years of age in only 13.3 percent of cases because of late presentation.

Creevy (1958) reported one instance of residual chordae, two of meatal stricture and one of wound dehiscence after 78 straightening operations. Culp (1959) acknowledged 3 persistent chordae, 6 meatal strictures and 4

wound separations in a series of 124 cases. In our series incidence of residual chordae was higher in those cases treated by Cecil Culp's technique. Wound dehiscence and infection were seen occasionally irrespective of technique used.

It is essential that urethra is not reconstructed until the penis seems to be truly straight, meatus is of adequate caliber and 6 months have passed since the last operation and the child has attained 5 years of age. However in the present series urethroplasty could be done in preschool age group in 31 percent.

In the patients treated by Byar's technique the rate of fistulae formation was only 6.6 percent. Charles (1955) also obtained excellent results with the Byar's technique of repair. Summarizing the results of Denis Browne Urethroplasty, Nesbit (1967) reported fistulae formation in 21 percent. In our patients rate of fistulae formation was 6.6 percent only by the Denis Brown method and 31.3 percent with Cecil Culp's technique. Creevy (1958) using Cecil Culp technique came across fistulae formation in 7.6 percent of cases.

Abstract

Forty five cases of hypospadias were studied. Of these 80 percent had penile hypospadias, 13 percent penoscrotal and 7 percent perineal hypospadias. Chordae was corrected before 2 years of age in 13.3 percent due to late presentation. The incidence of residual chordae was higher in patients treated by Cecil Culp's technique. Plastic repair was completed in preschool age in 31 percent and an equal number of patients were treated between 5—10 years age. None of the patients reported for second stage reconstruction within 6 months of first operation. Incidence of fistulae formation was 6.6 percent with Byar's Browne and 13.3 percent with Cecil Culp technique.

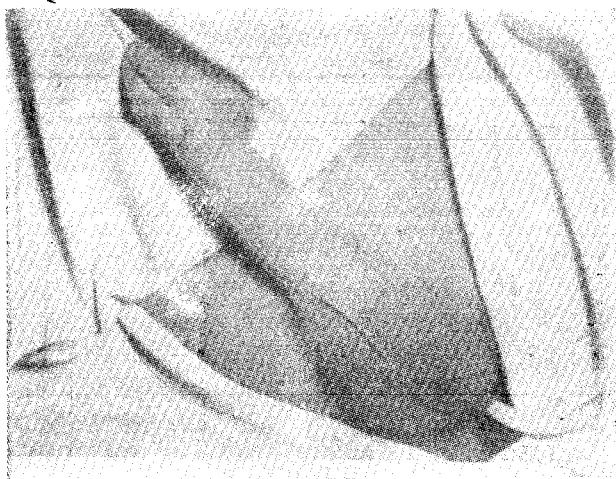


Fig. 1 Byar's Urethroplasty Photograph showing Penile Hypospadias with Perineal Urethrostomy.



Fig. 2 Photograph showing inner urethral tube completed and the lateral flaps of skin are widely mobilized.

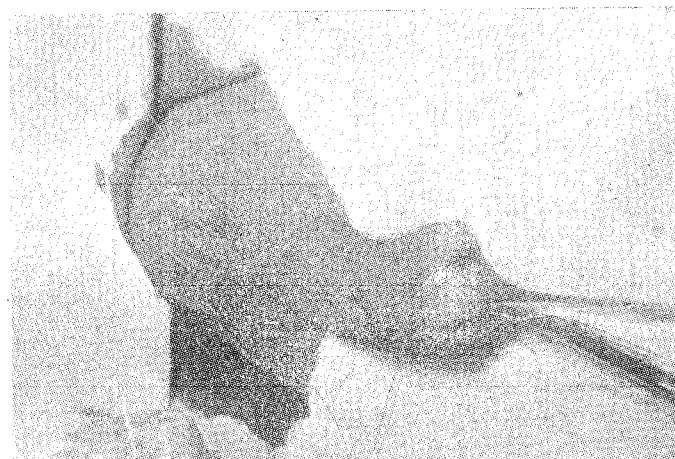
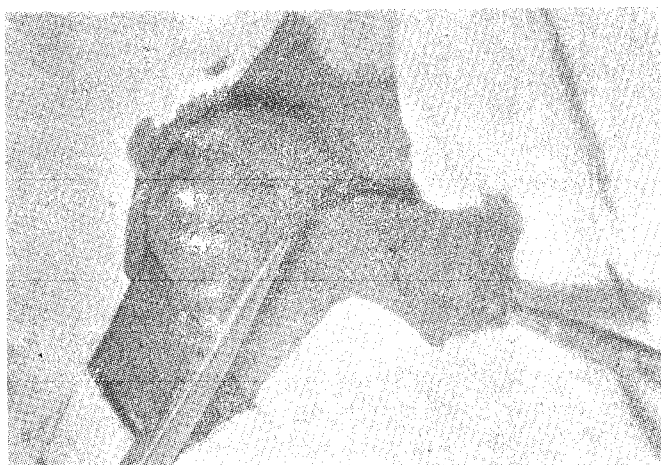


Fig. 3 A and B Photographs showing the skin edges are approximated during urethroplasty.

In some patients there was less than acceptable cosmetic appearance of the penis in

cases treated by Cecil culp due to addition of hairy scrotal skin and additional bulk.

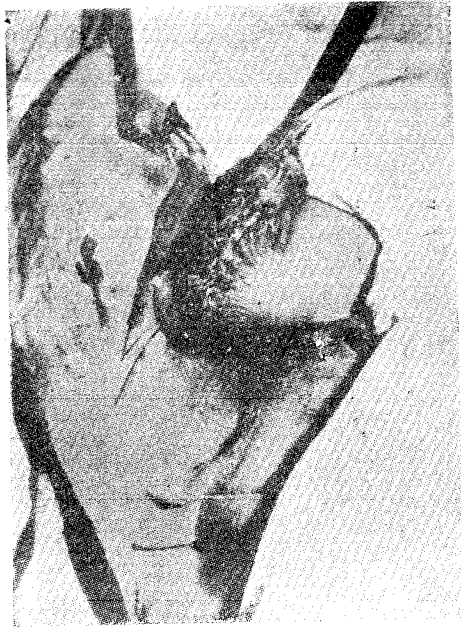


Fig. 4 Denis Brown Urethroplasty: Photograph showing the insertion of beads during Urethroplasty.

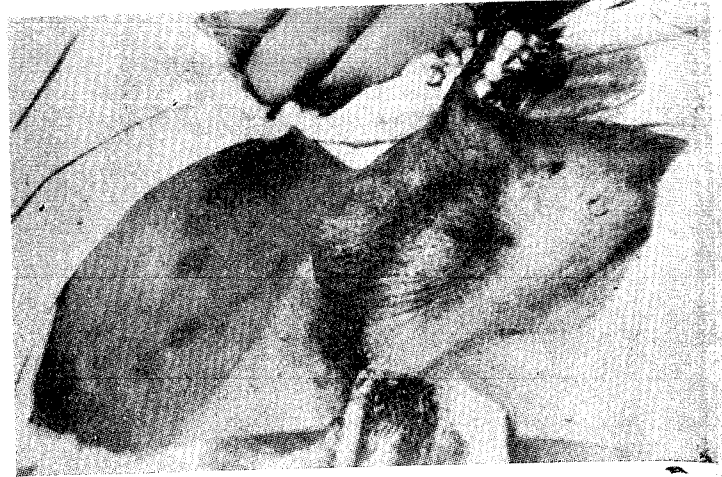


Fig. 5 Photograph showing the third stage of the Cecil Culp's Urethroplasty.

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