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### RESEARCH ARTICLE

#### STUDY OF SURGICAL OUTCOME OF HYPOSPADIAS CORRECTION BY MODIFIED SNODGRASS (TUBULARISED INCISED PLATE URETHROPLASTY) TECHNIQUE

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#### Manuscript Info

##### Manuscript History

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#### Abstract

**Background:** The incidence of hypospadias is around 1 in 300 male live births. It is the most common congenital abnormality of the urethra. Diagnosis is made on physical examination. There are three characteristic features, including an ectopic ventrally located urethral meatus; usually a ventral penile curvature (chordee); and an incomplete dorsal hood prepuce. Surgical repair of hypospadias deformity is a challenging and complex issue. However, the technique of Snodgrass and its modifications attend promising functional and cosmetic results.

**Aims & Objectives:** The paper aims at finding the outcomes of correction of distal and mid-shaft hypospadias by modified snodgrass technique and to compare it with the data available for other techniques.

##### Patients And Methods:

**Source-** All patients undergoing surgical correction of hypospadias within the study period of 6 months (15th March 2023 to 15<sup>th</sup> September 2023)

**Type Of The Study:** prospective observational study

**Sample size:** 15 patients

##### Inclusion criteria:

- 1) Patients with distal and mid shaft hypospadias
- 2) all patients giving consent for the surgery

##### Exclusion criteria:

- 1) Patients with severe chordee
- 2) Patients with immunocompromised status
- 3) Patients not willing to stay in hospital for long as this procedure needs careful dressings and hospital care as we are dealing with children
- 4) Patients who already underwent modified snodgrass technique

**Result:** This study includes 15 boys with hypospadias. On Presentation Two Patient Had Mid Shaft Hypospadias With Severe Chordee Rest All Patients Had Distal Shaft Hypospadias With Minimal Chordee. Their ages ranged from 3 to 8 years average 5 years The mean follow up was 3 months and complications were observed in only FIVE (33%) patient.

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**Conclusion:** From 15<sup>th</sup> MARCH 2023 to 15<sup>th</sup> SEPTEMBER 2023; over 6 months this study has emphasized on the clinical outcomes including any urethrocutaneous fistula, hemorrhage, infection, recurrence of chordee or any stricture formation following modified snodgrass technique and only 20% cases developed urethrocutaneous fistula.

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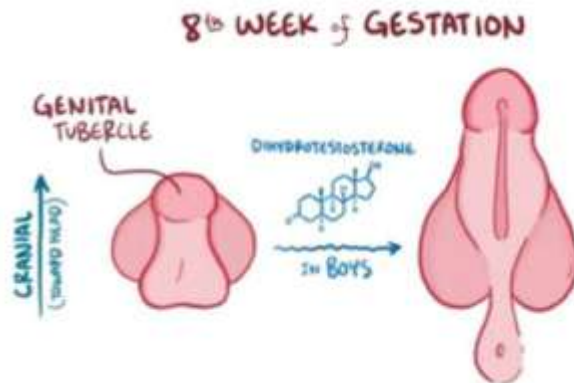
**Introduction:-**

The incidence of hypospadias is around 1 in 300 male live births. It is the most common congenital abnormality of the urethra. Diagnosis is made on physical examination. There are three characteristic features, including an ectopic ventrally located urethral meatus; usually a ventral penile curvature (chordee); and an incomplete dorsal hood prepuce

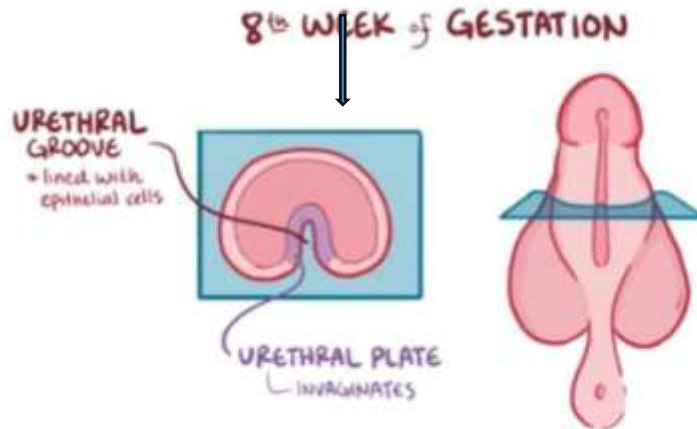
In patients with severe hypospadias the genitalia may look ambiguous at birth resulting in emotional and psychological stress for parents in that the gender assignment of their baby immediately comes into question. Left-uncorrected patients with hypospadias may need to sit down to void and tend to shun intimate relationships because of the fears related to normal sexuality

There are many techniques of hypospadias repair. This paper will review the modified snodgrass technique of hypospadias repair

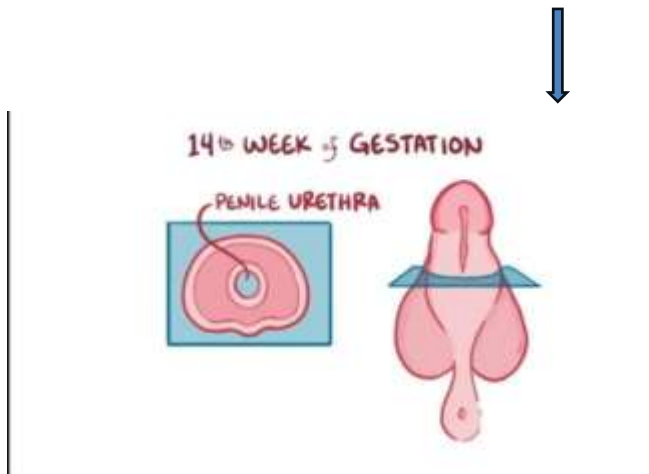
A) Embryology



Genital tubercle in boys responds to dihydrotestosterone and stretches out to become primitrivephalus



The urethral plate invaginates to form urethral groove lined by epithelial cells



The two urethral folds on the sides pinch off the groove to make it close and form penile urethra

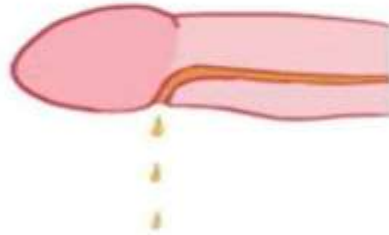


The ectodermal cells of glans penis undergoes canalisation and urethral canal connects with penile canal



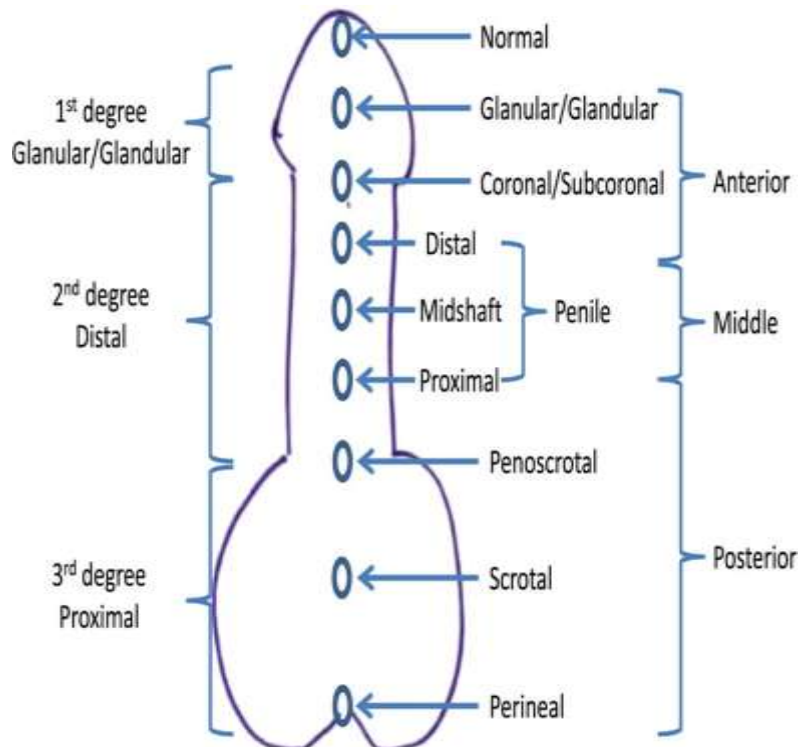
## HYPOSPADIAS

\* OPENING in BOTTOM of PENILE SHAFT \*



When the urethral folds along with the penile urethra don't meet up and close properly hypospadias occurs

### C) CLASSIFICATION



\*GLANULAR TYPE IS THE MOST COMMON AND MILDEST TYPE

\*MORE PROXIMAL HYPOSPADIUS- MORE CLINICAL MANIFESTATIONS (MORE SEVERE)

\*PERINEAL TYPE IS THE MOST SEVERE TYPE

### D) CLINICAL FEATURES

- 1) Downward directed stream of urine
- 2) Difficulty during intercourse
- 3) Male infertility

### E) ON EXAMINATION

- 1) CHORDEE : more pronounced during erection

More PROXIMAL hypospadias – more severe chordee  
2) Hooded prepuce  
3) Urethral opening is ventrally placed

#### F) MANAGEMENT -SURGERY

Circumcision Not Done In This Patients As Foreskin Will Be Used For Reconstruction

Best Time For Surgery : 6-12 MONTHS OF AGE

A child develops genital awareness by 18 months of age ; so any surgery after that age may be perceived as genital mutilation by the child , hence surgery should be done before that age, but in cases of uncorrected hypospadias upto later age surgery has to be done

#### Principles Of Surgery

- 1) ORTHOPLASTY : CHORDEE CORRECTION
- 2) URETHROPLASTY: REPOSITION URETHRAL OPENING AND TUBULARISE URETHRA
- 3) GLANULOPLASTY
- 4) SKIN COVER

#### Aim

The paper aims at finding the outcomes of correction of distal and mid-shaft hypospadias by modified snodgrass technique

#### Materials And Methods:-

Study setting- Study was conducted in Silchar Medical College, Ghungoor, Assam. The data was recorded from patients presenting to the surgery department , either in the OPD or on an emergency basis. The college serves as a major tertiary care centre for people from the ‘Barak Valley’ region of the State of Assam as well as the neighbouring states of Tripura, Manipur and Meghalaya. The data was recorded for a duration of 6 months , from 15/03/23 to 15/09/23

#### Study Design-

This was a prospective, observational study. Institutional ethical clearance and Informed Consent from the patients were both obtained for the study. The sample size was selected as 15 using standard statistical formulas with an online calculator.

#### Source-

All patients undergoing surgical correction of hypospadias within the study period of 15th MARCH 2023 to 15<sup>th</sup> SEPTEMBER 2023

#### Type Of The Study-

prospective observational study

Sample size- 15 patients

Inclusion criteria –

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#### Modified Snodgrass Technique

##### Goals Of Surgery

- 1) Micturation in standing
- 2) Near normal appearance
- 3) Future sexual functions

**Anaesthesia**

General anaesthesia(as operated in child) + caudal/penile block(to reduce pain)

**Urinary Diversion**

Infant feeding tube according to the meatus size or suprapubic catheter is given

**Artificial Erection/Torniquet Test**

(To see degree of chordee)

Degloving of penile region

A torniquet tied at the base of penile region

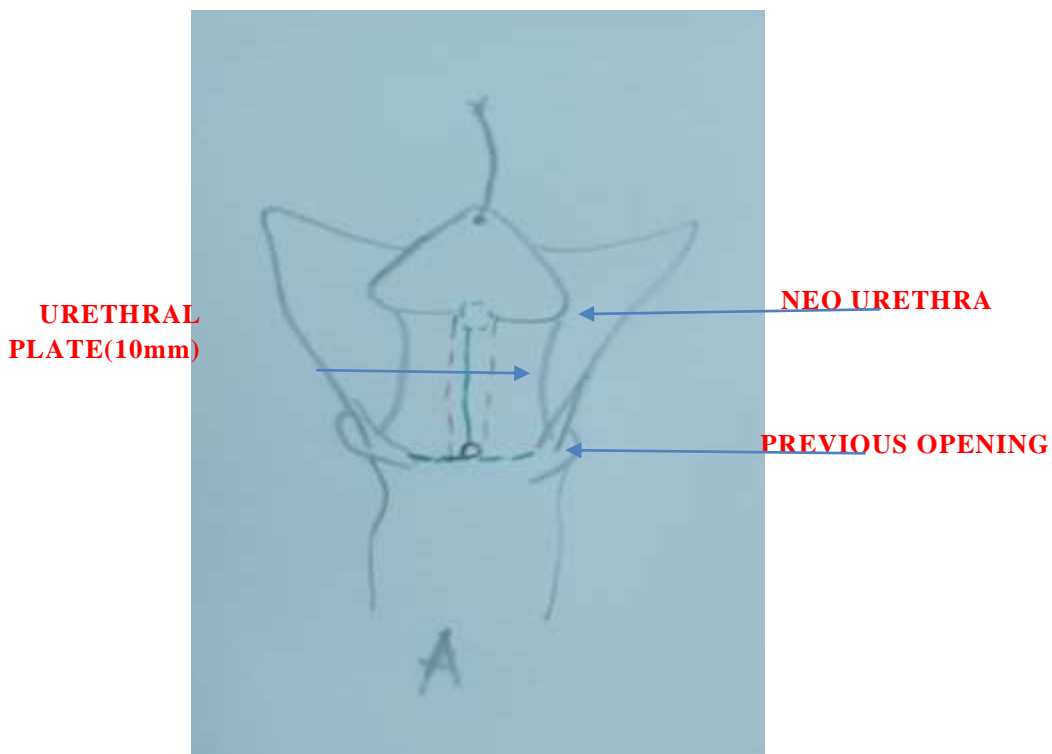
Using butterfly needle 5 to 10 ml of normal saline is injected in corpora cavernosa

SUTURE MATERIAL : PDS(POLYDIOXANONE) MONOFILAMENT 5-0;6-0

**STEPS**

1)The tip of the glans is fixed to the anterior abdominal wall with stray suture

A LONGITUDINAL SPLIT IS MADE BETWEEN THE CURRENT URETHRAL OPENING TO WHERE WE WANT THE NEW URETHRAL OPENING



2)HENCE Two flaps are created and these flaps of the urethral plate are closed over the feeding tube- tubularizing the urethral plate over draining tube



3) Now flaps are created from the glans from either sides and they are closed around the urethral plate as to waterproofing or to prevent any fistula or leak



The patients were taken care of in post operative period with regular anti septic dressings and discharged on an average around 10 days

**Advantages Of This Technique**

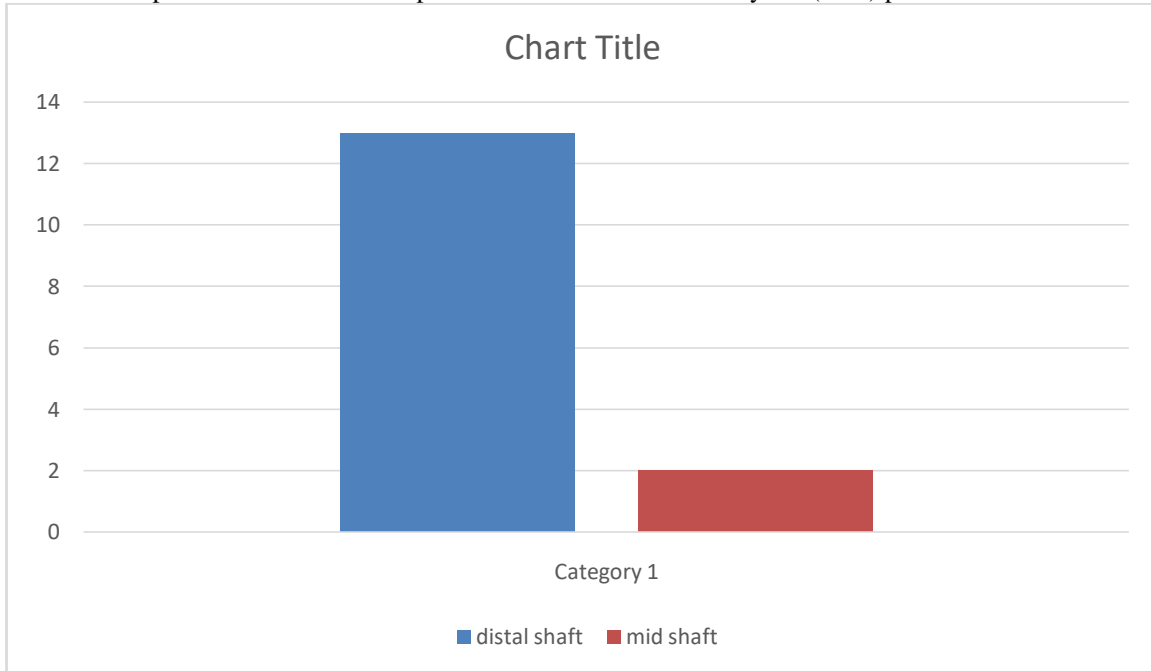
- 1) Tension free technique- less chances of suture cut through or fistula in case of erection in an older child
- 2) Less chances of urethrocutaneous fistula

**Results:-**

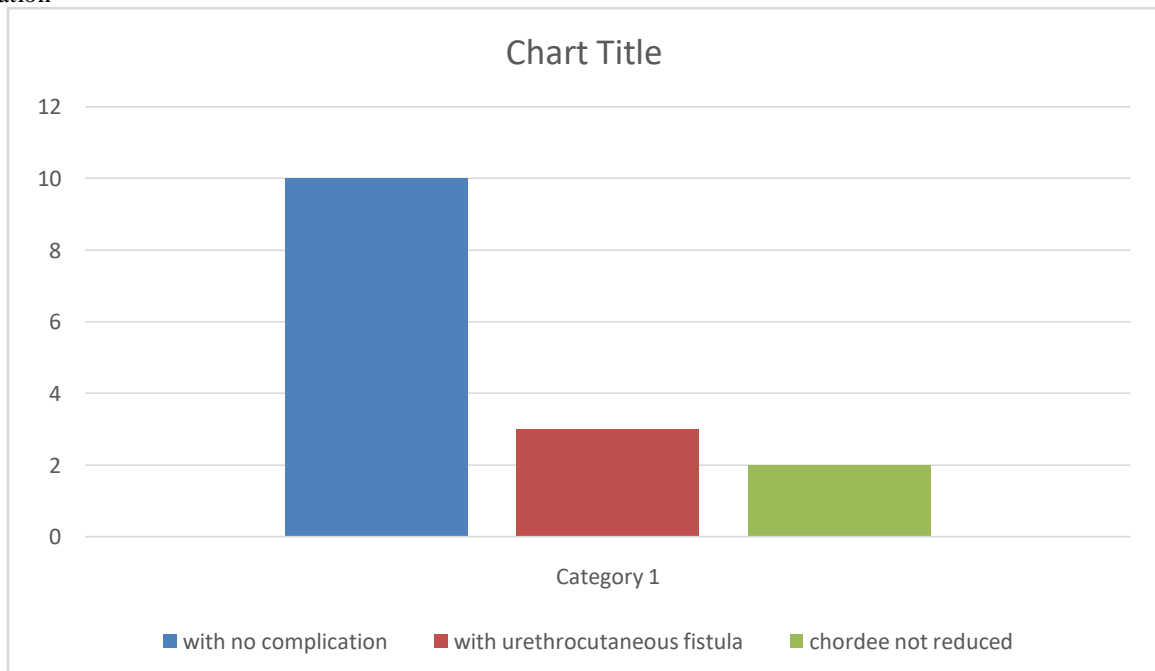
This study includes 15 boys with hypospadias. ON PRESENTAION TWO PATIENT HAD MID SHAFT HYPOSPADIAS WITH SEVERE CHORDEE

REST ALL PATIENTS HAD DISTAL SHAFT HYPOSPADIAS WITH MINIMAL CHORDEE. Their ages ranged from 3 to 8 years average 5 years

The mean follow up was 3 months and complications were observed in only five(33%) patients



After modified snodgrass technique out of 15 patients three(3) i.e 20% patients developed urethrocutaneous fistula, two(2) i.e 13 % patients chordee not reduced rest 10 i.e 66% patients didn't develop any complication







Without any complication

with urethrocutaneous fistula

### Discussion And Conclusion:-

From 15<sup>th</sup> march 2023 to 15<sup>th</sup>September 2023; over 6 months this study has emphasized. on the clinical outcomes including any urethrocutaneous fistula ,hemorrhage,infection,recurrence of chordee or any stricture formation following modified snodgrass technique.

In the study published in April 2002 by Yun Zhou, zinxinglu, Go Takahashi. Between March 2000 and January 2001, Snodgrass urethroplasty was consecutively done on 24 boys aged between 14 months and 9 years (median: 3 years). Postoperative follow up ranged from 4 to 14 months (median: 8 months). All patients undergoing Snodgrass repair obtained a neourethra with a slit-like meatus at the tip of the glans. A small urethrocutaneous fistula occurred in one patient with mid-shaft and two with proximal-shaft hypospadias (an overall fistula rate of 12.5%). Urethral stricture had not been encountered at the time of this report. One patient developed mild meatal stenosis and was successfully managed by simple dilatation.

In our technique only three(20%) out of 15 patients developed urethrocutaneous fistula which is planned for repair by brackas technique or dennis brown repair after 6 to 9 months

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