Comparison between Stented and Non Stented TIP Urethroplasty for Distal Hypospadias

A Thesis

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List of Abbreviations

Abb.	Full term
HOPE	*Hypospadias Objective Penile Evaluation*
MIP	*Megameatus Intact Prepuce*
OPT	*Optical Projection Tomography*
SPSS	*Statistical Package for Social Science*
TIP	*Tubularized Incised Plate*

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ABSTRACT

This study is an effort to find out the effects of urethral stenting on complication rate in distal hypospadias repair but it was seen that there was no difference in post-operative fistula rates in unstented and stented patients in distal hypospadias surgery, but at the same time there was no difference in post-operative stay between the two groups.

Repair with stents or without stents did not affect the outcome of hypospadias repair in terms of fistula formation or postoperative stay.

Keywords: Hypospadias Objective Penile Evaluation - Megameatus Intact Prepuce

INTRODUCTION

Hypospadias is a condition where the meatus is situated along the underside of the penis instead of the normal position at its tip. The meatus is most often found near the end of the penis ("distal" position). Hypospadias is the second most common birth defect in males, potentially affecting both urinary and sexual function of the penis. Surgical treatment is necessary, and more than 300 operation techniques have been described for primary hypospadias. The objective of all of procedures is the formation of a functionally normal urethra and a cosmetically acceptable penis **(Snodgrass et al., 2002).**

Snodgrass in 1994 described the tubularized incised plate (TIP) hypospadias repair in 1994 as a mean to widen and improve mobilization of the urethral plate when performing a Thiersch-Duplay urethroplasty.

The TIP repair is a reliable method for treating both distal and proximal hypospadias and is suitable for both primary and re-operated cases with accepted low rate of complications **(Sarhan et al., 2009).**

There is little long-term data available for any of the operations of hypospadias in common use today. Throughout the history of hypospadias repair continued evolution of techniques has often resulted in new operations being applied

and then discarded before long-term results are determined. Furthermore, most operations are performed in the first year of life, and it is not reasonable to expect data to be available on more than a sampling of these patients after they complete puberty **(Snodgrass, 2011).**

Many authors stated that urine diversion after hypospadias repair maintain the site of anastomosis dry and reduce postoperative complications such as fistula formation, meatal stenosis, hematoma formation, flap necrosis, persistent chordee. **McCormack et al. in 1993** stated that urinary diversion after hypospadias repair has no proven beneficial effect on surgical outcome but it prolongs the hospital stay of corrected patients. Further studies have found that urethral drainage by catheter or stent does not reduce the risk of postoperative complications after hypospadias repair such as fistula formation **(Amin et al., 2009).**

The role of stent and the duration of stenting in TIP repair of distal hypospadias are highly debated with no clear guidelines.This study is an effort to find out the effects of urethral stenting on complication rate in TIP repair of distal hypospadias as regard cosmetic satisfaction and postoperative complications.

Aim of the Work

This study aimed to compare the outcome of stented versus non stented repair in TIP urethroplasty operation for distal hypospadius as regards cosmetic outcome and rate of complications e.g. fistula, disruption and infection.

Chapter 1
EMBRYOLOGY OF THE URETHRA

Understanding normal human urethral development is the first step in unraveling abnormal urethral development for which the most common abnormality is hypospadias. The development of the human urethra has been a controversial subject in embryology for years. **Glenister in 1954** stated that the penile urethra arises by fusion of the primitive urethral groove and the secondary urethral groove that develops from the urethral plate. In contrast, **Van der Putte and Neeteson in 1984** concluded that the male penile urethra is formed by a movement in ventral direction of the urogenital opening relative to the growing perineum and not by fusion of the genital folds. **Kluth et al. in 2011** could not find evidence of fusion.

Recently the optical projection tomography (OPT) confirms a solid urethral plate that canalizes, forming the urethral groove that progressively advances and fuses to form the tubular penile urethra. The process starts proximally at the scrotal folds and progresses along the penile shaft to the glans to form the terminal urethral meatus. There is no evidence of ectodermal intrusion of epidermal cells that meet the solid and/or canalized urethral plate or urethral groove, consistent with the endodermal theory of urethral development **(Li et al., 2015).**

Double zipper ***hypothesis*** of urethral formation where the "opening zipper" facilitates formation of the urethral groove distally through canalization of the urethral plate, and a "closing zipper" follows behind and closes the urethral groove to form the tubular urethra. Midline epithelial proliferation within the urethral plate is a key feature of development of the urethral groove, while apoptosis does not appear to be involved in canalization of the urethral plate **(Li et al., 2015).**

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Indifferent Stage of Penile Development

In the youngest specimen estimated at 6.5 weeks (Figure 1) the urethral plate *was not evident* at the distal tip of the genital tubercle (1A), but was for the most part solid (1B) with evidence of canalization in the penile shaft (1C and D). The urethral meatus was located at the scrotal folds (1E) with the tubular urethra just proximal (F) **(Li et al., 2015).**

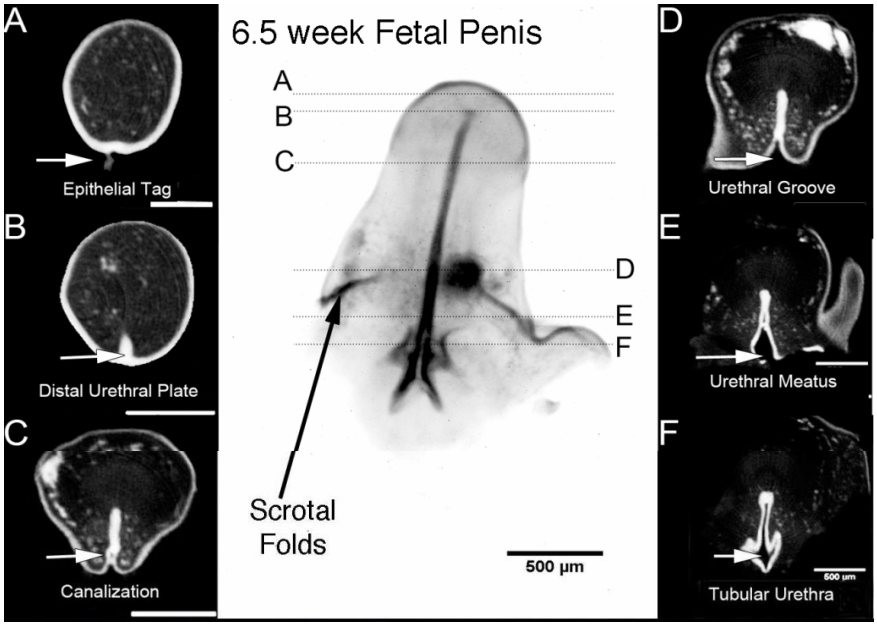

Figure (1): Fetal penis at 6.5 weeks **(Li et al., 2015).**

A similar result was found in the 7.5 week specimen with absence of the urethral plate in the distal most aspect of the genital tubercle and proximal canalization of the solid urethral plate **(Li et al., 2015).**

Early Stage of Penile Development

The 9.5-week penis exhibited increased growth compared to the two specimens in the indifferent stage. The urethral groove was now well developed extending from the scrotal folds to the proximal aspect of the glans (coronal sulcus) comprising the entire length of the penile shaft. The width of the urethral groove was also quite large compared to the solid urethral plate. The solid urethral plate now located exclusively within the glans exhibited ventral canalization, but remained solid dorsally **(Li et al., 2015).**