

Abstract

- **Objective:** To compare Snodgrass operation (*tubularized incised plate (TIP) urethroplasty*) with fibrin glue application & Snodgrass operation with dorsal dartos flap as an intermediate layer.
- **Study design:** A prospective randomized clinical trial
- **Study setting:** The study was conducted at **Pediatric Surgery Department, Ain Shams University Hospitals.**
- **Patients:** This clinical trial included **60** patients with hypospadias in which Snodgrass operation was performed. Patients were divided into **2 groups**, each included **30** patients, *group A* in which **fibrin glue** (Fibrogloo™) was applied & *group B* in which a **dorsal dartos flap** was used as an intermediate layer.
- **Results:** Fistula occurred in **11** cases in the fibrin glue group (**37.9 %**) and **6** cases in the dorsal dartos flap group (**20.7%**) (***p value = 0.248***). Dehiscence occurred in **7** cases (**24.1 %**) in both the fibrin glue and dorsal dartos flap groups (***p value = 1.000***). Meatal stenosis occurred in **4** cases in the fibrin glue group (**13.8%**) and **5** cases in the dorsal dartos flap group (**17.2%**) (***p value = 1.000***). One patient in the fibrin glue group had meatal synechia (**3.4%**) (***p value = 1.000***).
- **Conclusion:** The study showed no statistical significance between the 2 groups as regards the incidence of fistula, meatal stenosis or dehiscence, although there was a trend for increased fistula formation in case of fibrin glue.

Key words: *fibrin glue, dorsal dartos flap, Snodgrass operation*

Fibrin Glue versus Dorsal Dartos Flap in Snodgrass Operation: A randomized clinical trial for comparison of the outcomes

A thesis

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List of Abbreviations

CS	: Corpus Spongiosum
ESF	: External Spermatic Fascia
FDA	: Food and Drug Administration
HS	: Hypospadias
PICC	: Peripherally Inserted Central Catheter
TIP	: Tubularized Incised Plate
VCUG	: Voiding Cystourethrography

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Introduction

Hypospadias (HS) is a common congenital defect that is present in 1/300 newborn children (0.3%) (**Ambriz-González et al., 2007**). It is an association of three anatomical anomalies: an abnormal ventral opening of the urethral meatus, ventral curvature (chordee) of the penis, a hooded foreskin, which is deficient ventrally (**Wilcox and Mouriquand, 2008**).

The goals of primary hypospadias repair include straightening the curvature of the penis, extending the meatus to the glans tip, and revising the abnormal prepuce by either circumcision or foreskin reconstruction to allow satisfactory cosmetic and functional results (**El Saket et al., 2008**).

Urethrocutaneous fistula after hypospadias repair is the most common complication and remains a frustrating problem for surgeons (**Shehata and Hashish, 2011**).

Due to the improvements in fistula rates, creating some form of vascularized flap as an intermediate barrier is now common practice in hypospadias surgery (**Wallis et al., 2008**).

Fibrin glue has been used in many surgical procedures as a topical agent for haemostasis and adhesive in tissue approximation (**Soyer T et al., 2013**).

Fibrin glue contains 2 major components (thrombin and highly concentrated fibrinogen) which replicate the final stage of the coagulation cascade-the cleavage of fibrinogen into fibrin by the action of thrombin-when mixed together. It is the most widely studied and utilized biosurgical adjunct in urology (**Evans and Morey, 2006**). It prevents urinary extravasation from the suture line, binds tissue planes and ensures hemostasis with remarkable efficacy (**Hick and Morey, 2004**) and has a role in wound healing (**Spotnitz et al., 1997**). Few studies advocated the role of fibrin glue in hypospadias repair (**Gopal et al., 2008**).

Aim of the Work

The aim of this work is to compare Snodgrass operation (*tubularized incised plate (TIP) urethroplasty*) with fibrin glue application & Snodgrass operation with dorsal dartos flap as an intermediate layer.

Chapter 1

The Use of an Intermediate Layer in Hypospadias Repair

One of the most important factors in reducing the incidence of fistula in hypospadias repair was the introduction of a protective intermediate layer between the neourethra and the skin layer (*Hadidi, 2004*).

Smith was the first to describe the introduction of an intermediate or interposition layer between the neourethra and the cutaneous suture in 1973. He reported skin de-epithelialisation & double breasting (*Smith, 1973*). Snow described the use of a tunica vaginalis wrap from the testicular coverings (*Snow, 1986*). Retik et al. used a dorsal subcutaneous flap from the prepuce (*Retik et al., 1988*). Motiwala described the use of a dartos flap from the scrotum (*Motiwalla, 1993*). Yamataka et al. reported the use of an external spermatic fascia flap (*Yamataka et al., 1998*).

In the year 2000, Yerkes and colleagues described the Y-to-I wrap technique where the spongiosa were separated from the corpora cavernosa on both sides of the urethral plate and wrapped around various forms of 1-stage urethroplasty, including the TIP repair (*Yerkes et al., 2000*). Excellent