Different techniques of skin closure in Snodgrass hypospadias repair: Does these techniques affect the outcome?

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By

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INTRODUCTION

Hypospadias is a congenital abnormality of the penis and the urethra. In hypospadias, the distal urethra does not develop normally, and the urethral meatus lies somewhere along the ventral surface of the penis between the glans and the perineum. Surgical treatment is necessary, and more than 300 operation techniques have been described for primary hypospadias. The objective of all of these methods is the formation of a functionally normal urethra and a cosmetically acceptable penis. The Snodgrass technique, or tubularized incised plate (TIP) urethroplasty, is a single-stage, simple surgical technique with good cosmetic results and a low complication rate [1].

In hypospadias the ventral axis of the penis is deficient; not only the ventral side of the urethra is missing, but also the spongy tissue and fibrous bands replace Buck’s fascia and the dartos fascia [2]. The borders of the foreskin are displaced laterally creating the dorsal hooded prepuce. In most reconstructive techniques the redundant dorsal skin is used to compensate the deficient ventral skin[3].

Since its introduction the Snodgrass procedure has been widely adopted which is testament to its successful use. It reliably creates a normal appearing penis with a vertical slit-like meatus unlike the Mathieu or Thiersch-Duplay which create a horizontal, rounded meatus. It is a single stage procedure, typically performed as a day case and thus avoids the need for repeated general anesthesia [4].

The complication rate varies with the complexity of the repair and the surgeon’s experience level [5, 6]. The most common complications include fistulae, urethral stricture, meatal stenosis, persistent chordee, infections, and wound dehiscence [7].

In their review article, Baskin and Ebbers referred to the importance of skin coverage by counting it as one of five sequential steps for the successful repair of hypospadias[8]. This has also been considered by Duckett, who mentioned that one of four goals in the one-stage repair of hypospadias is to cover the penis with skin that is pliable, elastic and symmetrical and preferably
Materials and methods:  
45 patients will be randomly arranged into 3 groups in this study:  
1st group are those patients undergoing direct skin closure using the standard Snodgrass technique (15 patients).  
2nd group are those patients undergoing skin closure by Byars’ technique (15 patients).  
3rd group are those patients undergoing skin closure by modified Byars’ technique (15 patients).

Preoperative assessment:  
1- Clinical parameters: All patients will undergo complete history taking and clinical examination.  
2- Preoperative investigations:  
   a. CBC.  
   b. Urine analysis.  
   c. Liver function tests & coagulation profile.

Operative techniques:  

Snodgrass technique: The initial step includes degloving the penis. The glans wings are then separated. A deep incision of the urethral plate is performed. Urethroplasty or tubularization of the urethral plate is then carried out over an 8F catheter. Interposition of dartos fascia over the urethroplasty is optional to prevent fistula formation. The final step includes direct skin closure in the midline of the ventral surface.  

Byars’ technique for skin closure: After doing the urethroplasty as in the Snodgrass technique, a wide dartos flap is dissected from the prepuce to cover the urethroplasty through a buttonhole, and then the skin of the prepuce is divided into two halves to cover the ventral surface of the penis one above the other.  

Modified Byars’ technique for skin closure: Urethroplasty is done as in the Snodgrass technique, and before dissection of the dorsal dartos flap, the prepuce is gently stretched and incised vertically into two halves. The dartos flap is dissected from one half of the prepuce and brought ventrally around the side of the penile shaft to cover the urethroplasty, leaving the other preputial half with intact vascularity to reconstruct the ventral shaft skin.
non-hair-bearing [9]. Several techniques have been described to achieve this goal by providing skin flaps of reliable viability to cover the ventral penile shaft [9,10].

The paucity of soft tissues which could be readily and easily mobilized from an adjacent area to reconstruct the ventral defect is believed to be the prime factor responsible for the dilemma experienced by all surgeons involved. The prepuce is an important source of tissues that can be used in different ways in the repair of hypospadias: neo-urethral reconstruction, providing a barrier layer to cover the repair, or providing skin cover to the ventral shaft. Unfortunately, each patient has only one dorsal prepuce, usually serving one function in the repair [11].

In his review article, AboZaid described his technique for skin closure by modifying the old Byars’ technique, to be combined with TIP urethroplasty to allow a multilayered closure without compromising the blood supply to the ventrally placed skin flap. He aims to achieve two goals by splitting the prepuce into two halves each serving a function. One half will provide a barrier layer to cover the urethroplasty and the other half will be used to reconstruct the deficient ventral penile skin[11].
Inclusion criteria:

- All patients candidate for Snodgrass hypospadias repair with ventral skin deficiency and with no cordee.

Exclusion criteria:

- Circumcised patients.
- Recurrent cases.
- Patients with severe chordea.
- Adult cases.

Follow up:
Follow up of the three groups will be to compare the outcome as regard to:

- Operative time.
- Post operative hospital stay.
- Meatal shape and site.
- Development of urethrocutaneous fistulae.
- Skin complications: infection, disruption, and necrosis.
- Cosmetic appearance.

Article review:

➤ Introduction
➤ Embryological overview of hypospadias
➤ Review of literature
➤ Anatomical considerations for repair of hypospadias
➤ Snodgrass technique (TIP)
➤ Byars’ technique.
➤ Modified Byars’ technique.
➤ Material and methods.
➤ Results.
➤ Discussion.
➤ Conclusion.
➤ References.
Perfect skin closure is one of the most important steps in hypospadias repair. The aim of this study is to compare between three methods of skin closure which are: direct skin closure by standard Snodgrass technique, skin closure by Byars’ technique, and skin closure by modified Byars’ technique.
References:


