

Original Research Article

**THE OUTCOMES OF URETHROPLASTY FOR HYPOSPADIAS REPAIR
IN M. DJAMIL HOSPITAL, PADANG, INDONESIA**

ABSTRACT

Background: Hypospadias is believed to result from arrested penile development, leaving a proximal urethral meatus. It has challenged generations of reconstructive surgeons trying to extend the urethra with the goal of restoring as normal function and appearance as possible. It is commonly written that more than 200 urethroplasty techniques have been described.

Methods: We retrospectively review the medical records of patients with hypospadias that has been done urethroplasty for hypospadias repair in M. Djamil Hospital from January 2012 to January 2014. The inclusion criteria was all medical records of patients with hypospadias who underwent urethroplasty. The medical records with uncompleted data were excluded. Patients were followed-up by coming to the urology office in M. Djamil Hospital and by phone calling. The successful of therapy defines as no complications based on history taking and physical examination.

Results: Sixty-five hypospadias cases had underwent urethroplasty including 11 cases with uncompleted data. Fifty-four cases were included in the study, with 27 (50%) cases had underwent tubularized incised plate (TIP) technique, 15 (23.1%) cases underwent Koyanagi technique, 5 (7.7%) cases underwent onlay island preputial flap technique, 4 (6.2%) underwent transverse island preputial flap technique, and 3 (4.6%) cases underwent other techniques as their therapy for hypospadias. The position of the meatus were in the glans (11.1%), distal shaft (13%), middle shaft (33.3%), proximal shaft (22.2%) and scrotal (20.4%). The overall complications was 13 (24.1%) cases from all cases included in the study.

Conclusions: Hypospadias repair remains challenging based on urethroplasty techniques and complications following it. Surgical correction of hypospadias is individualized with the aims of achieving proper urinary function with adequate cosmesis.

Keywords: Hypospadias, Urethroplasty, Outcome, Complication

1. INTRODUCTION

Hypospadias can be defined as hypoplasia of the tissues forming the ventral aspect of the penis beyond the division of the corpus spongiosum. Hypospadias is usually classified based on the

anatomical location of the proximally displaced urethral orifice: distal-anterior hypospadias, intermediate-middle, and proximal posterior. The pathology may be much more severe after skin release [1].

In the 1800s both Bouisson and Rennes reported that hypospadias occurred in 1 of 300 males. Data from birth registries in the United States during the late 1960s demonstrated a similar incidence. Subsequent studies in the 1970s and 1980s indicated an apparent doubling in hypospadias occurrence in the United States, Hungary, and England, with upward trends in Denmark, Norway, and Sweden [2].

Risk factors associated with hypospadias are likely to be genetic, placental and/or environmental: an additional member with hypospadias is found in 7% of families, endocrine disorders can be detected in a very few cases. Babies of young or old mothers and babies with a low birth weight have a higher risk of hypospadias. A significant increase in the incidence of hypospadias over the last 20 years suggests a role for environmental factors (hormonal disruptors and pesticides). The use of oral contraceptives prior to pregnancy has not been associated with an increased risk of hypospadias in the offspring [1]. Assisted reproduction is associated with an increased hypospadias risk, which has been attributed to hormonal manipulations during and after procedures, as well as paternal subfertility and twin pregnancy [2].

Although it is commonly written that more than 200 repairs have been described, hypospadias urethroplasty can be summarized into three basic categories: tubularization of the urethral plate, supplementation or substitution of the urethral plate with skin flaps, or urethral plate substitution with grafts [2,3].

The aim of the study was to review the outcomes of urethroplasty for hypospadias repair in M. Djamil Hospital. The results of this study are very important in giving us an overview of how the outcomes of patients with hypospadias that has been done urethroplasty in order to enhance the surgical technique and minimizing the complications.

2. MATERIALS AND METHODS

We retrospectively review the medical records of patients with hypospadias that has been done urethroplasty for hypospadias repair in M. Djamil Hospital from January 2012 to January 2014. The inclusion criteria was all medical records of patients with hypospadias who underwent urethroplasty. The medical records with uncompleted data were excluded.

We collected data from the patients such as based on physical examination, pre-operative, peri-operative, and post-operative status of the patients with hypospadias. Patients were followed-up by coming to the urology office in M. Djamil Hospital and by phone calling. The successful of therapy defines as no complications based on history taking and physical examination.

3. RESULTS

Sixty-five hypospadias cases had underwent urethroplasty from January 2012 to January 2014, including 11 cases with uncompleted data. Fifty-four cases were included in the study.

The demographic data and pre-operative status is shown in table 1.

TABLE 1

74 All of the patients with disorder of sexual differentiation (DSD) had karyotype of 46XY.
 75 Twelve cases had previous surgery, including one previous urethroplasty surgery in 10 patients,
 76 two previous urethroplasty surgery in 1 patient, and four previous urethroplasty surgery in 1
 77 patient. All penoscrotal transposition cases had simultaneous repair of penoscrotal transposition
 78 and hypospadias surgery as well as repair of scrotal bifid. We had one patient with right
 79 testicular undescended. One other patient had left testicular undescended that had been corrected
 80 by orchiopexy previously. Four patients had hormonal manipulation pre-operatively by
 81 testosterone injection due to small size of the penile.

82 The peri-operative data is shown in table 2.

83

84 TABLE 2

85

86 All of the urethroplasty surgery using absorbable suture (e.g. pds and vicryl). The size of
 87 the suture is dependent to the size of the penis (range from the size of 4.0 to 6.0). All of the cases
 88 using antibiotic-tulle dressing post operative. None of the cases used suprapubic urine diversion.
 89 All of the cases used urethral stent either by Folley catheter or nasogastric tube stent per-urethral.
 90 There are 3 patients who underwent urethroplasty with other techniques including buccal mucosa
 91 graft and meatal advancement glansplasty (MAGPI).

92 The post-operative complication is shown in table 3.

93

94 TABLE 3

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96 The characteristics of patients in each urethroplasty technique is shown in table 4.

97

98 TABLE 4

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100 The TIP group had 5 patients with post-operative complications including wound
 101 dehiscence (2 patients), fistulae (1 patient), difficult to urinate (1 patient), and penile torsion (1
 102 patient). Post-operative complications for Koyanagi group including wound dehiscence and
 103 difficult to urinate (1 patient each). Post-operative complications for onlay island preputial flap
 104 including wound dehiscence and hematoma (1 patient each). Post-operative complications for
 105 transverse island preputial flap including fistulae and hematoma (1 patient each). Post-operative
 106 complication for other techniques group including wound dehiscence (2 patients).

107

108 **4. DISCUSSION**

109 Patients with hypospadias should be diagnosed at birth. Diagnosis includes a description of the
 110 local findings including position, shape and width of the orifice, presence of atretic urethra and
 111 division of corpus spongiosum, appearance of the preputial hood and scrotum, size of the penis,
 112 and curvature of the penis on erection. Severe hypospadias with unilaterally or bilaterally
 113 impalpable testis, or with ambiguous genitalia, requires a complete genetic and endocrine work-
 114 up immediately after birth to exclude intersexuality, especially congenital adrenal hyperplasia
 115 [1].

Hypospadias is diagnosed by physical examination, first suspected by the ventrally deficient prepuce and confirmed by the proximal meatus. Other abnormal ventral findings potentially include downward glans tilt, deviation of the median penile raphe, ventral curvature, scrotal encroachment onto the penile shaft, midline scrotal cleft, and penoscrotal transposition [2]. A karyotype may help categorize hypospadias as syndromic when there are other nongenital anomalies, especially developmental delay, dysmorphic facies, and/or anorectal or scrotal malformations. It may also detect gonadal DSD, especially when there is also cryptorchidism [2].

The functional indications for surgery are: proximally located meatus, ventrally deflected urinary stream, meatal stenosis, and curved penis. The cosmetic indications, which are strongly linked to the psychology of the parent or the patient's future psychology, are: abnormally located meatus, cleft glans, rotated penis with abnormal cutaneous raphe, preputial hood, penoscrotal transposition, and split scrotum [1]. The therapeutic objectives are to correct the penile curvature, to form a neo-urethra of an adequate size, to bring the neomeatus to the tip of the glans, and to achieve an overall acceptable cosmetic appearance of the genitalia.

The use of special fine synthetic absorbable suture materials are required as in our study. Knowledge of wound care and post-operative treatment are essential for a satisfactory outcome. Pre-operative hormonal treatment with local or parenteral application of testosterone, dihydrotestosterone or beta-chorionic gonadotropin can be helpful in patients with a small penis or for repeat surgery [1,2,4].

There are no data regarding optimal timing for hypospadias surgery in children. Optimal timing for surgery in children presenting at an older age is uncertain. From 18 months to approximately 3 years of age has been described as a difficult period for hospitalization, leading

138 to a recommendation that repair be postponed to age greater than 3 years [2]. The age at surgery
139 for primary hypospadias repair is usually 6-18 months [1,4]. However, earlier repair between 4
140 and 6 months of age has been reported recently [1]. Mean age of hypospadias repair in this study
141 is 10.49 years, lot more older than previous guideline. This could be happen probably due to the
142 lack of education and low economic status of the patients and its family.

143 The most commonly performed operation to repair distal hypospadias is the TIP repair
144 [2,5]. Although other procedures such as MAGPI, Mathieu flip-flap, and urethral advancement
145 remain in use. Options for repair midshaft hypospadias where the urethral plate can be
146 maintained, include TIP repair or onlay island preputial flap. The greatest controversy in primary
147 hypospadias surgery concerns decision making for proximal cases. Options depend on whether
148 the urethral plate is available for urethroplasty after associated ventral curvature is straightened.
149 If so, then either TIP repair or an onlay island preputial flap can be used. Previous literatures
150 showed the superiority of TIP repair in proximal hypospadias [6], even when compared with
151 onlay island preputial flap repair [7]. When the urethral plate is transected, a one-stage
152 urethroplasty can be accomplished by transverse island preputial flap or the Koyanagi flap [2].

153 Urine is drained with a transurethral dripping stent, or with a suprapubic tube. Some
154 surgeons use no drainage after distal hypospadias repair. A circular dressing with slight
155 compression, as well as prophylactic antibiotics during surgery, are established procedures.
156 Previous literatures showed that there were no statistically significance in patients with or
157 without urethral stent in terms of fistulae [8,9]. A large variation in the duration of stenting and
158 dressing is described but European Association of Urology (EAU) guideline cited that no
159 recommendation can be given due to the low level of evidence [1].

A systematic review of the TIP repairs of distal hypospadias found an incidence of fistula of 3.4 – 3.6% [1]. Urethrocutaneous fistula following hypospadias repair is the most feared but anticipated complication [10]. Karakus et al cited that TIP repair may be used safely for the treatment of fistulas after hypospadias repair [11]. Previous literature showed that the mean complications rate for onlay island preputial flap, transverse island preputial flap, and Koyanagi flap were 34%, 32%, and 27% respectively [2]. We found it similar with our study.

5. CONCLUSIONS

Hypospadias repair remains challenging based on urethroplasty techniques and complications following it. Surgical correction of hypospadias is individualized with the aims of achieving proper urinary function with adequate cosmesis.

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194 Table 1. Demographic data and pre-operative status

Total cases	54
Mean age (range)	10.49 (2 – 27) years
Disorder of sexual differentiation (DSD)	3 (5.6 %)
Previous surgery	12 (22.2 %)
Position of the meatus	
Glans	6 (11.1 %)
Distal shaft penile	7 (13 %)
Middle shaft penile	18 (33.3 %)
Proximal shaft penile	12 (22.2 %)
Scrotal	11 (20.4 %)
Penoscrotal transposition	3 (5.6 %)
Scrotal bifid	2 (3.7 %)
Testicular undescended	1 (1.9 %)
Hormonal manipulation pre-operative	4 (7.4 %)

195

196 Table 2. Peri-operative data

Urethroplasty techniques	
Tubularized incised plate (TIP)	27 (50 %)
Koyanagi	15 (23.1 %)
Onlay island preputial flap	5 (7.7 %)

Transverse island preputial flap	4 (6.2 %)
Other	3 (4.6 %)
Mean operative time (range)	130.55 (60 – 210) minutes
Mean duration of urethral stenting (range)	10.26 (7 – 14) days

197

198 Table 3. The post-operative complication

Total post-operative complication cases	13 (24.1 %)
Post-operative complication	
Wound dehiscence	6 (46.2 %)
Fistulae	2 (15.4 %)
Difficult to urinate	2 (15.4 %)
Penile torsion	1 (7.6 %)
Hematoma	2 (15.4 %)

199 Table 4. The characteristics of patients in each urethroplasty technique

Urethroplasty technique	Tubularized incised plate (TIP)	Koyanagi	Onlay island preputial flap	Transverse island preputial flap	Other
Total cases	27	15	5	4	3
Previous urethroplasty	7 (26 %)	2 (13.3 %)	-	1 (25 %)	2 (66.7 %)
Position of the meatus					
Glans	5 (18.5 %)	-	-	-	1 (33.3 %)
Distal shaft of penile	6 (22.2 %)	-	-	-	1 (33.3 %)
Mid-shaft of penile	12 (44.4 %)	2 (13.3 %)	3 (60 %)	1 (25 %)	-
Proximal shaft of penile	4 (14.9 %)	5 (33.3 %)	2 (40 %)	1 (25 %)	-
Scrotal	-	8 (53.4 %)	-	2 (50 %)	1 (33.4 %)
Post-op complications	5 (18.5 %)	2 (13.3 %)	2 (40 %)	2 (50 %)	2 (66.7 %)

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