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## Characteristics of hypospadias cases in Sanglah general hospital, Bali-Indonesia: a descriptive study



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### ABSTRACT

**Background:** Hypospadias is one of the most common congenital anomalies. The purpose of this study is to assess the characteristics of hypospadias patients in Sanglah General Hospital, and the type of hypospadias repair and the outcome.

**Methods:** The data is collected retrospectively from the hypospadias patients' medical records who undergone a hypospadias repair between January 2009 to April 2012. The data is analyzed descriptively to describe the characteristics of hypospadias patients, the procedures taken, and the outcomes.

**Results:** From 42 patients, type of hypospadias are 33.3% (n = 14) penoscrotal; 21.4% (n = 9) scrotal; 14.3% (n = 6) corona; 26.2% (n = 11) penile; 2.4% (n = 1) subcoronal; 2.4% (n = 1) and perineal.

Chordee was present in 67.9% cases (n = 36), and cryptorchidism present in 3.7% case (n = 2). The urethroplasty techniques applied: TIP 55.6% (n = 15); Duckett Preputial Island Flap 14.8% (n = 4); MAGPI 14.8% (n = 4); 14.8% (n = 4) two stages urethroplasty. Complication rate of Duckett is 50% (n = 2) urethra cutaneous fistula; MAGPI 25% (n = 1) meatal stenosis; TIP 20% (n = 3), 2 urethrocutaneous fistula, 1 urethral stricture; 2 stages urethroplasty 0% (n = 0).

**Conclusion:** The findings suggest a different frequency of the proportion of the type of hypospadias in this study when compare to the readily available literature. The age of the patients undergone hypospadias repair was higher compare to other studies. TIP technique was the most preferred in Sanglah Hospital.

**Keywords:** congenital; anomalies; cryptorchidism; urethra.

**Cite This Article:** Duarsa G.W.K., Nugroho T.D. 2016. Characteristics of hypospadias cases in Sanglah general hospital, Bali-Indonesia: a descriptive study. *Bali Medical Journal* 5(1): 12-14. DOI:10.15562/bmj.v5i1.185

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### INTRODUCTION

Hypospadias is an abortive development of the urethral spongiosum, ventral preputium, and penile chordee.<sup>1</sup> The incidence of hypospadias is 1 in 200-300 male live birth.<sup>1,2</sup> Hypospadias is classified in three types: distal (anterior), medial, and proximal (posterior). Most of hypospadias cases are the distal type, followed by medial and proximal. The proportions are influenced by the pathophysiology of the embryonic development of hypospadias. Anterior or glanular urethra grows towards the proximal, and the ectodermal core is formed in the distal of the glans penis which form a canal to join the more proximal urethra in the corona, forming a complete penile urethra in week 14.<sup>2,3,4</sup> It is the last step in the normal urethral formation, thus the incidence of the sub-coronal hypospadias is higher.<sup>2</sup> The most common anomaly accompanying hypospadias is undescended testes and inguinal hernia.<sup>2</sup>

Urology Committee of the American Academy of Pediatrics states the optimal psychological age for an elective surgery of the genitalia is within the sixth months of the early life, or in the age of four year old.<sup>3,5</sup> From the size perspective, a penis with hypospadias in 3 months of age is sufficient to be done a surgery with a help of a magnifier.<sup>2</sup>

Currently, doctors try to do hypospadias repair when a child is 4 to 18 month old, with a trend for an earlier intervention.<sup>4</sup> This is because it results in a better psychological and emotional state.<sup>2,4,6</sup> The patients with less complication after the surgery have a higher self-esteem compare to the patients with more complications.<sup>7</sup>

There is not an ideal urethroplasty technique that can be applied to repair all types of hypospadias. The type of hypospadias, the penile curvature, the surrounding tissues and their quality influence the decision of which technique to be used.<sup>8</sup> The main objective of hypospadias repair is to have a nearly normal cosmetic and functional result.<sup>5</sup> A tubularized incised plate (TIP) urethroplasty results in a cosmetically normal meatus, vertically oriented, and is complemented by a high success rate.<sup>7</sup> When applicable, a one-step approach which spares the urethral plate is the ideal approach for hypospadias repair. However, in a scrotal or a perineal hypospadias, with a severe chordee and a small penis, a two-step approach is more preferred.<sup>8</sup>

Because there is a rapid growth in the puberty, a new problems potentially arise: the unknown and asymptomatic microfistulae may shows symptoms,

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neo-urethra with scars grows inadequately, and an unsatisfactory penile morphology.<sup>5</sup>

A hypospadias data recording and reporting in Indonesia, specifically in Bali, are rarely conducted. Regardless, hypospadias is one of the commonly diagnosed congenital anomalies. The data collection of the hypospadias patient's characteristics can uncover the situation in Indonesia. Thus, this research is conducted to obtain the characteristics of the hypospadias patients in Sanglah General Hospital, Bali-Indonesia the surgical technique applied, and the complications.

## METHODS

The research is a descriptive retrospective. In May 2012, data of the post-hypospadias surgery patient was obtained from the patient medical record in Sanglah General Hospital, Bali-Indonesia traced from the list of the hypospadias surgery patients recorded by the Sanglah Urology Secretariat. The sample is the patient who underwent a hypospadias repair surgery in the hospital from January 2009 to April 2012. The number of the sample is 53. It includes patients who underwent a one step or two-step approach. A complete data about the patient characteristics was only obtained in 27 patients. The data of the patients with incomplete recording about the age, the presence of chordee, and the comorbid complaints, was included and analyzed.

## RESULTS

The case of hypospadias in Sanglah General Hospital from January 2009 to April 2012 was 53. Only 27 of the patients have a complete recorded characteristic in the medical record. Age median is 7.35 years (n = 53). The youngest patient is 2 years old, the oldest is 17. From 27 patients, 51% (n = 14) visits the hospital with a complaint of urinating from the base of the penis. None of the patients was circumcised before the hypospadias surgery. Frequency type of hypospadias is listed in Table 1.

**Table 2** The Frequency of Urethroplasty Technique Used

| Repair Method                 | n  | %     |
|-------------------------------|----|-------|
| One step approach             |    |       |
| TIP                           | 15 | 55.56 |
| MAGPI                         | 4  | 14.81 |
| Duckett Preputial Island Flap | 4  | 14.81 |
| Two-step approach             | 4  | 14.81 |
| Total                         | 27 | 100   |

**Table 3** Frequency of the Urethroplasty Technique Used and the Number of Complications

| Repair Method                 | n  | %     | Complications |    |    |
|-------------------------------|----|-------|---------------|----|----|
|                               |    |       | UF            | US | MS |
| One step approach             |    |       |               |    |    |
| TIP                           | 15 | 55.56 | 2             | 1  |    |
| MAGPI                         | 4  | 14.81 |               |    | 1  |
| Duckett Preputial Island Flap | 4  | 14.81 | 2             |    |    |
| Two-step approach             | 4  | 14.81 |               |    |    |
| Total                         | 27 | 100   |               |    |    |

Remarks: UF = Urethrocuteaneous fistula; US = Urethral stricture; MS = Meatal stenosis

In 53 patients the accompanying anomalies are hydrocele = 2 (3.70%); cryptorchidism; central agenesis = 1 (1.80%); scrotum bifidum = 2 (3.70%); Disorder of Sex Development (DSD) = 2 (3.70%). There is not any accompanying anomaly in 86.80% of the patients (n = 46). There are 67.9% (n = 36) of the patients presented with chordee, and 32.1% (n = 17) without. The frequency of the urethroplasty technique used is listed in Table 2. The frequency of the Urethroplasty technique used and the number of complications were presented in Table 3.

There is no complication in 77.80% of the case. The post-surgical complication occurred are: urethral stricture in 1 case of scrotal hypospadias, meatal stenosis in 1 case of penile hypospadias, and a fistula in 4 cases of penoscrotal hypospadias. The minimum duration of the surgery is 45 minutes, and maximum 270 minutes (median = 135 minutes).

## DISCUSSION

The number of hypospadias case Sanglah General Hospital, Bali-Indonesia cannot be used in comparison to other countries. The data is only collected from Sanglah General Hospital, Bali-Indonesia while the patients may went or underwent a surgery in

**Table 1** The Frequency of Hypospadias Type

| Hypospadias | n  | %     |
|-------------|----|-------|
| Penoscrotal | 14 | 33.33 |
| Scrotal     | 9  | 21.43 |
| Coronal     | 6  | 14.29 |
| Penile      | 11 | 26.19 |
| Subcoronal  | 1  | 2.38  |
| Perineal    | 1  | 2.38  |
| Total       | 42 | 100   |

other hospital in Bali or in other Indonesian island. To have a better insight of hypospadias incidence, a regional or national research in several hospitals is needed. The ideal method is to have a record for every newborn physical examination.<sup>9</sup> The sensitivity of physical examination is different from one centre to another, from time to time.<sup>10</sup> In a consequence, the case reporting and recording may have a wide variance. The age of the patient who underwent a hypospadias surgical repair in this research is older when compare to the younger group within the optimal age range suggested by the American Academy of Pediatrics Urology which is 6 to 12 months old.<sup>5,7</sup> It can be because of the difference of penis size of the Indonesians compare to the Americans. The surgery is postponed until the patient is older, though it is said that this may affect the patient psychologically. Testosterone preparation is not used in Sanglah General Hospital, Bali-Indonesia.

The most type of hypospadias in Sanglah General Hospital, Bali-Indonesia is the proximal, follow by the distal. It is converse from the currently available epidemiological data and the pathophysiological theory. This can happen because of the small number of the sample (42 cases). In addition, the patients with distal hypospadias may not notice that they have a hypospadias, and therefore they do not seek for a medical help. Only the patient with the severe form comes to the hospital.

In this research, the proportion of the proximal hypospadias but has less proportion of additional anomaly compare to the research in Istanbul where 29.4% (10 cases of 34) of the newborn with hypospadias has another anomaly; 5 cases (14.7%) with cryptorchidism, 1 case with hydrocele, and the other 4 with other extragenital anomaly.<sup>11</sup>

The severe form of hypospadias (penoscrotal, scrotal, or perineal) is more likely to have an additional congenital anomaly, the most common is urogenital anomaly: cryptorchidism and inguinal hernia.<sup>11,12</sup> Cryptorchidism in this research is lower (1.8%), and no hernia inguinalis is found.

TIP is the most used technique in Sanglah General Hospital. It is popular because it is flexible, has lower complication rate, and resulting a vertical meatus. Most of the hypospadias surgical techniques is criticized for the complexity of it to be learned, but not in TIP.<sup>13</sup>

A fistulae as a complication in TIP is 0 to 28%.<sup>13</sup> In this study, from the TIP procedure (n = 15), 20% (n = 3) shows 2 cases of urethrocutaneous fistulae and 1 meatal stricture. The 2 (n = 4) step approach in this study shows no complication. These may be influenced by the small number of sample.

In this study, the TIP combined with a Double Dartos Flap (DDF) shows a better protection against the formation of fistulae, compare to a single flap.<sup>14,15</sup>

When DDF is used, a perforation may happen in the first flap resulting a urethrocutaneous fistulae, but protected by the second layer of Dartosflap.<sup>14</sup>

## CONCLUSION

The proportion of cases according to the type of hypospadias in this study is different from the readily available literature. The age of the patients undergone hypospadias repair was higher compare to other studies. TIP technique was the most preferred in Sanglah Hospital.

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