

Management of hypospadias in Saudi Arabia: A national survey

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Abstract

Introduction: Hypospadias is one of the most common congenital anomalies of the penis. Different methods of hypospadias management are described in the literature. We try in this study to evaluate the national trends and to compare them with international practices.

Materials and Methods: A multiple choice survey was distributed among a sample of national practitioners using a weblink between September and December 2017. It included questions about participants demographics, number of cases operated on per year, perioperative care and preferences, long-term follow-up, and complications. Data were analyzed and compared with international practices.

Results: Results of 47 practitioners were evaluated and analyzed in this study. The majority of the participants were pediatric urologists (48.9%) and from the central province (44.7%). Most of the participants prefer to operate on patients between the ages of 1 and 2 years (48.9%) and operate at ≥ 20 cases per year (76.6%). Tubularized incised plate (TIP) is the preferred technique for distal penile hypospadias repair whereas staged repair is preferred for proximal cases. All participants use a form of a second layer and a stent for their repairs. The majority reported an overall complication rate of $\leq 10\%$ for distal penile hypospadias (76.1%) and $> 10\%$ for proximal penile cases (59.6%).

Conclusion: This study helped us identify national trends in hypospadias management, which were comparable to the international trends. TIP repair is the preferred technique for distal penile hypospadias repair whereas staged repair is preferred for more complex proximal variants. Although data in this study come from reports of personal experience, it can serve as a backbone for the future prospective studies on this topic.

Keywords: Hypospadias, surgical techniques, survey

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INTRODUCTION

Hypospadias, a ventral opening of the external urethral meatus with or without chordee and deficiency of the ventral penile skin, is one of the most common congenital anomalies of the penis.^[1] There are many publications in the literature describing the methods of hypospadias

management. Factors that can influence choices in clinical practice include hypospadias severity, surgeon's background, and preference.^[2] We try, in this study, to evaluate the trends of national practice toward hypospadias in the Kingdom of Saudi Arabia and to compare them with the international practices.

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MATERIALS AND METHODS

A multiple-choice survey was distributed among a sample of national general urologists, pediatric urologists, and pediatric surgeons using e-mail and mobile messaging applications through the period from September to December 2017. It included questions about participants demographics, number of cases operated on per year, perioperative care and preferences, long-term follow-up, and complications. Data were analyzed and compared to international practices.

RESULTS

Demographics

A total of 51 surgeons (42 consultants, five specialists, and four residents) took part in the survey. Residents were excluded from the study. The majority, 21/47 (44.7%), was from the central province whereas the remainder was as follows: 14/47 (29.8%) from the East, 7/47 (14.9%) from the West, and 5/47 (10.6%) from the South. Participants were mostly pediatric urologists 23/47 (48.9%), followed by general urologists 18/47 (38.3%), and finally pediatric surgeons 6/47 (12.8%).

Surgeons experience and preference

Most of the participants operate on ≥20 cases per year, 36/47 (76.6%). It was only a minority, who operated on less cases, 11/47 (23.4%). The age thought appropriate for hypospadias surgery was between 6 and 12 months as per 18/47 (38.3%) participants, 1–2 years as per 23/47 (48.9%) participants, and >2 years as per the reminder. The majority never use hormonal therapy preoperatively, 26/47 (55.3%). Still, however, a good number uses preoperative hormonal therapy in selected cases, 22/47 (46.8%).

Intraoperative preference

Magnifying surgical loupes are used by 32/47 (68.1%) participants. Out of 47, 37 (78.8%) prefer to perform some kind of intervention for glanular hypospadias. The procedure of choice is meatal advancement and glanuloplasty, 22/47 (46.8%). Tubularized incised plate (TIP) is the preferred procedure for distal penile hypospadias repair whereas staged repair using preputial graft or flap is preferred for proximal more complex cases [Chart 1]. The preferred suture material, size, and suturing technique are summarized in Table 1. Tourniquet and bipolar diathermy are used by the majority to achieve hemostasis. Only few use adrenalin or monopolar diathermy, 6/47 (12.8%) and 5/47 (10.6%), respectively. All participants use a form of the second layer to cover their repairs. The preferable type and site of the second

layer are summarized in Table 2. Stents are always used following hypospadias surgery. Table 3 summarizes the preferred stent type and duration kept following distal and proximal penile hypospadias repair.

Postoperative care and follow-up

Out of 47, 11 (23.4%) participants use oral analgesia alone for postoperative pain control. The majority however 33/47 (70.2%) combine caudal anesthesia with oral analgesia. Out of 47, 3 (6.4%) use parenteral medications while none uses epidural catheters.

Postoperative antibiotics are routinely prescribed by most participants, 42/47 (89.4%). The choice of antibiotic and regimen used is summarized in Table 4.

Patients are followed up at least once as per 6/47 (12.8%) participants, up to 2 years as per 26/47 (55.3%) participants, and until the age of 5 years as per 7/47 (14.9%) participants.

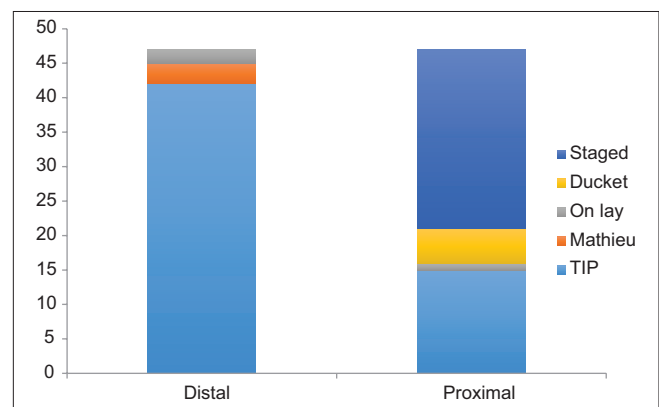


Chart 1: Preferred techniques for distal and proximal penile hypospadias repair

Table 1: Preferred suture material, size, and suturing technique

Suture	Percentage
1. Suture material	
Monofilament	33 (70.2)
Braided	14 (29.8)
2. Suture size	
5/0	13 (27.7)
6/0	21 (44.7)
7/0	13 (27.7)
3. Suturing technique	
Through and through	26 (55.3)
Subcuticular	21 (44.7)

Table 2: Preferred second layer type and technique

Second layer	Percentage
Dorsal dartos flap from one side	14 (29.8)
Dorsal double dartos flap	12 (25.5)
Ventral dartos flap	13 (27.7)
Buttonhole dartos flap	7 (14.9)
Tunica vaginalis flap	1 (2.1)

Table 3: Preferred stent type and duration of stenting

Stent	Percentage
1. Type	
Nelaton catheter	19 (40.4)
Foleys catheter	14 (29.8)
Hypospadias stent	14 (29.8)
2. Duration of stenting	
A. Distal penile hypospadias	
3 days	10.6
5 days	31.9
7 days	51
10 days	4.26
14 days	2.1
B. Proximal penile hypospadias	
3 days	0
5 days	12.8
7 days	23.4
10 days	44.7
14 days	19.2

Table 4: Postoperative antibiotic choice and regimen

Antibiotic	Percentage
1. Augmentin	
Prophylactic dose	12.8
Treatment dose	19.2
2. Trimethoprim/sulfamethoxazole	
Prophylactic dose	27.7
Treatment dose	8.5
3. Cephalosporins	
Prophylactic dose	21.3
Treatment dose	0
4. Nitrofurantoin	
Prophylactic dose	0
Treatment dose	0

Only 7/47 (14.9%) participants follow their patients until puberty and adulthood.

In addition to the clinical examination, 7/47 (17%) request uroflowmetry and measure postvoid residual urine volume for their patients. Out of 47, 4 (8.5%) routinely calibrate the external urethral meatus. None of the participants would examine their patients under anesthesia or do urethrocystoscopy routinely after hypospadias repair.

The overall complication rate for distal penile hypospadias was reported to be ≤10% by 35/47 (76.1%) participants. This is opposite to what is reported for proximal penile hypospadias in which 28/47 (59.6%) participants report an overall complication rate >10%. The most common complication reported was urethrocutaneous fistula, 31/47 (66%).

DISCUSSION

Hypospadias is one of the most common congenital anomalies of the penis.^[1] Different techniques of repair and protocols of postoperative care and follow-up are described in the literature. There have been surveys in the literature

evaluating surgeons’ practice internationally. There, however, are no publications evaluating national practice up to our knowledge. We tried in this study to evaluate the national practice and compare it with the international practice. The majority of the participants in our study were pediatric urologists, followed by adult urologists, and finally pediatric surgeons. This could be explained by selection bias, as the author is a pediatric urologist and could communicate more effectively with his peers.

One of the factors that are reported to be of paramount importance in the success of hypospadias surgery is the surgeons’ experience, and number of cases operated on per year.^[2] Many authors suggest that a minimum of 20 cases need to be operated on per year to be labeled as a high-volume hypospadias surgeon.^[3] In an international survey that included a cohort of 93 participants, 76% operated on ≥20 patients per year, which is comparable to the result of our cohort, 70.3%.^[4] Another important factor for success is the careful dissection and tissue handling. This can be facilitated by the use of magnifying surgical loupes.^[5] About 66% of our participants use magnifying loupes during hypospadias surgery.

The risk of anesthesia has to be considered when performing an elective surgery for an infant. Those <6 months of age are at a greater risk than the older ones.^[6] When asked about the optimal age to perform hypospadias surgery, the majority of our participants (48.9%) think that 1–2 years are optimal, which is comparable to the international practice, 52%.^[4] We, however, have to put in mind that children become aware of their genitalia by the age of 18 months and try to do surgeries before that age.^[5]

There is no clear consensus on the use of preoperative hormonal therapy for patients with hypospadias.^[5] This is clearly reflected by the results of our survey which showed that 55.3% of our participants never use hormonal therapy whereas 44.7% use it in selected cases.

While most of the surgeons prefer to do some kind of intervention for glanular hypospadias, a good percentage of them prefer not to intervene. Around one-fourth of our participants do not operate on glanular hypospadias. This is comparable to the result of Steven’s *et al.* survey published in 2013.^[4]

Since Snodgrass published his initial description of TIP repair 1994, this procedure became popular especially for the repair of distal penile hypospadias.^[7] A Canadian multicenter evaluation of technical preferences for primary hypospadias repair showed that TIP is the preferred

technique for distal penile hypospadias repair which is comparable to our results.^[8]

Management of proximal penile hypospadias is more complex and challenging. To deal with them, a surgeon should be ready to use different techniques than the ones used for distal penile hypospadias repair. The majority of our participants (55.3%) prefer staged repair, which is comparable to the international practice, 47%–49%.^[4,9]

Sutures size, composition, and techniques of placement may contribute significantly to outcomes of hypospadias surgery.^[5] Nearly 70% of our participants use monofilament sutures for their urethroplasties, which is comparable to international practice, 68%.^[4]

The use of an intervening layer between the neourethra and skin significantly reduces urethra-cutaneous fistula, the most common complication reported by our participants.^[6] All of our participants use one for their repairs. The most common used flap is the dorsal dartos flap that is rotated ventrally. This might lead to some degree of penile rotation. To overcome this, some use a ventral dartos flap, a dorsal buttonhole, or a double dartos flap.^[6,10]

Although a large number of hypospadias surgeons use some kind of stent after repair, there is no agreement regarding its need, the size, or kind to be used.^[11] All participants in our survey use stents for their patients. The majority, 82.9%, uses it for 5–7 days after distal penile hypospadias repair as recommend by Snodgrass.^[7] This period is increased when dealing with proximal penile hypospadias leaving the stent >7 days.

Of growing interest in modern healthcare services is the use of day surgery units. Several studies have highlighted their economic benefits. Pain control, however, may be a limiting factor in using day surgery units for some procedures.^[12] The majority of our participants do their distal repairs on day surgery or 1-day admission basis, 66% which is comparable to the international practice.^[4] This may also explain why most of our participants prefer the combination of caudal anesthesia and oral analgesia for postoperative pain control.

To reduce the rates of surgical site infections, surgeons commonly use perioperative antibiotics. The type, dose, and regimen have not been standardized for hypospadias repairs.^[13] This is clearly shown in the results of our survey. Nearly 89% of the participants use perioperative antibiotics. The types and regimens used, however, differ between them.

It is understandable that self-reporting of outcomes might be difficult as they are subjected to recall bias. Looking however at our participants' overall complication rate for distal and proximal penile hypospadias repairs, we find that they are comparable to international outcomes.^[4]

CONCLUSION

This study helped us identify national trends in hypospadias management, which were comparable to international practices. TIP repair is the preferred technique for distal penile hypospadias repair whereas staged repair is preferred for more complex proximal variants. Although data in this study come from reports of personal experience, it can serve as a backbone for future prospective studies on this topic.

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Conflicts of interest

There are no conflicts of interest.

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