

Postoperative care in hypospadias. Common practices and evidence available

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ABSTRACT

Introduction. There are many alternatives available regarding postoperative care in hypospadias surgery. The objective of this study was to assess the current care situation in our environment and to review the evidence available for pediatric surgeons who conduct this procedure.

Materials and methods. A survey regarding the main aspects of hypospadias postoperative care was created and distributed to pediatric surgeons. In addition, the evidence currently published in this field was reviewed.

Results. A total of 46 replies were achieved. 100% of the surgeons leave in place a probe or stent, and more than 80% remove it after 5 or 7 days. 87.8% of the respondents use a double diaper, but only 65.2% discharge patients early in the postoperative period. 60.9% prescribe antibiotic prophylaxis for as long as the probe remains in place, and 34.8% use full-dose antibiotic therapy.

Discussion. There was a general consensus regarding urethroplasty guiding and the use of compression dressings among the pediatric surgeons surveyed. However, more discrepancies were found in the use of antibiotic therapy and early discharge. The currently available evidence and international practice suggest using a probe with double diaper and early discharge, with postoperative antibiotics being limited. In the absence of clear evidence for a specific care type, the patient's experience could be used to choose the best postoperative protocol on an individual basis.

KEY WORDS: Hypospadias; Urinary catheters; Antibiotic prophylaxis.

CUIDADOS POSTOPERATORIOS EN EL HIPOSPADIAS. PRÁCTICAS HABITUALES Y EVIDENCIA DISPONIBLE

RESUMEN

Introducción. Existen numerosas alternativas en lo que respecta a los cuidados postoperatorios en la cirugía de hipospadias.

El objetivo de este estudio es evaluar la situación actual de estos cuidados en nuestro medio y revisar la evidencia existente al respecto para cirujanos pediátricos que realizan este tipo de intervenciones.

Material y métodos. Hemos elaborado y distribuido una encuesta que recoge los principales puntos en el cuidado postoperatorio del hipospadias dirigida a cirujanos pediátricos. Se ha realizado revisión de la evidencia actual publicada al respecto en la especialidad.

Resultados. Hemos obtenido un total de 46 respuestas. El 100% de los cirujanos dejan algún tipo de sonda o stent y más del 80% están de acuerdo en retirarlo tras 5 o 7 días. El 87,8% de los encuestados utiliza el doble pañal, pero solo el 65,2% da alta precoz en el postoperatorio. Un 60,9% pauta profilaxis antibiótica mientras dure el sondaje y un 34,8% antibioterapia a dosis plenas.

Discusión. Existe consenso general respecto a la tutorización de la uretroplastia y el uso de apósito compresivo entre los cirujanos pediátricos encuestados. Se detectan más discrepancias en el uso de antibioterapia y el alta precoz. La evidencia actual y la práctica a nivel internacional apunta hacia el uso de la sonda a doble pañal con alta precoz y la limitación del uso de antibióticos postoperatorios. En ausencia de clara evidencia que favorezca un tipo de cuidado u otro, la experiencia del paciente podría ser utilizada para elegir el mejor protocolo postoperatorio individualizado.

PALABRAS CLAVE: Hipospadias; Catéter urinario; Profilaxis antibiótica.

INTRODUCTION

Distal hypospadias surgery is one of the most common procedures in our specialty. Overall hypospadias incidence ranges from 3 to 5 cases in 1,000 live births. Among the wide spectrum of hypospadias manifestations, the most frequent forms are those that imply a meatus in a distal penile position or in the balanopreputial sulcus, with a prevalence of 65-70%⁽¹⁾.

These procedures are controversial in terms of the techniques used and postoperative care, with significant variability among pediatric surgeons and institutions⁽²⁾.

Even though each hypospadias is different and individualization is required, distal hypospadias –distal penile

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and sulcus hypospadias with urethroplasty— have common characteristics that could lead to postoperative care standardization, regardless of the repair technique used.

Postoperative care may play a critical role in favoring adequate healing and avoiding complications, and is key in the patient’s and their caregivers’ experience following surgery, as well as in the recovery process.

Its role has been discussed for more than 40 years⁽³⁾, with many studies analyzing the results with different protocols. When deciding among all the alternatives available, scientific evidence and patients’ experience and quality of life—as well as the specific circumstances of each institution— should be considered.

The objective of this study was to assess the current situation of distal hypospadias postoperative care following urethroplasty among the pediatric surgeons of our environment, to analyze the degree of consensus among the various specialists, and to review the evidence available.

MATERIALS AND METHODS

A survey regarding the key aspects of hypospadias postoperative care (Table 1) was designed. From September to December 2023, the survey was distributed through the Spanish Pediatric Surgery Society and addressed to 376 surgeons, approximately. The replies were anonymous.

The replies were collected and managed using the REDCap electronic data capturing tool^(4,5). REDCap (Research Electronic Data Capture) is an online software platform designed to facilitate data collection for research studies in a safe manner. This tool offers an intuitive interface for data collection and provides with a series of data management control systems, export procedures for statistical software, and data integration and external source coordination options.

The data was exported to ESTATA for descriptive analysis purposes. All variables were qualitative, and they were described as a percentage with their respective confidence intervals. A bibliographic search in medical databases (Pub Med, Scielo) with the terms “postoperative hypospadias care”, “hypospadias dressing”, “hypospadias diversion”, and “antibiotic hypospadias” was carried out. An online search of hypospadias care recommendations in various pediatric surgery institutions internationally was also conducted.

RESULTS

A total of 46 out of 376 replies were achieved (participation rate: 12.2%).

The overall results with 95% confidence intervals are summarized in Table 2.

Table 1. Survey.

1. What type of guiding do you use following urethroplasty?
a. Bladder probe without balloon
b. Bladder probe with balloon
c. Urethral stent
d. None
2. How long do you apply urethroplasty guiding?
a. Less than 5 days
b. 5-7 days
c. More than 7 days
3. During hospitalization, younger patients are immobilized (arms or legs)
a. Yes
b. No
4. In case of bladder probe guiding:
a. It always remains within a closed system with a bag
b. It changes to double diaper in the postoperative period
5. Discharge following surgery occurs:
a. After bladder probe and dressing removal
b. Early with a urine bag
c. Early with a double diaper
6. What type of antibiotic prophylaxis do you use while the patient is wearing a urethral probe or stent?
a. A daily dose of prophylactic antibiotic
b. Full-dose antibiotic therapy
c. No use of antibiotic therapy
7. What type of dressing do you use in the postoperative period?
a. Hydrocolloid compression dressing
b. Compression dressing with gauze pads
c. Other types of dressing
d. No compression dressing used
8. When do you remove dressing?
a. At probe removal
b. 48 hours following surgery
c. When it comes off spontaneously
9. Do you use any quality-of-life survey among patients undergoing hypospadias surgery?
a. Yes
b. No

100% of the surgeons leave a probe or a stent in place. Most of them (67.4%) prefer a probe without balloon, while 23.9% opt for a probe with balloon. The majority of surgeons remove it 5-7 days after surgery (82.6%) (Fig. 1).

Table 2. Summary of overall results.

	<i>n</i>	%	95% CI
Urethroplasty guiding			
Probe without balloon	31	67.4%	52.3-79.5
Probe with balloon	11	23.9%	13.5-38.7
Urethral stent	4	8.7%	3.2-21.4
Guiding time			
Less than 5 days	5	10.9%	4.5-24
5-7 days	38	82.6%	68.4-91.2
More than 7 days	3	6.5%	2-18.9
In case of bladder probe			
Double diaper	36	87.8%	73.3-95
Closed system	5	12.2%	5-26.7
Dressing in the postoperative period			
Hydrocolloid compression dressing	24	52.2%	37.6-66.4
Compression dressing with gauze pads	11	23.9%	13.5-38.7
Other types	7	15.5%	7.3-29
No dressing	4	8.7%	3.2-21.5
Dressing removal			
At probe removal	27	64.3%	48.4-77.5
48 hours following surgery	12	28.6%	16.7-44.4
Comes off spontaneously	3	7.4%	2.2-20
Use of antibiotics			
Perioperative single dose	1	2.2%	2.9-14.5
Prophylaxis for as long as the probe remains in place	28	60.9%	45.8-74
Full doses for as long as the probe remains in place	16	34.8%	22.2-49.9
Other regimens	1	2.2%	2.9-14.5
Time of discharge			
Following probe removal	13	28.3%	16.9-43.2
Early with double diaper probe	30	65.2%	50.1-77.8
Early with closed circuit probe	1	2.2%	2.9-14.5
Other	2	4.3%	1-16.3

More than 85% of the respondents use the double diaper, but only 65.2% decide early discharge in the postoperative period and 28.3% maintain hospitalization until probe removal.

In terms of dressings, more than 90% use a compression dressing in the postoperative period. 52.2% prefer hydrocolloid dressings, while 23.9% opt for gauze pads (Fig. 2). This dressing is removed along with the bladder probe in most cases, but 28.6% of respondents prescribe removal 48 hours following surgery.

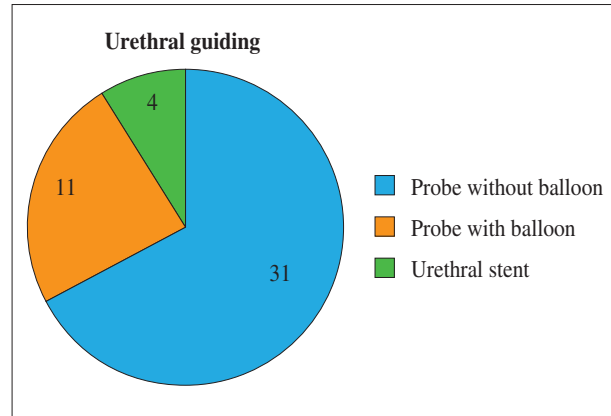


Figure 1. Use of urethral guiding.

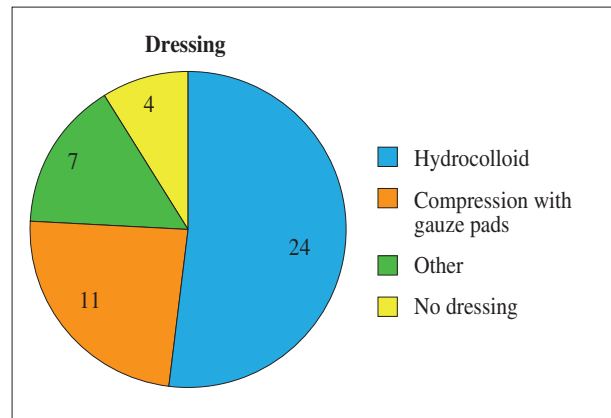


Figure 2. Use of dressings.

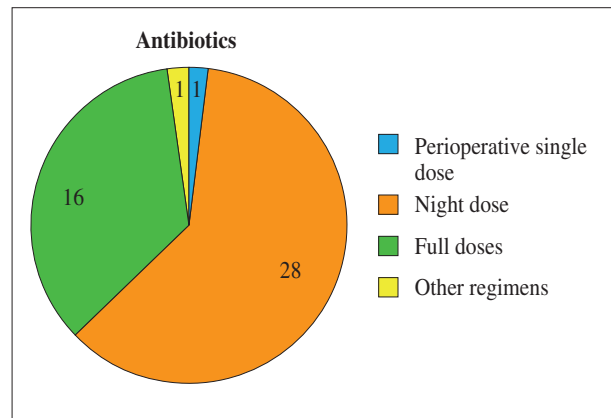


Figure 3. Use of antibiotics

As for antibiotics, 60.9% prescribe antibiotic prophylaxis for as long as the probe remains in place, and 34.8% use full-dose antibiotic therapy. Only one respondent administers single-dose prophylaxis preoperatively (Fig. 3).

DISCUSSION

Postoperative care in hypospadias surgery is somewhat controversial, with abundant scientific literature available^(2,3,6). However, there is not much quality evidence allowing care to be protocolized in a single manner to optimize results. A recent survey in the US demonstrates these discrepancies, highlighting the importance of conducting quality studies to establish the best care option among all available⁽²⁾. In the last years, a tendency towards care simplification has been noted as a result of the fact certain procedures have not demonstrated to prove beneficial in terms of subsequent progression.

Regarding dressings, there is a wide consensus in favor of their use in our environment, with most surgeons preferring hydrocolloid dressing –adhesive to the surgical area– and less than 25% opting for the gauze pad dressing. The use of hydrocolloid dressing allows postoperative edema and bleeding to be controlled in order to facilitate subsequent healing, theoretically reducing the risk of dehiscence, hematoma, and surgical wound infection. However, some authors suggest that excessive pressure could interfere with blood flow and cause complications. A recent meta-analysis by the Naples team concluded that there is no quality evidence in favor of one option or the other, and that it cannot be claimed that not using any type of dressing proves beneficial in any way⁽⁷⁾. Therefore, the choice in terms of dressing should be made at the surgeon's discretion and according to patient needs. This meta-analysis also stated that simultaneous dressing and probe removal represents one of the most stressful situations for patients and caregivers. Consequently, in the absence of clear evidence in favor of one practice or the other, the most reasonable option would be to resort to the type of dressing that is the easiest to remove and represents less stress for patients and their families, as it has already been proposed by other authors^(6,8).

Urethroplasty guiding is one of the aspects that gathers more consensus among specialists. The obvious benefit is that it supports the recently sutured urethra and diverts urinary flow until adequate healing occurs. Those in favor of limiting its use claim that exerting excessive pressure or friction on the suture could cause fistulas and imply a risk of infection. A 2018 meta-analysis showed there is no clear evidence in favor of or against urethroplasty guiding, but it also established that studies in this respect lack quality⁽⁹⁾. Highly rigorous investigations would be required to consider abandoning the practice of leaving a bladder probe in place, which is significantly widespread and makes surgeons feel more comfortable. Controversy in this aspect raises when analyzing the type of probe left in place. Those who prefer using a probe without balloon claim that removal is less traumatic for a recently reconstructed urethra, whereas those who opt for a probe

with balloon state it is less likely to accidentally come off before scheduled.

In light of the data published and the fact postoperative care is advancing towards simplification, leaving in place probes that are easier to remove and for increasingly shorter times is probably the way to go as long as reconstruction-derived complication rates are not demonstrated to be higher. In this respect, a UK pilot study on at-home bladder probe removal following hypospadias surgery⁽¹⁰⁾ stands out. In this study, parents were taught how to cut the probe at the end at which the balloon is insufflated with a pair of scissors and no further manipulation. The probe came out spontaneously in the following hours, and parents found it in the diaper. The authors claim this avoids forced friction on the urethra, as well as the anxiety resulting from in-hospital probe removal. However, in certain people, this procedure could represent an extra level of stress.

Regardless of the type of probe used, consensus regarding the use of an open urinary drainage system is increasingly greater. The first literature instance in this respect dates back from 1988⁽¹¹⁾, with data indicating that the possibility of infection depended on how long the probe was left in place rather than on whether the system was a closed or open one. However, this practice was highly criticized in some institutions, and it is only in the last years that its use has gained traction. As demonstrated by various studies, the infection rate is not higher with an open system, and the double diaper has represented an important change in hypospadias management. The fact there is no probe outside the diaper reduces the possibility of it accidentally coming out as a result of a pull, and it also allows for greater patient mobility, thus opening the door to the possibility of early discharge. Many institutions have adopted it as a common practice, and in their patient information websites, they describe the at-home postoperative period using this system⁽¹²⁾. A recent pilot study suggested complications would not be greater even if the probe was left in place with a single diaper⁽¹³⁾.

Nevertheless, it should be highlighted that, in daily practice, some parents are anxious about the possibility of bladder-probe-related complications occurring at home, which means they would not be eligible for an early discharge program. Again, the best decision for each family should be made based on patients' and parents' experience. In our data, it is noteworthy that, even though most respondents (87%) resort to the double diaper in the postoperative period, only 65% opt for early discharge with probe. This may be due to the safety sensation some parents have if their children remain in hospital for as long as the probe is in place. Educating parents in the management of the probe and the double diaper can increase their confidence and allow for discharge 24 or 48 hours following surgery, as well as for probe removal on an outpatient basis.

In our survey, there is great variability regarding the use of antibiotics pre- and postoperatively. More than half

of the surgeons prefer to administrate a prophylactic dose, and more than one third opt for full-dose antibiotic therapy for as long as the bladder probe remains in place. A 2019 meta-analysis showed that the usefulness of postoperative prophylactic antibiotic therapy in reducing infectious complications is limited⁽¹⁴⁾. Similarly, in 2022, the University of Rochester and the Children’s Hospital of Boston’s team published that neither postoperative nor preoperative antibiotic therapy have an impact when it comes to reducing infectious complications in the postoperative period of distal hypospadias with probe⁽¹⁵⁾. A responsible, case-by-case use of antibiotics is key to cooperate against the emergence of resistant bacterial strains, and protolyzing its use in the hypospadias postoperative period –as it is already the case in some reference institutions⁽¹⁶⁾– would prove beneficial.

Finally, it is also noteworthy that only 13% of the surgeons from our survey routinely conduct patient experience and quality-of-life surveys. As explained in the introduction, today’s medicine is oriented towards the concept of putting patients and their families at the core of our priorities. Their experience during the surgical process, their perception of the results, and subsequent quality of life should be considered and correctly assessed to adjust our daily practice in order to maximize benefits for our patients also in this respect.

Regarding our study limitations, it should be noted that the reply rate was low, which could make results more difficult to extrapolate. However, given that not all pediatric surgeons specifically work with this pathology, and in light of the results’ trends and the calculations based on the confidence interval, an approximate analysis of the current situation can be drawn. In addition, this survey was aimed at summarizing the most important aspects in the postoperative care of hypospadias, but some specific issues of interest for specialized surgeons were not approached, which could also stand as a limitation.

In conclusion, our data shows a general consensus in the most important aspects of distal hypospadias postoperative care, with a certain variability in some specific details. The pre- and postoperative use of antibiotic therapy should be reviewed in light of the scientific evidence available. Finally, patient experience and quality-of-life studies should be carried out to encourage parents’ care participation and choose the most adequate protocol for each patient on a case-by-case basis.

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