Risks and relevance of preputial reconstruction in hypospadia repair

Rischi e rilevanza della ricostruzione del prepuzio nella chirurgia dell'ipospadia

Cimador M., Castagnetti M., De Grazia E.

Key words: hypospadia, preputioplasty, circumcision.

Riassunto

SCOPI. Valutare i rischi relativi alla prepuzioplastica e la rilevanza che tale chirurgia riveste per i genitori dei bambini operati per ipospadia.
MATERIALI E METODI. 186 bambini con ipospadia distale sono stati sottoposti a prepuzioplastica o a postectomia durante l'intervento di uretroplastica. Il tipo di procedura è stato scelto in relazione alle condizioni anatomiche ed alle preferenza dei genitori, dopo un'attenta esposizione dei rischi correlati alla plastica del prepuzio. Le complicanze postoperatorie, i risultati, il grado di soddisfazione dei genitori sono stati valutati paragonando i pazienti circoncisi e non.
RISULTATI. Nessuna differenza statistica nelle complicanze uretrali è stata rilevata nei due gruppi. Una stenosi uretrale o meatale si è verificata in 11 (6,9%) casi dopo prepuzioplastica e in 2 (7,4%) casi dopo circoncisione. La ricostruzione del prepuzio è stata gravata da 6 casi di deiscenza del prepuzio (3,7%) e 10 casi di fimosi (6,2%) quali complicanze specifiche della procedura. Dopo un follow-up medio di 3,7 anni tutti i genitori hanno confermato il loro gradimento per l'aspetto estetico del prepuzio e del meato uretrale.
CONCLUSIONI. La ricostruzione del prepuzio è possibile in molti pazienti con ipospadia distale e dovrebbe essere presa in considerazione in accordo con le preferenze dei genitori. Questi ultimi dovrebbero essere informati che questa procedura prevede un rischio suppletivo di complicanze nella chirurgia riparativa dell'ipospadia.

Cattedra di Chirurgia Pediatrica - Università di Palermo

Indirizzo per la corrispondenza (Corresponding author): M. Cimador - Via Tramontana, 28 - 90144 Palermo - tel. 338/3786970 - fax 091/6373652 - e-mail: mcimador@unipa.it

Abstract

AIM. To assess the risks related to preputial reconstruction and its relevance for parents of children undergoing hypospadias repair.
MATERIALS AND METHODS. One-hundred-and-eighty-six children with distal hypospadias underwent circumcision or preputial reconstruction during the hypospadias repair. The type of procedure was chosen according to anatomical conditions and parents preferences after a careful explaination of possible related risks. Postoperative complications, outcomes, parents' satisfaction were assessed comparing circumcised and uncircumcised patients.
RESULTS. No statistical differences in urethral complications were found between the two groups. Urethral or meatal strictures occurred in 11 (6.9%) cases after preputioplasty and in 2 (7.4%) cases after circumcision. Fistulas occurred in 8 (5%) cases after preputial reconstruction and in 1 (3.7%) after circumcision. Preputial reconstruction involved 6 cases (3.7%) of dehiscence and 10 of phimosis (6.2%) as specific complications of this procedure. After a mean follow-up of 3.7 years all the parents stated to be satisfied of the cosmetic results.
CONCLUSION. Preputial reconstruction is feasible in many patients with distal hypospadias and it should be considered in accordance with parents' preferences. Parents should be informed that this procedure involves an increased risk of complications in hypospadias repair.

Introduction

The goal of modern hypospadia repair is to obtain a normal-appearing penis in a single stage operation minimizing morbidity[1].

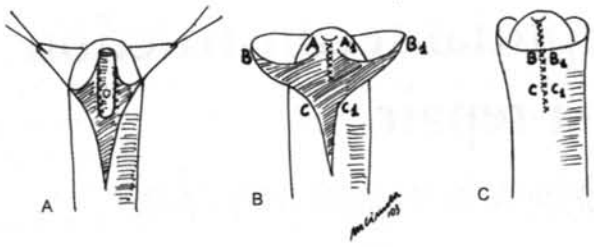

Figure 1
Surgical technique for preputioplasty. A) Mathieu urethroplasty is completed and the parameatal flipped flap was sutured. B) Two incision lines have been done along the lateral preputial wings. The marked points should be exactly sutured between them. C) Final results of preputial reconstruction. The sutured points A-A1 are located on the internal face of prepuce.

In many European countries, an uncircumcised penis is considered normal; furthermore, children who underwent hypospadias repair, considered their penile appearance different from other boys just for the absence of foreskin[2]. In such countries preputial reconstruction is often requested by parents[3] and therefore, it probably should be considered as part of the hypospadia a repair, at least when a preputial flap has not been used.

Unfortunately, preputial reconstruction appears also to increase postoperative morbidity[3]. It adds specific complications, as foreskin dehiscence and phimosis, to those one already present in urethroplasty, thus increasing the number of one stage repair failures.

Aim of the present study is to evaluate complications, risks and failures rate of preputial reconstruction according to the relevance of this procedure from the parents' point of view.

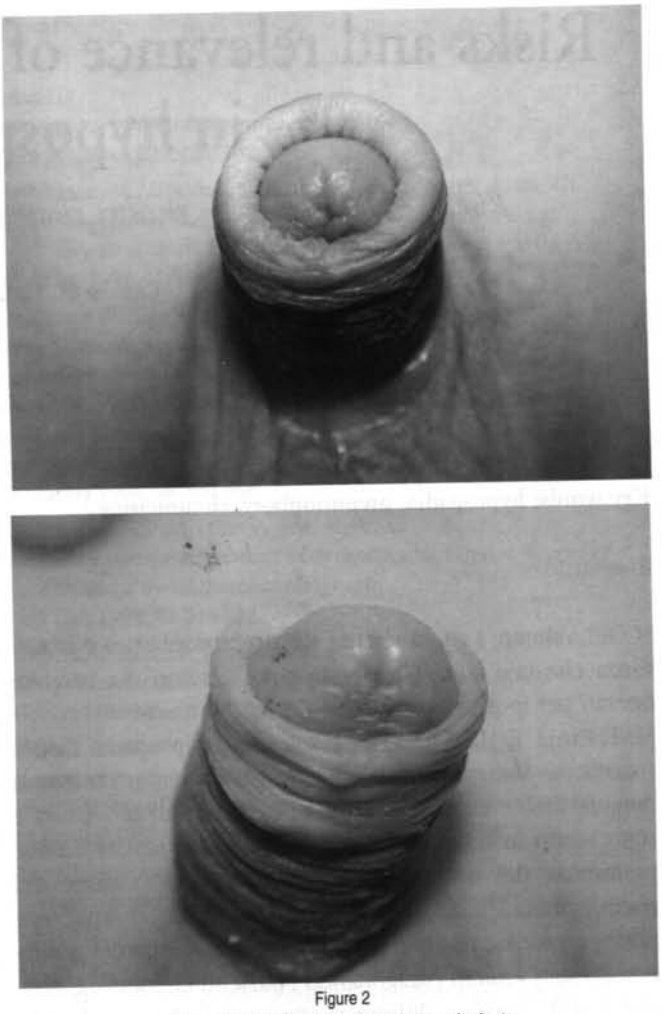

Figure 2
Penile appearance after Mathieu urethroplasty and preputioplasty.

Materials and methods

From January 1996 to January 2001, 287 children were referred to our Institution for hypospadia. Mean age at repair was 17 months. One hundred and one of these had a proximal form and were excluded from the study since they underwent a preputial flap urethroplasty. Of the remaining 186 who underwent a Mathieu or a MAGPI urethroplasty, 27 had a hooded prepuce with a small insertion on the dorsal surface of the penile shaft and were circumcised, whereas a preputial reconstruction was considered feasible in 159 cases. Parents of these 159 children were interviewed and were invited to choose between preputial reconstruction or circumcision of their child after careful information about possible advantages and risks related to each procedure. All the parents chose for preputial reconstruction despite of related risks. The preputioplasty (Fig. 1) was done performing a transverse incision on the superior margin of the foreskin and than suturing it vertically in a single layer fashion with a 6/0 polyglycolic acid stitch. Glandular and coronal urethroplasty was performed without any indwelling catheter. On the other hand, a urethral tube was inserted and left for 3 days in distal shaft urethroplasty. A self-adherent sponge dressing was used in all the cases.

Follow-up consisted of a clinical examination performed six months and one year after the intervention and then annually. Postoperative complications were recorded. During the visit parents were interviewed about their satisfaction.

Complications of preputial reconstruction were compared to those occurred in the circumcised group.

T-test for paired data was used with a statistical significance set at a $p < 0.05$.

Results

We considered two groups of boys: 159 undergoing preputial reconstruction and 27 circumcised. Urethral or meatal strictures occurred in 11 (6.9%) cases after preputioplasty and in 2 (7.4%) cases after circumcision. Fistulas occurred in 8 (5%) cases after preputial reconstruction and in 1 (3.7%) after circumcision. The difference was not statistically significant

both for stricture and fistula rates (respectively p = 0.393 and p = 0.391). Postoperative complications specific of preputial reconstruction were a dehiscence in 6 children (3.7%) and a phimosis in 10 (6.2%). Both these complications arose within the initial six months postoperatively. All the 16 children were circumcised in agreement with parents. No further complications developed at follow-up. At the final follow-up of mean of 3.7 years (range 1.2 to 6.3 years) 143 (90%) patients who underwent preputioplasty had a retractable foreskin without signs of phimosis and a good cosmetic appearance.
However, all the parents in both groups said they were satisfied of the cosmetic results of the repair, regardless of foreskin preservation (Fig. 2).

Discussion

A circumcised penis is usually considered normal in paediatric urology literature. Either Baskin and Holland, in their assessment of hypospadia repairs, do not consider prepuce surgery within the criteria for the evaluation of postoperative results[4,5]. According with previous data reported by Klijn, in European countries there is a major attention to preputial reconstruction and many parents choose this surgical step of hypospadia repair, in spite of the increased risk of complications related to it[3]. All the parents of our series required preputial reconstruction when it was proposed.
Complications in our series differed from those reported by Klijn et al.[3]. They did not observe urethral stricture (6.9% in our series) neither phimosis (6.2% in our series). Moreover they report a rate of dehiscence of the prepuce (7%) a bit higher than the ours (3.7%), but overall a higher number of urethral fistulas (21%). Authors conclude preputial reconstruction could increase the risk of such latter complication. For this reason we compared the rate of urethral complications in circumcised patients and in those undergoing preputioplasty and no statistically significant differences were found. Klijn et al related their observation to the fact that in foreskin closure overlaying suture lines can not be avoided. In our opinion, this can occur with the Snodgrass technique used in the last two years of their study, but not with the Mathieu urethroplasty, which involves two lateral suture for the meatal-based flap and a midline suture for the second layer of dartos and for the foreskin respectively.
Although preputial reconstruction may cause an increase in the risk of postoperative and early complications, in our opinion some evidences suggest that circumcision, instead, may involve a long-term hidden morbidity and lack of real benefits. Circumcision can cause a reduction of penile sensitivity threshold due to the loss of foreskin own sensory receptors and a keratinisation of the uncovered glandular nerve endings[6]. Even the uncovered urethral meatus was supposed to be more prone to complications and, particularly, to develop meatitis and stenosis[7]. Actually, we did not encounter any in our experience. On the other hand, the potential medical benefits generally attributed to circumcision, i.e. the reduction of urinary tract infections, sexually transmitted diseases and penile cancer, were recently questioned by a specific Task Force of the America Academy of Pediatrics[8].
Furthermore, from a forensic point of view, circumcision was compared to an involuntary mutilation in a healthy child and even the right of parents to give consent for their child circumcision was questioned[9].
Another debated issue is which children could undergo preputioplasty. Up-to-now, we have offered this procedure only in case of distal hypospadias, but, of course, not in proximal hypospadias where prepuce is going to be used for a flap urethroplasty. Anyway, with the recent diffusion of the Snodgrass technique a preputial reconstruction could be performed in more proximal cases[3], although we have previously advanced some concerns about that.
Finally, we would stress that, according to Mureau et al.[2], the presence of a circumcised penis is a reason that make children aware of their congenital malformation but not involve dissatisfaction for final penile appearance. All the parents of our children stated to be satisfied of the cosmetic results and accepted well circumcision when considered necessary. Nevertheless, probably, more structured interview would be necessary for an objective evaluation of this issue.
In conclusion, according to Bracka[10], we believe that a surgical repair should assure the best results allowed by contemporary techniques and materials and thus, in our opinion, preputial reconstruction should be addressed by modern "hypospadiologists" in accordance to parents' preferences. Parents should be informed that this procedure introduces a mildly increased risk of complications to the hypospadia repair.

REFERENCES

[1] Duckett JW, Baskin LS.
Hypospadias.
In: Gillenwater JC, Grayhack JT, Howard SS, Duckett JW (eds.). Adult and pediatric urology. 3rs edn, Chapt 55 Mosby St. Louis 1996; 2549-2587.

[2] Mureau MAM, Slijper FME, Nijman RJM, van der Meulen JC, Verhulst FC, Slob AK.
Psychosexual adjustment of children and adolescent after different types of hypospadias surgery: a normal-controlled study.
J Urol 1995; 154: 1902-1907

[3] Klijn AJ, Dik P, De Jong TPVM.
Results of preputial reconstruction in 77 boys with distal hypospadias.
J Urol 2001; 165: 1255-1257.

[4] Baskin L.
Hypospadias: a critical analysis of cosmetic outcomes using photography.

BJU Int 2001; 87: 534-539.

[5] Holland AJA, Smith GHH, Ross FI, Cass DT.
HOSE: an objective scoring system for evaluating the results of hypospadias surgery.
BJU Int 2001; 88: 255-258.

[6] Goldman R.
The physiological impact of circumcision.
BJU Int 1999; 83 (Suppl 1): 93-102.

[7] Lairdner D.
The fate of the foreskin.
BMJ 1949; 2: 1433.

[8] American Academy of Pediatrics task force on circumcision.
Circumcision policy statement.
Pediatrics 1999; 103: 686-693.

[9] Van Howe RS, Svoboda JS, Dwyer JG, Price CP.
Involuntary circumcision: the legal issue.
BJU Int 1999; 83 (Suppl 1): 63-73.

[10] Bracka A.
Sexuality after hypospadias repair.
BJU Int 1999; 83 (Suppl 3): 29-33.