Reconstructive surgery of the sulcus of glans penis for balanopreputial adhesion due to lichen sclerosus

Our experience and medicolegal implications

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Reconstructive surgery of the sulcus glans penis for balanopreputial adhesion due to lichen sclerosus. Our experience amd medicolegal implications

AIM: *Our exeperience with the reconstructive surgery of the adhesion of the glans with the preputial skin due to lichen sclerosus.*
MATERIAL OF STUDY: *Twentyeight patients (mean age, 44 years; range, 28-69) underwent reshaping of the balanopreputial sulcus at our institution. All patients presented with trapped penis resulting from adhesion at the sulcus of glans due to Lichen Sclerosus. The procedure entailed separating the coronal adhesion along its entire length with the use of a blunt-tipped forceps, then reshaping the balanopreputial sulcus. Though simple, the maneuver is delicate and requires scrupulous attention to the ventral aspect to avoid damaging the urethra. The adhesion is removed circumferentially around the glans by means of electrobistoury.*
RESULTS: *The duration of the follow-up period was 24 months. All patients stated they were satisfied with the cosmetic results and functional outcome. Recurrence of the condition occurred in 7% of the patients and was treated medically; recurrence of adhesion occurred in 2% of the patients and was treated with repeat surgery.*
DISCUSSION: *The indication for medical therapy in early LS is a selective criterion restricted to less severe cases; otherwise, the physician may be held responsible for treatment failure, justified claims for reimbursement, disease progression and the decidedly greater damage that may ensue. Such consequences can be averted when assessment is based on recent scientific evidence and the approach to treatment is appropriate in terms of efficacy and effectiveness.*
Surgical management is definitive and restores normal penile anatomy and function, including sexual and urinary function, thus enabling the patient to regain sexual confidence
CONCLUSIONS: *Lichen sclerosus et atrophicus is a rare disease, however, its management is not devoid of medicolegal considerations. The etiopathogenesis of the disease is unknown but progression to carcinoma of the penis has been reported in untreated cases. Consequently, timely diagnosis holds medicolegal relevance for averting delayed initiation of treatment. In cases of balanopreputial adhesion with disappearance of the sulcus of glans, we proceed with lysis and reshaping of the sulcus by means of a simple technique we have developed. The technique involves separating the coronal adhesion circumferentially around the glans using a blunt-tipped forceps, then reshaping the balanopreputial sulcus. Though very simple, the procedure is also delicate as the surgeon must be careful not to damage the urethra beneath the ventral surface.*

KEY WORDS: Balanitis Xerotica Obliterans, Inflammatory Process of the Penis, Lichen Sclerosus, Phimosis, Trapped Penis, Scleroatrophic

Introduction

Medical liability litigation has not spared rare presentations, particularly when psychophysical ramifications extend into the sexual and relational spheres of the person [1]. LS is a sclerosing entity in boys primarily involv-

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Figs. 1, 2: Balanopreputial fusion by lichen.

ing the prepuce, although a spread to the anterior urethra is possible [2]. Histologically LS is characterized by hydropic degeneration of the basal cell layer of the epidermis and a pale and homogeneous sclerosing zone in the upper dermis underlined by a band-like infiltrate of inflammatory cells. Corresponding clinical signs include a thickened and nonretractable foreskin, a whitish ring at the tip of the prepuce, dominant scarring and the development of secondary phimosis. Nevertheless, the actual incidence of LS is thought to be clinically underestimated by as much as 50%.Previous histological studies have shown a variable incidence of LS in phimosis ranging from 5% to 52%. Lichen sclerosus (LS) is a chronic-recurrent inflammatory condition of unknown origin. It may involve the foreskin and the urethra alone or the glans alone or concomitantly [3]. Involvement of extragenital skin sites is less common. One of the most accredited theories for its etiopathogenesis is an underlying autoimmune process [4], as demonstrated by the presence of tissue-specific antibodies and the association with other autoimmune disorders such as lupus erythematosus, lichen planus and graft-versus-host reaction. Other findings lending support to the idea that LS is caused by an autoimmune mechanism is the increased number of Langerhans cells in the epidermis, as seen in other immune-mediated skin disorders (e.g., lichen planus, contact dermatitis). LS is most commonly diagnosed in middle age (fourth to fifth decades of life).

Clinically, it manifests itself with a loss of elasticity due to sclerosis and/or atrophy of the tissues involved, which was formerly termed balanitis xerotica obliterans.

Lichen sclerosus may progress to adhesion of the foreskin to the glans, making it partly or completely nonretractable, and rendering sexual intercourse difficult or painful (Figs. 1, 2). The impact the disorder can have on the person varies depending on its severity and tempo, ultimately affecting the person's deepest sense of intactness and psychophysical well being.

Lichen sclerosus has been variously associated with penile squamous cell carcinoma (SCC), although the exact causal mechanism and relation between the two remain unclear [5-8].

Lichen sclerosus can be managed medically or surgically. The choice of treatment is based on assessment of the clinical stage of the disease, taking into consideration comorbidities and preexisting conditions which may play a direct or indirect role in treatment outcome [9]. Management hinges critically on the patient's compliance with treatment: active patient involvement will help to minimize risk of litigation [10]. In our experience, medical treatment of early LS includes daily topical application of a cream composed of 100 mg testosterone propionate in sesame oil and 30 g of a cream containing mometasone furoate [11]. Surgical treatment is considered curative. It is the therapy of choice in advanced stages of the disease and, depending on the site invovved, it includes circumcision, meatoplasty or reshaping of the sulcus of glans penis [12].

Here we report on our experience with reconstruction of the sulcus of the glans for balanopreputial adhesion due to LS and comment on the related medicolegal ramifications .

Materials and Methods

Between February 2005 and November 2011, 28 patients (mean age, 44 years; range, 28-69) underwent reshaping of the balanopreputial sulcus at our institution. All patients presented with trapped penis resulting from adhesion at the sulcus of glans due to LS. The most common complaints were painful erection, difficulty retracting the foreskin, and bleeding and splitting of the foreskin during intercourse.

Skin penile thermal and vibratory sensitivity thresholds were measured by means of the Genito Sensory Analyzer (GSA) prior to treatment and then again at 6 months after the operation. Erectile function was assessed using the International Index of Erectile Function (IIEF5) questionnaire. Preoperative medical treatment with daily application of a topical cream composed of 100 mg testosterone propionate in sesame oil and 30 g of a cream containing mometasone furoate (30 g of cream contain-

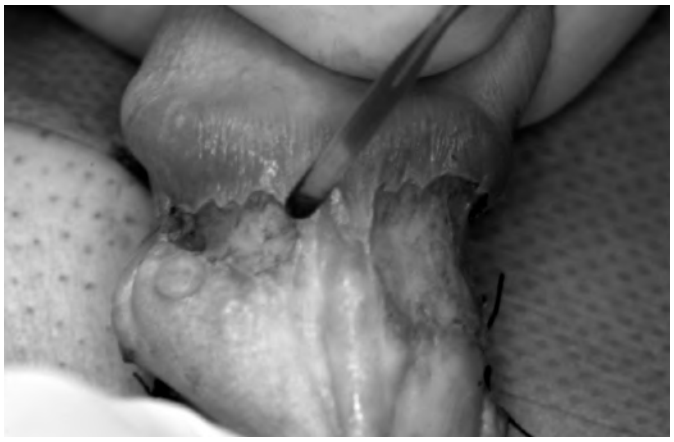

Fig. 3: Sculpture and creation of the sulcus with electric needle.

Fig. 5: Final result.

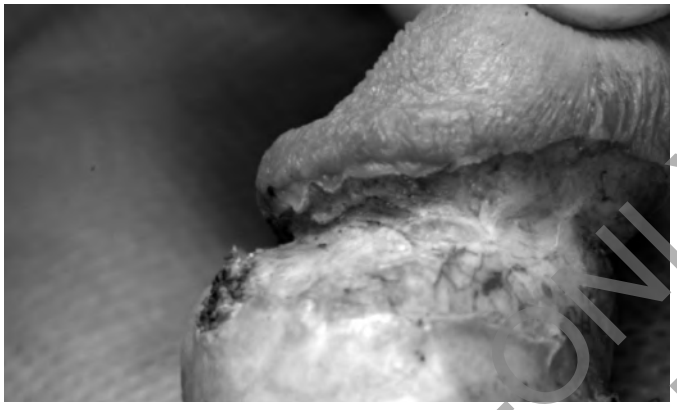

Fig. 4: Result to operating table.

ing 30 mg mometasone furoate plus 200 mg testosterone propionate) for about 2 months led to a reduction in the lesional area [13].

The surgical procedure was performed under local anesthesia with dorsal nervovascular bundle block at the root of penis using carbocaine 2%. The procedure entailed separating the coronal adhesion along its entire length with the use of a blunt-tipped forceps, then reshaping the balanopreputial sulcus. Though simple, the maneuver is delicate and requires scrupulous attention to the ventral aspect to avoid damaging the urethra. The adhesion is removed circumferentially around the glans by means of electrobistoury (Figs. 3, 4). The current intensity should be kept low to avert tissue damage. Perioperative biopsies were taken for histological confirmation of lichen. When indicated, frenulotomy and frenuloplasty were performed using separate sutures. Intraoperative dressings consisted of fat gauze pads applied to the sulcus of glans.

Healing occurred within 30 days postoperative. During the postoperative period, fat gauze dressings were applied gradually less often to prevent the recurrence of adhesion.

Results

We applied this technique to 28 patients (mean age, 35 years) with balanopreputial adhesion due to LS. The duration of the follow-up period was 24 months (Fig. 5). All patients stated they were satisfied with the cosmetic results and functional outcome. Recurrence of the condition occurred in 7% of the patients and was treated medically; recurrence of adhesion occurred in 2% of the patients and was treated with repeat surgery.

Discussion

Severe lichen sclerosus can progress to stricture of urinary flow, painful erection, and diminished quality of life. Conservative management can bring benefit in the early stages before the mucosa become thickened. In our series, daily application of a topical cream (100 mg testosterone propionate in sesame oil and 30 g of a cream containing mometasone furoate [30 g of a cream composed of 30 mg mometasone furoate plus 200 mg testosterone propionate]) can halt progress of the disease and lead to healing in some cases. Values of pretreatment sensitivity testing of the glans were seen to improve after treatment, with a notable improvement in quality of life and complete resolution of pain (93%). The results showed a reduction in sclerosis and thickening of the foreskin and absence of burning on urination.

The indication for medical therapy in early LS is a selective criterion restricted to less severe cases; otherwise, the physician may be held responsible for treatment failure, justified claims for reimbursement, disease progression and the decidedly greater damage that may ensue 14. Such consequences can be averted when assessment is based on recent scientific evidence and the approach to treatment is appropriate in terms of efficacy and effectiveness.

Surgical management is definitive and restores normal penile anatomy and function, including sexual and urinary function, thus enabling the patient to regain sexual confidence. Furthermore, while the outcome may not be complicated by particular technical difficulties, as may be encountered in other types of penile surgery, from a medicolegal perspective, it may well influence the patient's expectations of treatment outcome, creating a case for gross negligence.

In patients with LS limited to the foreskin, circumcision is curative. When the meatus is involved, meatoplasty provides better cosmetic and functional results than urethral dilatation and ventral meatotomy. With this surgical approach, patient satisfaction is high, as is improvement in quality of life and sexual function.

That said, the postoperative course is long and involves frequent self application of medications, which raises a major problem for the surgeon: responsibility for patients who do not adhere to prescribed therapy [15]. In such cases, art. 1227 of the Civil Code may apply: "If negligence on the part of the creditor has contributed to the cause of damage, compensation is diminished according to the degree of negligence and the extent of the ensuing consequences." Clearly, this creates the problem of defining the degree that can be directly or indirectly attributable to a patent's following a prescribed treatment regimen or not.

Conclusions

In consideration of the existing literature on vulvar LS (in adults) comparable pathways seem to be involved in the genesis of preputial LS in boys. Unless treated, lichen sclerosus et atrophicus can involve the balanopreputial sulcus and lead to adhesion of the overlying skin. This anatomic alteration impedes normal sexual activity. There is a known correlation between LS and penile squamous cell carcinoma. In cases recalcitrant to medical therapy or those in which the condition has been ignored or untreated, surgical management is indicated. The complexity of the case will guide the choice of therapy and approach to surgery; together with patient adherence to prescribed treatment, these are the determinant factors in successful treatment outcome [16].

Riassunto

Il lichen sclero atrofico è considerata una malattia rara. L'eziopatogenesi è sconosciuta, a livello genitale maschile è ben nota l'evoluzione verso il carcinoma se non trattato. Nelle fasi iniziali della malattia usiamo con successo da circa trent'anni una crema ottenuta con da 100 mg di testosterone propionato in olio di sesamo e 30 gr di crema contenente mometasone furoato per uso topico. Le zone maggiormente colpite sono il glande il frenulo ed il prepuzio con evoluzione verso la fimosi e la fusione balano-prepuziale. Gli interventi di frenuloplastica e postectomia sono ben codificati da anni. Quando ci troviamo di fronte alla fusione balano-prepuziale e scomparsa completa del solco balanico interveniamo chirurgicamente con la lisi scultura del solco con una semplice tecnica che abbiamo messo a punto. La tecnica operatoria consiste nell'eseguire mediante una forbice a punta smussa, il clivaggio dell'aderenza coronale per tutta la sua estensione, fino a scolpire interamente il solco balano-prepuziale. Questa manovra molto semplice ma al tempo stesso delicata, bisogna stare molto attenti a livello della superfice ventrale per non ledere l'uretra. Successivamente con il bisturi elettrico si completa lo scollamento a 360°. La guarigione deve avvenire lentamente per impedire la precoce cicatrizzazione dei margini cruentati con successiva recidiva. Le medicazioni frequentissime post operatorie garantiscono degli ottimi risultati

References

1. Powell JJ, Wojnarowska F: *Lichen sclerosus.* Lancet, 1999; 353: 1777.

2. Barbagli G, Mirri F, Gallucci M, et al: *Histological evidence of urethral involvement in male patients with genital lichen sclerosus: A preliminary report.* J Urol, 2011; 185:2171.

3. Garaffa G, Shabbir M, Christopher N, Minhas S,, Ralph DJ: *The Surgical Management of Lichen Sclerosus of the Glans Penis: Our Experience and Review of the Literature.* J Sex Med, 2011; 8:1246-253

4. Edmonds E, Barton G, Buisson S, et al: *Gene expression profiling in male genital lichen sclerosus*. Int J Exp Pathol, 2011; 92:320.

5. Alei G, Letizia P, Sorvillo V, Alei L, Ricottilli F, Scuderi N: *Lichen sclerosus in patients with squamous cell carcinoma. Our experience with partial penectomy and reconstruction with ventral fenestrated flap*. Ann Ital Chir. 2012; 83(4):363-67.

6. Powell J, Robson A, Cranston D, Wojnarowska F, Turner R: *High incidence of lichen sclerosus in patients with squamous cell carcinoma of the penis*. Br J Dermatol, 2001; 145:85.

7. Neill SM, Lessana-Leibowitch M, Pelisse M, Moyal-Barracco M: *Lichen sclerosus, invasive squamous cell carcinoma, and human papillomavirus.* Am J Obstet Gynecol, 1990; 162:1633.

8. Nasca MR, Innocenzi D, Micali G: *Penile cancer among patients with genital lichen sclerosus.* J Am Acad Dermatol, 1999; 41:911.

9. Cubilla AL, Velazquez EF, Young RH: *Pseudohyperplastic squamous cell carcinoma of the penis associated with lichen sclerosus. An extremely well-differentiated, nonverruciform neoplasm that preferentially affects the foreskin and is frequently misdiagnosed: A report of 10 cases of a distinctive clinicopathologic entity.* Am J Surg Pathol, 2004; 28:895.

10. Ricci S, Ricci O, Tucci CE, Massoni F, Sarra MW: *Regenerative medicine: Orthopedical aapplication and medical legal questions.* Clin Ter, 2012; 163(5):357-63.

11. Skierlo P, Heise H: *Testosterone propionate ointment: A therapeutic trial in lichen sclerosus et atrophicus.* Hautarzt, 1987; 38:295.

12. Kohlberger PD, Joura EA, Bancher D, Gitsch G, Breitenecker G and Kieback DG: *Evidence of androgen receptor expression in lichen sclerosus: An immunohistochemical study*. J Soc Gynecol Investig, 1998; 5:331.

13. Sideri M, Origoni M, Spinaci L, Ferrari A: *Topical testosterone in the treatment of vulvar lichen sclerosus*. Int J Gynaecol Obstet, 1994; 46:53.

14. Pugliese JM, Morey AF, Peterson AC: *Lichen sclerosus: review of the literature and current recommendations for management*. J Urol, 2007; 178:2268.

15. Margolis DJ: *Cutaneous diseases of the male external genitalia*. In: Retik, PC WalshAB, Vaughan ED Jr, Wein AJ (eds). Campbell's Urology. vol1. Philadelphia: WB Saunders Co 2002; 8th edit. vol 1; 715-18.

16. Alei G, Letizia P, Ricottilli F, Simone P, Alei L, Massoni F, Ricci S: *Original technique for penile girth augmentation through porcine dermal acellular grafts: Results in a 69 patient series.* J Sex Med, 2012; 9:1945-953.