OBJECTIVES. Strictures due to lichen sclerosus (LS) may affect the urethra as far proximally as the mid-bulb. For such strictures, a staged full-length repair is required and should use a nonpenile graft source such as buccal mucosa. Many cases occur in a population already accustomed to seated voiding, leading us to re-evaluate this approach and, in some circumstances, recommend definitive perineal urethrostomy alone.

METHODS. We reviewed the medical records and retrograde urethrograms of all patients undergoing surgery for LS at our facilities between January 1991 and June 2002.

RESULTS. A total of 63 patients, with an average age of 54.2 years, underwent surgery for LS stricture with an average follow-up of 38.5 months (range 4 to 117). Of the 63 patients, 19 underwent grafting in preparation for future reconstruction. Of these, 11 completed the second-stage repair, and 8 patients elected not to undergo the second stage of the repair, leaving a functional perineal urethrostomy. This led us to look more critically at definitive perineal urethrostomy alone for some patients. Parallel with the staged repairs, and subsequent to them, 44 patients underwent perineal urethrostomy alone.

CONCLUSIONS. The often extensive nature of LS, the prevailing philosophy that urethroplasty must use nonpenile skin, the limited availability of such sources, and the acceptance of many patients for seated voiding makes definitive perineal urethrostomy alone a viable treatment option. In all our cases, this satisfied patients’ quality of life concerns, leaving the anterior urethra dry and amenable to future repair. Younger men desirous of penile voiding should still be considered for staged repair using current techniques.
lial collagen, dermal lymphocytic infiltration, and collagen deposition in the upper layer of the dermis. The dermal layer will also show evidence of endarteritis. These findings combined to give the disorder the name balanitis xerotica obliterans. The etiology of LS is obscure but may include viral infection, bacterial infection, autoimmune disorders, and prior trauma.

The traditional management of LS stricture disease consists of medical and surgical options. Topical steroids have been used with variable results, as has carbon dioxide laser therapy. These often result in poor alleviation of symptoms with continued disease progression. Surgical therapy for LS stricture disease ranges from simple meatotomy to complex staged repairs.

The more extensive cases of LS stricture disease may require excision of the entire urethra to the proximal normal area, with replacement by graft. Because all genital skin is at risk of recurrence of LS disease, this must involve a staged procedure using skin grafts with the afflicted portion of the urethra replaced with a graft from a nonpenile skin source. Although nonpenile skin from locations such as the postauricular regions have been used, it is likely that all skin substitutes are at risk of recurrent disease. Recently, buccal tissue has been shown to be one of the most resistant to recurrent disease. Certainly, the harvest of graft from these other areas may prolong recovery time and convalescence. In our experience, many such cases occur in an elderly population already accustomed to seated voiding. This led us to re-evaluate the approach to management of LS stricture disease and in some circumstances to recommend definitive perineal urethrostomy placement.

MATERIAL AND METHODS

The institutional review board approved the study, which met all guidelines of the institution. We reviewed the medical records and retrograde urethograms of all patients undergoing reconstructive surgery for LS strictures at Duke University Medical Center and the Center for Urethral and Genital Reconstructive Surgery (Italy) between January 1991 and June 2002. We recorded patient demographics such as age, time from presentation to definitive repair, prior surgical therapy such as meatotomy, dilation, or urethroplasty, and prior medical management. LS stricture disease was confirmed by histopathologic examination of tissue obtained at the time of repair. All patients underwent a standard preoperative evaluation with history and physical examination, urine tests, retrograde urethrography, and serum blood testing.

RESULTS

A total of 63 patients, with an average age of 54.2 years (range 29 to 72), were referred to our facilities for definitive surgical management of LS stricture disease. The average time from the original presentation of symptoms to definitive repair was 14.5 years (range 2 to 40). Of the 63 patients, 34 (54%) had undergone prior treatment, including meatotomy in 16 (47%), urethroplasty in 21 (62%), prior repairs in 6 (18%), and dilation in 27 (79%). Of these 34 patients, 26 (79%) had undergone multiple procedures, with a combination of meatotomy and dilation most commonly performed (n = 11, 32%).

Of these 63 patients, 19 had undergone the first step of a planned staged repair with a buccal (n = 14), split-thickness thigh (n = 4), or penile graft (n = 1) in preparation for a future neourethral reconstruction. Of these 19 patients, 11 (9 with buccal grafts and 2 with split-thickness thigh grafts) completed the second-stage repair, with an average time between procedures of 14 months. The other 8 patients (5 with a buccal graft, 2 with a split-thickness thigh graft, and 1 with a penile graft) elected not to undergo the second stage of the repair because of patient choice, leaving them with a functional perineal urethrostomy. This patient-driven decision led us to look more critically at this option alone for some patients. Parallel with the above-mentioned staged repairs, and subsequent to them, 44 patients underwent perineal urethroplasty alone. To perform this procedure, an inverted U incision is made on the perineum, and a flap-based urethrostomy is performed by sewing the proximal portion of the bulbar urethra to the flap with interrupted, absorbable suture. A silastic Foley catheter is left in place and removed after 10 days for a voiding trial (Fig. 2). All patients had undergone surgery by one of two reconstructive surgeons (G.D.W. and G.B.), and all procedure selection was by patient decision alone.

All patients were followed up postoperatively at 10 days and 3 months and then yearly with patient
interview, physical examination, and calibration of the definitive or functional perineal urethrostomy. At an average follow-up of 38.5 months (range 4 to 117), none of the 52 patients with a definitive or functional urethrostomy required reoperation or dilation. All patients also indicated on patient interview at the follow-up visits that they were happy with their choice of management for LS stricture disease. No complications occurred in any of these 52 patients. However, 2 (18%) of the 11 patients who chose completion of the staged repair required reoperation or dilation during their follow-up period.

COMMENT

When considering definitive surgical correction for LS stricture disease, the dictum includes the use of extragenital tissue for reconstruction to prevent disease recurrence in the repaired area. This, and the great length of these strictures, increases the morbidity of these procedures, prolonging convalescence. Barbagli et al. described these as complex procedures fraught with complications and high failure rates, with up to 71% of patients needing reoperation for stricture recurrence. In our experience, many patients in this population are already accustomed to seated voiding because of age and prior voiding difficulties. Because of the morbidity of the procedure, poor outcomes, the invariable cutoff point of LS stricture disease sparing the bulbar urethra, and the age of our patient population, we believed that creation of a definitive perineal urethrostomy for treatment in some patient populations would be acceptable.

Several patients had undergone the first stage of a two-stage repair with placement of the graft after excision of the diseased urethra. However, 8 of the 19 patients undergoing a planned two-stage repair chose to stop after only the first stage of the repair. All these patients were content with seated voiding without complications. Persuaded by the choice of these patients, we began offering definitive perineal urethrostomy to patients with LS stricture disease. On patient interviews during follow-up, it transpired that all who had made this choice to stop after the first stage of repair or to undergo definitive perineal urethrostomy were happy with their decision. In contrast to staged reconstruction, perineal urethrostomy is a minor surgical intervention and can be performed on an outpatient basis, with an early return to normal activities. Lengthy buccal graft repairs are both surgically and postoperatively labor intensive. Although long-term oral harvest site morbidity is uncommon, postoperative graft dressing care is elaborate, including 5 days of bed rest to allow graft take, limited activities for weeks after surgery, and dressing changes two to three times daily until maturation of the graft. During the interval between grafting and second-stage urethral tubularization, cosmesis is certainly compromised, and most patients become sexually inactive. Finally, completion of the second stage does not always realize the patient's cosmetic expectations.

Prior reports have linked LS with a risk of developing squamous cell carcinoma in the diseased area. Some investigators have recommended removal of the entire stricture area to both prevent future proximal spread of the disease and decrease the risk of malignancy. This may not be necessary. Prior treatment of LS in women involved resection of the diseased area with vulvectomy but has now evolved to include local steroid therapy and aggressive follow-up. Others have found that diversion of urine away from the afflicted area leads to desiccation and possibly regression of LS, a phenomenon seen in patients undergoing circumcision for distal LS disease. Therefore, resection of the entire urethra may not be needed, because the perineal urethrostomy diverts urine away from the urethra, resulting in desiccation, and may decrease both the progression of LS and the risk of cancer as well. Some investigators have recommended histopathologic examination of LS to confirm the diagnosis and to exclude malignancy. Although one can generally be certain of the diagnosis on the basis of the clinical appearance, we agree with the

FIGURE 2. Flap-based perineal urethrostomy performed as outpatient surgery, providing excellent seated voiding with minimal morbidity and complications.
need for obtaining representative biopsies at surgical management. We followed up these patients at 3 months after surgery, and yearly thereafter. In that period, none of our patients with LS stricture disease developed cancer. All were administered postoperative steroid therapy to promote regression of the LS skin changes. At follow-up, any suspicious or new lesions and skin changes should be biopsied and monitored appropriately.

The perineal urethrostomy satisfies patients’ quality of life concerns while leaving the anterior urethra dry and amenable to later repair. In the future, this may be facilitated by the use of new skin graft techniques, as well as development of allografts, xenografts and artificial epithelial replacements. The availability of such grafts will potentially greatly enhance full length reconstruction, which is currently limited by availability of sufficient buccal material to address the extensive case adequately. Even harvesting from both cheeks and the lower lip often allows for construction of only a moderate-size urethra. We view the perineal urethrostomy as a temporary step in the management of symptoms from LS stricture disease while waiting new and improved techniques for tissue replacement. Obviously, younger men desirous of penile voiding should still be considered for staged repair using current techniques.

CONCLUSIONS

The nature of anterior urethral involvement with LS, the prevailing philosophy that urethroplasty must use a nonpenile skin source, the limited availability of such sources, and the acceptance of many patients for seated voiding makes definitive perineal urethrostomy alone a strong choice, particularly in the elderly population. In all our cases, definitive perineal urethrostomy satisfied patients’ quality-of-life issues and left the anterior urethra amenable to future repair, which may well be facilitated by future developments such as the use of an allograft or cultured urethral epithelial replacements. Younger men desirous of penile voiding should still be considered for staged repair using current techniques.

REFERENCES


