ABSTRACT

Introduction: Urethral stricture treatment in the adult is a urological challenge. Strictures larger than 3 cm are managed through the use of tissue (skin or buccal mucosa). When substitution procedures are necessary, different types of tissues have been used, including genital skin, extragenital skin, bladder mucosa, and buccal mucosa. These have been used as pedunculated flaps or as free grafts. The use of buccal mucosa was first described in 1941. Its immunological advantages reduce infection and aid recurrence resistance. The objective of the present article was to present the surgical technique employed in a case of recurrent complex urethral stricture that was managed with posterior buccal mucosa graft.

Clinical case: Patient is a forty-one-year-old man who presented with weakened strength and caliber of urinary flow, straining, and bladder tenesmus. His International Prostate Symptom Score was twenty points. Urethral stricture was documented and was initially managed with endoscopic urethrotomy. One year later patient presented with recurrence and the decision was made to use posterior buccal mucosa graft.

RESUMEN

Introducción: El tratamiento de la estenosis de uretra en el adulto, es un reto para el urólogo. Estenosis mayores a 3 cm, son manejadas con la utilización de tejido (piel o mucosa oral). Cuando los procedimientos de sustitución son necesarios, se han utilizado diversos tejidos incluyendo piel genital, piel extragenital, mucosa vesical y mucosa oral. Los cuales se han utilizado en colgajos pediculados o como injertos libres. El uso de mucosa oral fue descrito por primera vez en 1941. Sus privilegios inmunológicos reducen la infección y favorecen la resistencia a la recidiva. El objetivo del trabajo es presentar la técnica quirúrgica, en un caso de estenosis de uretra compleja recurrente, manejado con injerto de mucosa oral posterior.

Caso clínico: Paciente es un hombre de 41 años con disminución de la fuerza y calibre del chorro urinario, pujo y tenesmo vesical. Con un IPSS (índice internacional de síntomas prostáticos) de 20 puntos. Se documentó estenosis de uretra. El manejo inicial fue con uretrotomía endoscópica. Un año después presenta recidiva, por lo cual se decide realizar...
to carry out end-to-end urethroplasty and cystotomy, which failed. Control urethrography showed stricture with a length of 4 cm. Urethroplasty with a posterior buccal mucosa flap was performed.

Conclusions: Despite the fact that different tissues and substitutes are used in urethral reconstruction, buccal mucosa has been the most widely used for more than a decade. It is a reproducible technique and in well-trained hands, offers a high success rate.

Keywords: Urethral stricture, buccal mucosa, urethroplasty, urethrography, Mexico.

INTRODUCTION

Urethral stricture has been recorded in history for more than 2500 years. The Ayurveda, written in 600 BCE, contains the oldest record of this disease, describing how wooden or metal dilators were used as part of treatment.  

The anterior urethra is classically divided into the penile portion and the bulbar portion. The bulbar urethra is surrounded by bulbospongiosus muscle. The penile urethra extends from the distal margin of the bulbospongiosus muscle to the navicular fossa and the external meatus. Bulbar urethral strictures are more common than those located in the penile portion.

Urethral stricture treatment in the adult is a urologic challenge. In industrialized countries the most common causes are due to instrumentation and external trauma, while infection is the cause in underdeveloped countries. Numerous repair techniques have been described for bulbar urethral stricture, depending on stricture length, and they include end-to-end anastomosis, augmentation urethroplasty, repair with flaps, or graft procedures. Small strictures from 1-2 cm are generally managed with primary end-to-end anastomosis with a 95% success rate and augmented anastomosis for 2-3 cm long strictures has a 90% success rate. Tissue (skin or buccal mucosa) is generally used to repair strictures longer than 3 cm and there is a 96% success rate, specifically for buccal mucosa. Two-stage urethroplasty or grafts should be used in patients with strictures longer than 6 cm that involve both the penile and bulbar urethra.

When substitution procedures are necessary, different tissues have been used including genital skin (from the penis or scrotum), extragenital skin, bladder mucosa and buccal mucosa. Currently, the most utilized grafts are buccal mucosa, preputial skin, penile or preputial skin flaps, with their own blood supply. The use of buccal mucosa in urethral surgery was described for the first time by Humby in 1941, but was not reported on again until the end of the 1980s. It has been proven to be a versatile material for urethral repair because it is a humid epithelium that can be easily handled and it lends itself to surgical manipulation. Its...
immunological advantages make it less susceptible to infection and it is more resistant to stricture recurrence than skin, particularly when there is lichen sclerosus. It has a submucosa with a dense capillary network that facilitates rapid nutrient imbibition from the tissue bed as well as early neovascularization. The graft is taken from the inside of the cheek or the lower lip. However, morbidity is reduced when the graft is taken from the inside of the cheek, with less pain and less paresthesia that can be secondary to lingual nerve damage. There have been associated complications such as thinning of the mouth, numbness, motor deficit, salivary changes, bleeding, scarring, and retraction and curvature of the lip.6,7 The concept of posterior graft for substitution urethroplasty, mobilization of the intact urethra, and dorsal urethrotomy of the stricture was introduced by Barbagli,8 and provides the following benefits: less bleeding from the corpus spongiosum; graft application to the tunica albuginea of the corpus cavernosum, forming a base that allows for it to be better attached; it facilitates improved blood flow and reduces contracture during scarring; there is less risk of graft sacculation from emptying pressure; and there is less risk of forming diverticula.

Urethroplasty with buccal mucosa graft is one of the most widely used methods for bulbar urethral stricture repair and provides excellent results. However there can be recurrence despite adequate surgical technique and the substitution material can deteriorate over time.9 There are two different stages in stricture recurrence: extensive tissue fibrosis involving the entire graft area or fibrous ring stricturing at the anastomosis site, where the graft was sutured to the urethral plate.10
The objective of this article was to present the surgical technique in a case of complex recurrent urethral stricture managed with posterior buccal mucosa graft.

**CASE PRESENTATION**

Patient is a 41-year-old man with weakened strength and caliber of urinary flow, straining, and bladder tenesmus. He had an International Prostate Symptom Score (IPSS) of 20 points, documenting urethral stricture. Initial management was with endoscopic urethrotomy. One year later he presented with recurrence and it was decided to carry out end-to-end urethroplasty and cystotomy, which failed. Control urethrography showed 4 cm long stricture (Figure 1) and so urethroplasty with posterior buccal mucosa flap was performed (Figures 2 to 11).

**DISCUSSION**

It is difficult to recommend the best clinical practice using buccal mucosa in substitution urethroplasty, based on the current medical literature, because as is clearly the case in all reconstructive surgery, it is essential to individualize each therapy.\(^{11}\)

The last word is still not in as to the ideal technique for managing complex urethral strictures. Each reconstruction continues to be a challenge for the urologist. The effect of a previous surgery, whether urethrotomy or urethroplasty, can influence urethral substitution results, due to the presence of significant amounts of scar tissue, associated with diminished blood flow to the graft. The success of this procedure depends on several factors: stricture length, site, and number, as well as the amount of spongiofibrotic tissue to repair.

Urethroplasty with buccal mucosa graft is one of the most widely used methods for bulbar urethral stenosis repair because of its thin tissue and because it is highly vascularized.\(^{12}\) Stricture recurrence can occur after buccal mucosa graft urethroplasty in the area of anastomosis of the graft to the native urethra, usually due to the formation of strictured rings or diaphragms that are more easily managed with endoscopic incision.\(^{13-14}\)
CONCLUSIONS

Despite the fact that there are many different tissues and substitutes used in urethral reconstruction, buccal mucosa has been the most widely used for more than a decade. It is a reproducible technique and in the hands of the experienced surgeon, the success rate is high. Strictures that recur after treatment can be managed with results comparable to those in primary strictures. Complex strictures require surgical experience combined with advanced techniques.

REFERENCES