CLINICAL CASE

Augmented anastomotic urethroplasty in bulbar urethral stricture management

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Abstract During augmented urethroplasty, if the stricture presents with a region of 1-2 cm that is too narrow or fibrous, that portion can be resected with the subsequent anastomosis of the ventral or dorsal region of the urethra in order to shorten, widen, and optimize the urethral wall over which the buccal mucosa graft will be placed. This procedure is known as augmented anastomotic urethroplasty and is an option to be considered in cases of long and narrow bulbar urethral stricture.

We present herein the case of a patient with bulbar urethral stricture managed with augmented anastomotic urethroplasty.

A 51-year-old man had a past history of genitourinary tuberculosis in 2009 and urethral stricture in 2011 managed with cystostomy. He had onset of lower urinary tract symptoms in 2010 secondary to the genitourinary tuberculosis. The patient was diagnosed with bulbar urethral stricture and was treated with cystostomy. Two months later, through a perineal approach, a 3 cm long bulbar urethral stricture was encountered and the decision was made to perform an augmented anastomotic urethroplasty. The ventral surface of the urethra was resected and an anastomosis was carried out on that surface; a buccal mucosa onlay graft was then placed on the dorsal side of the anastomosis. No complications resulted from the surgery and the transurethral catheter was removed one month after the procedure. Patient progression was good and there was no evidence of stricture in the control cystography and uroflowmetry.
Augmented anastomotic urethroplasty is an effective technique that enables the use of smaller-sized buccal mucosa grafts, reducing the complications derived from the graft harvest. Better results are obtained because the urethral wall and corpus spongiosum are optimized. We recommend this technique in patients with very fibrous or narrow urethral stricture up to 2 cm in length.

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Introduction

A large number of surgical techniques have been described for the management of bulbar urethral stricture in accordance with its length, and they include resection and anastomosis (end-to-end), graft-augmented urethroplasty, flap urethroplasty, or multi-stage procedures. Short bulbar strictures of 1-2 cm are generally managed with primary end-to-end anastomosis, whereas 2-3 cm strictures should be managed with augmented anastomotic urethroplasty. Strictures longer than 3 cm generally require the use of tissue transference (skin or buccal mucosa) in a variety of techniques described, including its dorsal or ventral placement. Finally, strictures longer than 6 cm involving both the penile and bulbar urethra, or associated with adverse local conditions, should be managed with multi-stage urethroplasty.

During augmented urethroplasty, if the stricture presents with a length of 1-2 cm that is too narrow or fibrous, that portion should be resected with the subsequent anastomosis of the ventral or dorsal region of the urethra in order to shorten, widen, and optimize the urethral wall over which the buccal mucosa graft is to be placed. This procedure is known as augmented anastomotic urethroplasty and is an option to consider in cases of long and narrow bulbar urethral stricture.

Aim

The aim of this article was to present the case of a patient with a 3 cm bulbar urethral stricture that was managed with...
augmented anastomotic urethroplasty as a little-used technique in urethral stricture management.

**Material**

High-quality urologic surgical equipment was used that included a Scott separator, Monocryl 3-0 sutures, an SH needle, a 16 Fr silastic transurethral catheter, and a Beriplast P® Combi-set.

**Results (clinical case)**

A 51-year-old man had a past history of genitourinary tuberculosis in 2009, now resolved, acute urinary retention secondary to urethral stricture in 2014, managed with cystostomy, that was secondary to previous instrumentation of the urinary tract and not to urethral tuberculosis. Two months later, a perineal approach was carried out in which a 3 cm-long bulbar urethral stricture with a fibrous and narrow wall was found, for which it was decided to perform an augmented anastomotic urethroplasty using a buccal mucosa graft. The traditional perineal approach was carried out and the entire bulbar urethra was dissected. A 2 x 5 cm buccal mucosa graft was taken from the inner surface of the left cheek. It was prepared by removing the excess subcutaneous cell tissue from the mucosa. The buccal mucosa wound was closed with Vicryl 3-0. The ventral surface of the urethra was resected and an end-to-end anastomosis at the ventral surface was done with 4 simple sutures of Monocryl 3-0. The buccal mucosa graft was placed at the dorsal surface of the anastomosis, fixing the graft to the corpora cavernosa with simple Monocryl 3-0 sutures. The urethra was then joined to the graft with simple Monocryl 3-0 sutures. The urethra was fixed to the corpora cavernosa in order to prevent displacement of the anastomosis. The anastomosis was covered with Beriplast. The perineal wound was closed in layers with Vicryl 3-0. The surgery was performed with no complications. The patient’s postoperative progression was adequate and he was released to his home on the second postoperative day. One month after surgery, the transurethral catheter was removed. The patient presented with good voiding mechanism and there was no evidence of re-stricture in the control cystography and uroflowmetry (figs. 1 and 2).

![Figure 1](image1.png) Segment to be resected.

![Figure 2](image2.png) Anastomosis and graft. In figure A the narrow zone is identified (outlined) and resected. The posterior incision is extended to prepare the graft. In figure B, the graft is placed and the anastomosis is performed.
Discussion

The primary technical principle of this technique is the resecting of the narrowest and most fibrous part of the urethra before placing the graft. This reduces the possibilities of re-stricturing. There are various consequent benefits that include resection of the defective urethra, reducing the length of the urethrotomy and allowing the use of a smaller graft. The urethra can also be widened, resulting in a smaller portion of the urethral circumference being of graft material; this is even more important in the case of dorsal grafts, because it is much more difficult to suture a graft to the urethral wall when the graft is already fixed and extended to the corpora cavernosa. In addition, the complete resection of a fibrotic and narrow urethral segment usually results in a corpus spongiosum with better vascularity, favoring improved healing and greater surgical success.4-11

Guralnick and Webster published a study that presented an initial case series of 29 patients with a 93% success rate after a follow-up of 28 months (3-12 months). The remaining 6% could be resolved with early internal urethrotomy and only 1% were considered failed, requiring new open surgery.4

Abouassaly published a case series of 69 patients, which is the largest published case series using this surgical technique. After a mean 41-month follow-up, the success rate was 90%, making it a more substantive study, approaching the true success rate of this technique because of the longer follow-up period and the higher number of patients.22

This technique should be kept in mind because the most common situation in which it is applied is when surgery is begun with the idea that a urethrocystography-measured 2 cm stricture will be encountered, but once the segment is resected it turns out that the proximal part of the stricture is in fact fibrous, as a consequence of the hydrostatic dilation caused by the stricture itself, and so it is necessary to resect it, thus requiring a graft.17-24

Conclusions

Augmented anastomotic urethroplasty is an effective technique that enables the use of smaller sized buccal mucosa grafts, which reduces the complications derived from the harvesting of the graft, improving the results, since it optimizes the urethral wall and corpus spongiosum. We recommend the application of this technique in patients with very fibrous or narrow urethral stricture up to 2 cm in length.

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Conflict of interest

The authors declare that there was no conflict of interest.