

Urologists At Work

RECONSTRUCTION OF THE FOSSA NAVICULARIS

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ABSTRACT

Fossa navicularis strictures have troubled urologists for years. Although several flap procedures have been described none truly leaves a normal-appearing penis postoperatively. A new technique is described of the reconstruction of the fossa navicularis with a ventral transverse island flap on a broad, dependable pedicle. All 5 patients who have undergone the procedure have excellent cosmetic and functional results. The appearance of the penis postoperatively is normal, with a median followup of 17 months. Early reconstruction of fossa strictures may avoid the sequelae of more conservative attempts at management, thus, correcting the fossa stricture itself before the occurrence of penourethral stricture disease secondary to repeated dilations, meatotomy and internal urethrotomy.

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Fossa navicularis strictures are a well described sequela of transurethral resection procedures. Additionally, isolated fossa navicularis strictures appear to be an early complication of balanitis xerotica obliterans. However, many patients with balanitis xerotica obliterans have severe panurethral stricture disease. It also has been argued that panurethral stricture disease results from multiple cystoscopy studies, dilations and internal urethrotomy procedures, all directed at the original fossa navicularis stricture. Should this be the case, early open definitive reconstruction of the fossa navicularis would be indicated in all patients who present with isolated fossa strictures, since a procedure aimed at the fossa could prevent later panurethral reconstruction or lifelong dilations and internal urethrotomy procedures.

In 1963 Cooney,¹ and in 1967 Blandy and associates² described flap procedures for correction of fossa navicularis strictures. The cosmetic results of both methods were criticized. Both procedures created deformation of the penile skin and a coronal hypospadiac meatus. Brannen later described a modified Blandy procedure that was designed to bring the meatus further toward the tip of the glans.³ This procedure achieved coverage of the ventrum of the glans with preputial skin, thus, the aesthetic results were not optimal.

Devine reported the use of a full thickness skin graft in a procedure that he termed resurfacing of the glans.⁴ The procedure involves total excision of the strictured fossa with replacement by a tube graft. The cosmetic results were excellent and good functional results were reported in a small number of patients.

In 1984 De Sy presented a modification of the Brannen procedure in which an island flap is mobilized much in the same fashion as the original advancement flap.⁵ The procedure differs in that it allows for closure of the ventral glans. The cosmetic results of this procedure were excellent. However, the flap is mobilized on a narrow midline vascular pedicle, which theoretically may be a tenuous situation. In 2 patients on whom I tried the procedure the cosmetic results were satisfactory. However, the fossa strictures recurred, perhaps as a sequela of ischemic damage to the narrow pedicle flap. Therefore, a pro-

cedure that uses a ventral transverse island flap mobilized on a wide vascular pedicle was developed.

DESCRIPTION OF PROCEDURE

Patients believed to be candidates for this procedure must have strictures confined to the fossa navicularis. All patients are evaluated with retrograde and voiding contrast medium studies, as well as urethroscopy. Urethroscopy is performed

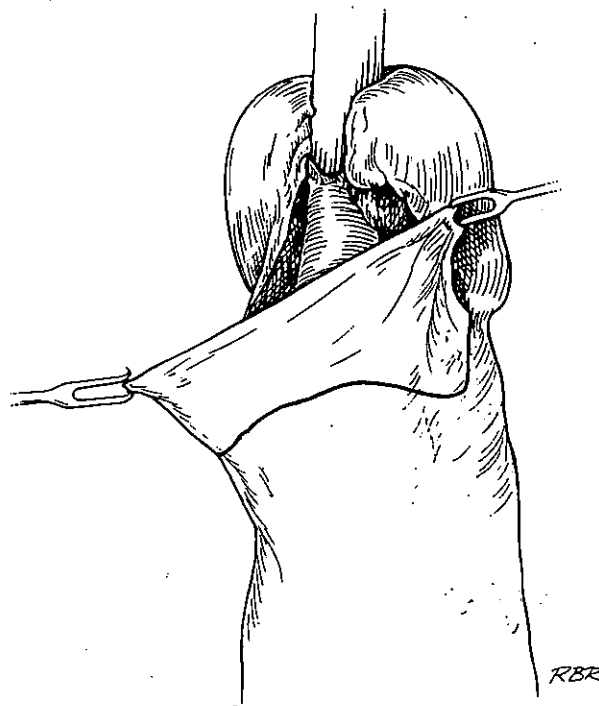


FIG. 1. Urethrotomy is performed well into urethra of normal caliber. Then small partial circumferential incision is created. Note outline of flap.

either preoperatively with a pediatric cystoscope or at operation.

Initially, a small circumcising incision is made in the ventrum of the penis approximately 5 mm. proximal to the coronal margin. The incision need only cover the ventrum of the penis. The ventral preputial skin is elevated in the layer immediately superficial to Buck's fascia. A grooved director then is placed in the meatus and an external urethrotomy is made through the fossa stricture. The urethrostomy must be extended into the normal urethra for 1 to 1.5 cm. The normal urethra is identified by bougienage (fig. 1).

The width of the existing glanular urethral mucosa is measured, as well as the length of the defect created by the external urethrotomy. The flap then is elevated to these dimensions such that the neofossa navicularis will be 30F. When the flap is outlined care must be taken to extend the flap base slightly across the midline. Likewise, the incision on the proximal preputial and medial aspects of the flaps must be superficial, incising the skin only. The flap then is elevated in the layer immediately superficial to Buck's fascia, with the flap mesen-

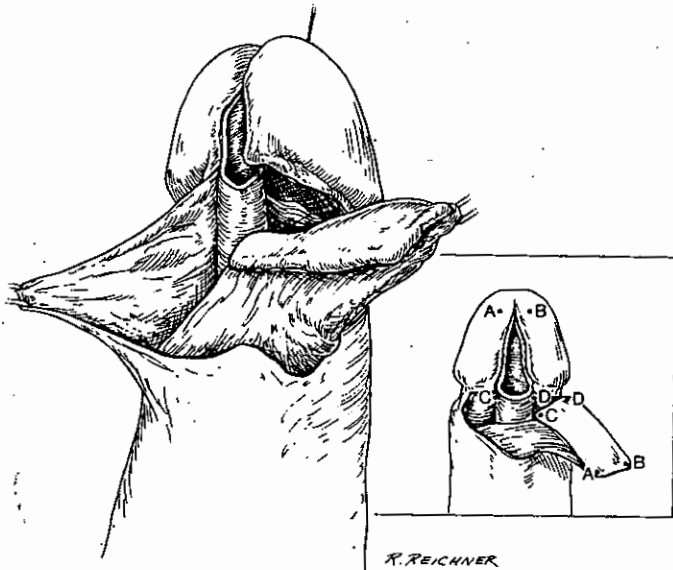


FIG. 2. Flap is transposed and inverted into urethrotomy defect. Flap tips are sutured with chromic and lateral edges are sutured with 5 or 6-zero polydioxanone sutures.

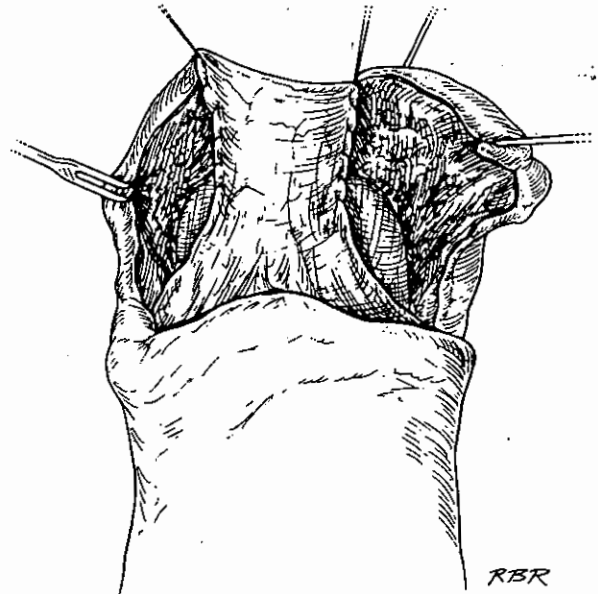


FIG. 3. Suturing of flap is complete. Note wide mesentery extending proximally. Glans flaps have been elevated. Note tip of exposed corporal body.

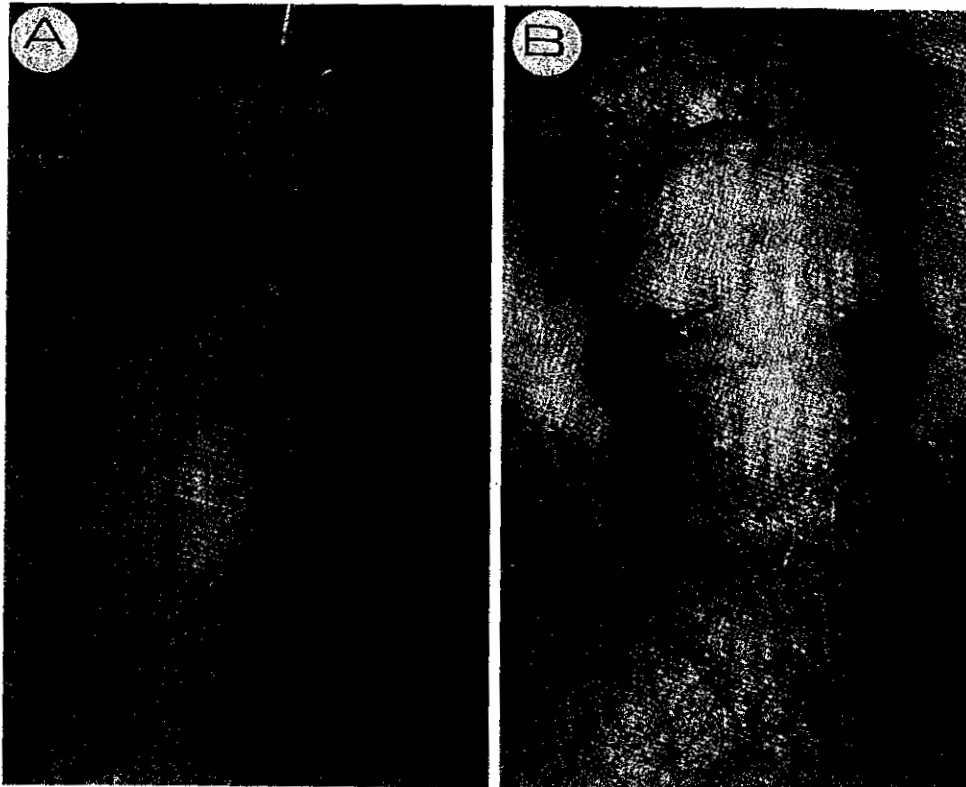


FIG. 4. A, preputial skin is transposed and advanced closing donor site defect. Glans has been reapproximated in ventral midline. B, result 6 months postoperatively.



FIG. 5. Stream is normal and breaks away cleanly from neo-meatus

tery extending from the base and a portion of the preputial proximal margin of the flap.

Once the flap has been elevated the lateral wings of the glans are elevated in the plane between the tips of the corpora and the overlying glanular tissue. The small amount of bleeding that occurs is controlled easily with bipolar coagulation forceps. The elevation of the glans flaps allows for ventral closure of the glans without tension and provides the appearance of normal glans fusion ventral to the neo-glanular urethra.

The flap is transposed into the external urethrotomy defect and inverted such that the epithelium faces the lumen of the neofossa (fig. 2). The flap is sutured with a running subepithelial/mucosal suture of 5 or 6-zero polydioxanone. The most distal corners of the flap first are fixed with a full thickness 5-zero chromic suture, such that the knots are in the lumen (fig. 3).

The glans then is closed loosely around the neo-fossa with a 26F to 28F sound in the urethra to prevent constriction of the neo-glanular urethra. The glans closure is accomplished in 2

layers with a 5 or 6-zero polydioxanone suture used for the deep layer and chromic used in the skin of the glans. The sound is replaced with a small urethral catheter as a stent. Suprapubic diversion was used in these first patients. However, in the future a splint as described by Mitchell and Kulb⁶ will be used, which is expected to provide equally good results.

The flap donor site then is closed by transposing the preputial skin into the defect (fig. 4, A). In 2 patients Burrow's triangles were used to excise small dog ears at the corner closure. In all 5 cases the cosmetic results have been excellent, with the penis eventually having undetectable stigmas of the operation (fig. 4, B). The fossa strictures were corrected and the stream breaks away cleanly from the glans without spraying (fig. 5). To date there have been no fistulas and no recurrent strictures. Followup ranged from 6 to 27 months, with a median of 17 months.

DISCUSSION

This ventral transverse preputial island flap procedure appears to have excellent applicability to the correction of fossa strictures. It provides optimal cosmetic results and the flap survives on a dependable broad-based blood supply.

With several procedures that provide good aesthetic and functional results currently available, it is believed that early open reconstruction of the fossa navicularis is preferred to late reconstruction after failed dilations and internal urethrotomy. This procedure of fossa reconstruction is accomplished easily, and provides reliable functional and aesthetic results.

REFERENCES

1. Cohnsey, B. C.: A penile flap procedure for the relief of meatal stricture. *Brit. J. Urol.*, **35**: 182, 1963.
2. Blandy, J. R. and Tresidder, G. C.: Meatoplasty. *Brit. J. Urol.*, **39**: 633, 1967.
3. Brannen, G. E.: Meatal reconstruction. *J. Urol.*, **116**: 319, 1976.
4. Devine, C. J., Jr.: Surgery of the urethra. In: *Campbell's Urology*, 5th ed. Edited by P. C. Walsh, R. F. Gittes, A. D. Perlmutter and T. A. Stamey. Philadelphia: W. B. Saunders Co., vol. 3, sect. XV, chapt. 80, pp. 2853-2887, 1986.
5. De Sy, W. A.: Aesthetic repair of meatal stricture. *J. Urol.*, **132**: 678, 1984.
6. Mitchell, M. E. and Kulb, T. B.: Hypospadias repair without a bladder drainage catheter. *J. Urol.*, **135**: 321, 1986.