MANAGEMENT OF STRICTURE URETHRA BY INTERNAL OPTICAL URETHROTOMY

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SUMMARY

Transuretheral urethrotomy under vision with the Sachse urethrotome is a relatively new surgical procedure for the treatment of urethral strictures. The main advantage of the urethrotome is the fact that the surgeon can cut strictures selectively and accurately under clear vision. The procedure is less painful than blind internal urethrotomy. We report on 105 cases with at least 12 months of follow up. In 47(45%) cases the strictures were in membranous and prostatic urethra, in 39(37%) in bulbar urethra and in 19(18%) in penile urethra. The results were considered good in 79(75%), improved in 21(20%) and a failure in 5(5%). The technique for urethral strictures is described and postoperative treatment is emphasized and discussed. We have found this technique a further improvement in the management of urethral strictures.

INTRODUCTION

Our experience with transurethral urethrotomy using the Sachse cold knife urethrotome is described. The 20F metal sheath with its blunt round end and a 12 degree angle lens permit excellent urethroscopic view of the urethra and the extent and depth of strictures.

We have found transurethral urethrotomy under vision to be a distinct advantage over previously used blind techniques of internal urethrotomies using the Otis, Maisonneuve or other similar internal urethrotomes. A further advantage is in the fact that transurethral sharp cold knife cutting of scar tissue under vision frequently is not too painful. Sachse[1], and Matouschek and Michaelis[2] have shown good long-term results in the treatment of urethral strictures with this instrument.

MATERIAL AND METHODS

From January 1996 to December 1999, we have used this technique on 225 male patients age 19 to 73 years, with severe

urethral strictures. The 105(47%) patients with at least 12 months of follow up are included in this series. All strictures were of small caliber (less then 14F) and required dilations at least every 2 to 3 months or the patient had been advised to have open reconstructive plastic surgical procedures. All operations were done with the Sachse urethrotome (OES optical urethrotome). Olympus Optical Co, Ltd. San-Ei Building, 22-2 Nishi Shinjuku 1-chome, Shinjuku-ku, Tokyo, Japan (OES olympus endoscopy system).

All cases were done in the hospital with the patient under general anesthesia. When strictures are extensive it is helpful to pass a 5F urethral catheter through the side arm of the urethrotome and to guide it through the stricture to serve as a guide line during cutting and to avoid false passages. Frequently, the vision is so clear that one can cut the stricture gradually from its distal to its proximal end by following the remaining urethral mucosa as a guide line and doing without a catheter.

The cutting is done at the 12 o'clock position for urethral strictures towards the septum between the corpora cavernosa to avoid bleeding. In certain dense strictures cutting may be necessary at 6 o'clock position. The lever of the working element of OES optical urethrotome with the knife blade serves to move the blade outward of the sheath for optimal cutting. The cold knife cutting is done by approximating the partially extended knife blade against the stricture dorsally and then moving the whole instrument in a short arc-like motion towards the operator with the fulcrum being approximately at the center of the instrument. Repeated short cutting motions gradually cut the entire length and the depth of the urethral stricture. Analogous to transurethral prostatic resection the first cuts are done more superficially but progressing from caudad towards the cephalad end of the stricture. This technique permits passage of the 20F urethrotome sheath into the bladder and bladder emptying when necessary. One proceeds by gradually cutting further through out the depth of the usually not very vascular stricture until one sees non-cicatricial tissue deeper in the urethral wall or towards the septum. These deep cuts are done last since venous bleeding may occur but can be controlled by placing 24F silicone catheter and, if necessary, applying a pressure dressing around the penis and perineum.

Because of the danger of extravasation the same sterile osmotic irrigating solutions are used as for transurethral resections. It is always impressive that the scar tissue not only extends much deeper into the wall of urethra but also further caudad and cephalad than suggested by urethrograms or initial inspections.[3-5] It is essential to cut through the extent and depth of the scar tissue of the stricture to separate the continuity of the circular scar tissue of the stricture. This procedure decreases the likelihood of intraluminal adhesions and recontracture. Such proper technique results in a smooth (usually 26F or larger) urethral lumen. The remaining strip of urethral mucosa is on the floor and inferolateral to the new lumen. The remainder of the urethra shows raw urethral tissue that acts as scaffold for mucosal regeneration. Weaver and associates have shown that the circumference of the urethra will regenerate in 6 to 8 weeks if a strip of mucosa remains.[6-8] Complete urethral ruptures or badly infected dense strictures with no remaining or damaged urethral mucosa were the main cause of our failures. Bleeding during the operations has not been a problem and coagulation was not needed and is avoided, if possible, because it might promote more scar tissue formation. A 24F silicone Foley catheter is inserted postoperatively and there have been no problems passing it into the bladder. We usually leave the Foley catheter in dwelling for 1 to 3

days, depending on the extent of the stricture and the bleeding. Longer catheterization periods would probably do more harm by promoting infection. Approximately 1 week after the operation the patient starts hydraulic urethral distention by pinching off the distal end of the urethra in the middle of forceful urination.[9] The patient watches the urine flow carefully, at least during the first year postoperatively, and he is instructed to return to the office if it decreases in caliber or force. If adhesions should form during urethral regeneration gentle gradual urethral calibration and dilation are done. Whether cortisone or synthetic cortisone-containing emulsions are effective in postoperative care is being investigated further. It cannot be over-emphasized that frequent and explicit post-operative care is as important as proper operative technique.

Every attempt is made to have the urine sterile preoperatively and to keep it sterile postoperatively. The patient is seen frequently during the first critical postoperative months to monitor urine flow and to check for infection. He is then checked when necessary or on a yearly followup for 2 more years. Most recurrent significant strictures manifest themselves within 6 months but it is known that certain strictures can recur even a year or more later and this should be explained to the patients preoperatively.

RESULTS OF 105 CASES AFTER TRANSURETHRAL COLD KNIFE URETHROTOMY UNDER VISION

	Good		Improved		Failure	
	n	%	n	%	n	%
Urethral strictures (anterior and/or posterior)	79	75	21	20	5	5

TABLE – I

RESULTS

Our results are summarized in the table-I. The 79(75%) patients with good results have no further symptoms, do not require dilations and have at least an average peak flow rate>20ml/s and the home flow test (HFT) mean value < 7sec/100ml. The 21(20%) improved cases necessitated dilations only once or twice a year postoperatively and these could be done much more easily and with less discomfort. In 47(45%) cases the strictures were in membranous and prostatic urethra, in 39(37%) in bulbar urethra and in 19(18%) in penile urethra.

Of the 105 urethral strictures 11(10%) were cut a second time but the second operation involved only a shorter remaining segment of stricture. We have urethroscoped several patients at different intervals post-operatively when there was a question of recurrent constriction. We have been impressed with the much cleaner and smoother appearance of the urethra compared to our previous experience with patients who had undergone internal urethrotomy with the Otis urethrotome. We have not observed chordee or incontinence. The causes of the urethral strictures were as follows: 10(10%) post infections, 12(11%) post prostatectomy, 74(70%) traumatic and 9(9%) with history of urethral catheterization.

DISCUSSION

We advise transurethral urethrotomy under vision for all strictures that require repeated dilations. We only dilate soft strictures since these may respond by a few successive gradual dilations. We are hesitant to dilate dense strictures because stretching in such cases will result in more and denser scar tissue formation, and we prefer to cut them with cold knife. The low risk of complications and lesser discomfort, dis-

ability and expense for the patient would make this the procedure of choice. We reserve open reconstructive urethroplasties for persistent failures or complete ruptures or destruction of segments of the urethra.

As further cases are evaluated on long term followup transurethral urethrotomy under vision with the cold knife Sachse urethrotome will find its proper place in our armamentarium against the long-standing and persistent challenge of urethral strictures. Internal optical urethrotomies have been reported with good results in the prevention and treatment of selected strictures by various authors.[10-12]

CONCLUSION

We have found transurethral urethrotomy under vision with the cold knife Sachse urethrotome a further improvement in the management of urethral strictures.

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