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INTERNAL OPTICAL URETHROTOMY IN THE MANAGEMENT OF URETHRAL STRICTURES IN NIGERIANS: TECHNIQUE AND OUTCOME

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KEY WORDS: urethral strictures, Nigerians, internal optical urethrotomy

ABSTRACT

This study was carried out to evaluate the role of internal optical urethrotomy in the management of patients with urethral strictures seen at the University College Hospital, Ibadan, Nigeria. The study was carried out over a five year period. The details of the technique used, including measures taken to ensure that the stricture tract is not lost during urethrotomy are described. A total of 40 patients with urethral strictures were treated by internal optical urethrotomy during the study period with an age range of 26-80 years (mean 42.2 years.). The aetiology of the stricture was post-infective in 80% of the cases. Seventy-five percent of the patients have maintained a satisfactory flow-rate of between 15ml/sec. and 28ml/sec. with a mean flow-rate of 23ml/sec. after a single attempt at urethrotomy and over a period of follow-up of between 6 months and 5 years. In conclusion, internal optical urethrotomy can be effective in the management of patients with post-infective urethral strictures that do not involve the membranous urethra, and should be attempted in the first instance where the facility exists, particularly as a failed urethrotomy does not jeopardize the management of the stricture by other techniques.

INTRODUCTION

Most urethral strictures are treated by instrumentation, either by urethral dilatation or by urethrotomy. These techniques will be adequate to treat most patients, although they may need to be repeated on more than a single occasion with the attendant risk of complications. Urethroplasty is generally considered reserved for those patients who failed to respond to repeated instrumentation as well as those with complex strictures at presentation.[1]

Since the technique of internal optical urethrotomy was first introduced by Sachse in 1974, the method has been used as the primary treatment of new as well as recurrent urethral strictures[2], and several other authors have documented their experiences with the use of the instrument[3,4,5,6].

Since February 1994 we have been able to use internal optical urethrotomy along with other modalities in the management of our patients at Ibadan, Nigeria, who presented with urethral strictures. This report details the technique used and the outcome in Nigerian patients who were managed by internal optical urethrotomy between February 1994 and January 1999.

PATIENTS AND METHODS

All new patients who presented with clinical diagnosis of urethral strictures were evaluated for a possible management by internal optical

urethrotomy.The history of voiding difficulties, significant past medical history, including previous purulent urethritis and urethral instrumentation as well as concurrent medical problems were obtained. Where possible, a urine flow rate was done followed by a retrograde urethrogram (RUG). Where it was considered appropriate, a micturating cystourethrogram (MCU) and intravenous urogram (IVU) as well as an ultrasound of the kidneys, ureters and bladder (KUB) were carried out. Those patients whose RUG showed complete obliteration had urethroscopy performed. The packed cell volume, serum electrolytes and urea were also estimated and the urine was cultured.

Patients whose RUG and urethroscopy showed complete obliteration, and those with short segment post-traumatic strictures were excluded from the study. The patients who also had a perineal fistulae at presentation had a suprapubic urinary diversion and were treated with antibiotics until healing of the fistulae was achieved prior to urethrotomy.

A total of 40 patients with urethral strictures were treated by internal optical urethrotomy during the period of the study. The patients' age ranged from 26 to 80 years (mean 42.2 years). Sixteen patients (80%) had post-inflammatory strictures, 6 patients (15%) had post-traumatic strictures caused by urethral instrumentation applied by herbalists and alternative medical practitioners, and in 2 patients (5%) post-traumatic strictures had been induced by catheterization.

The length of the strictured segment of the urethra ranged between 2 cm and 10 cm with a mean length of 5.7cm. The total duration of the procedure ranged from 10 to 30 minutes with a mean of 15 minutes.

The urethrotomy was performed either under general anaesthesia, spinal anaesthesia or a caudal block. Peri-operative antibiotics were routinely administered as prophylaxis. A 21 Fr. sheath Storz optical urethrotome was used in all cases. A 3 Fr. ureteric catheter was always used as a guide through the stricture during incision. The stricture was incised at 12 o'clock along its entire length and depth until it admitted the urethrotome sheath comfortably and the bladder could be entered. Incision at the 6 o'clock position was not done because of the danger of entering into the rectum.The irrigation fluid used was normal saline.

After completing the urethrotomy, a size 18 Fr. silastic catheter was left indwelling for 21 days to serve as a scaffold for re-epithelisation of the raw area. Silastic catheters have been reported to cause less irritation[7].

Patients were usually discharged 24-48 hours after the procedure and catheters were removed during an outpatient visit. Urinary flow rates were done after catheter removal and at 6 weeks, 3 months and 6 months during follow-up visits. Urinary flow rates obtained when the total volume of urine voided was less than 120 ml were discarded.

RESULTS

One patient suffered extravasation of the irrigation fluid into the subcutaneous tissue of the penile shaft during the procedure, apparently from too deep an incision into the scar tissue. This happened in the earlier part of the study. However, the swelling resolved uneventfully within 48 hours after the procedure. None of the patients required a blood transfusion and there were no cases of septicaemia following the procedure.

Thirty patients (75%) have maintained a satisfactory flow rate of between 15ml/sec and 28ml/sec, with a mean flow rate of 23.6 ml/sec after a single attempt at internal optical urethrotomy, and during a period of follow-up of 6 months to 5 years.

Ten patients (25%) required a repeated urethrotomy. Four of these patients stabilized after the second urethrotomy, and they now void with satisfactory flow rates. In four others, urethroplasty was done, while the remaining two patients who refused urethroplasty required intermittent bouginage to void adequately. Patients were followed up for a period ranging between 6 months and 5 years.

All the patients who had required repeated procedures presented within six weeks of the catheter removal with a poor urinary stream tending towards dribbling.

The presence of a perineal fistula did not seem to have an adverse effect on the outcome of the urethrotomy; two of the four patients who had presented initially with perineal fistula stabilized after a single attempt at urethrotomy, while the other two patients had urethroplasty.

DISCUSSION

The outcome of internal optical urethrotomy in our patients has been quite impressive. Seventy five percent (75%) of the patients had adequate urinary flow rates after a single attempt at urethrotomy, and at over a six months period of follow up. This result is comparable to that of Holm-Nielson et al. who obtained an overall cure rate of 77% in 225 patients whose strictures were treated by internal optical urethrotomy[8]. The result, however, contrasts with that of Boccon-Gibod et al. who obtained a 56% cure rate at 6 months and a cure rate of only 25% at 2 years[9]. It should be noticed, though, that post-infective or post-inflammatory strictures predominate in the current series (80%), while the series reported on by Boccon-Gibod et al. contained mostly iatrogenic and post-traumatic strictures (70%)[9]. Iatrogenic and post-traumatic strictures are notorious for being more resistant to treatment, especially by urethrotomy presumably because they are often associated with a denser fibrosis[8,10]. Previous studies from this environment had confirmed the preponderance of post-inflammatory strictures over either iatrogenic or post-traumatic strictures[11].

Although internal optical urethrotomy is quite a simple procedure to do and can be accomplished in a very short time, care must be taken to avoid complications. We have found that the use of a small ureteric catheter acting as a guide through the strictured segment into the bladder can avoid the risk of losing the tract of the stricture during incision, a mistake that could lead to extravasation of the irrigation fluid into the soft tissue of the penile shaft, as occurred in one of our patients. Because of the possibility of fluid extravasation during the procedure and consequent systemic absorption, it is advisable to use an isotonic fluid for irrigation rather than water, which may lead to haemolysis when absorbed in a large quantity systemically.

Our patients have been followed up mainly by clinical assessment and not by uroflowmetry, which is not available in our center. Follow up by uroflowmetry may demonstrate a higher number of recurrences than clinical assessment of the treatment results[12].

The success rate obtained in this study confirms the results of other workers sugesting that internal optical urethrotomy (IOU) should be attempted first in patients with passable urethral strictures that do not involve the membranous urethra, for fear of causing urinary incontinence. The procedure is quite simple and can be repeated in cases of recurrence. It is also notable that a failed urethrotomy does not jeopardize a subsequent urethroplasty.

Morbidity associated with optical urethrotomy was minimal in this study. There was no death, and no patient suffered impotence. One patient suffered extravasation of the irrigating fluid into the penile shaft, however this resolved uneventfully within 48 hours of the procedure.

The length of follow-up in this study ranged from six months to five years and the outcome has been quite encouraging. Some authors have tried to improve the success rate and decrease the number of recurrences after optical urethrotomy by instituting intermittent self-catheterization[13], while others instruct the patients to pinch the external meatus at the beginning of micturition in order to effect urethral self dilatation (hydraulic self dilatation)[9]. We did not find it necessary to institute any of these measures in our patients. Our follow-up routine usually consists of voiding history and measurement of the urinary flow rate. When one or both of these measures indicate urethral obstruction, a urethroscopy will be performed and if necessary a repeat urethrotomy will be done.

The 77% success rate of internal urethrotomy in these patients with mostly post-infective strictures, coupled with minimal morbidity suggest that this should be the first treatment option in patients with passable, post-inflammatory strictures, particularly since a failed urethrotomy does not adversely affect the outcome of other modalities of treating strictures including urethroplasty.

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Editorial Comment:

It is very unusual to treat lengthy strictures of up to 10 cm in length by internal optical urethrotomy. This technique is usually used for short strictures, while lengthy strictures would be treated by open surgery.

Reply of the author:

I agree that lengthy strictures are not usually treated by internal optical urethrotomy, but we chose this procedure for four patients with 7.5 cm, 8 cm, 8.5 cm and 10 cm strictures, respectively.

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