THE RADICAL CURE OF URETHRAL STRICTURES

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Until recently the accepted treatment of urethral strictures was dilatation with bougies or metal sounds. Operative measures were not invoked until palliative treatment failed owing to the type of stricture or because the patient did not attend regularly.

Although it is still consistently stated that dilatation should be a painless procedure, it is difficult to understand how this can be so in certain cases. If the stricture, whatever its length, is fibrous and relatively unyielding then painless dilatation is impossible. Local surface anaesthesia cannot penetrate the fibrous scar tissue to reach the sensitive nerve endings; it affects only the urethral mucosa, and it is reasonable to conclude that stretching of a fibrous stricture with its embedded nerve endings must be painful. With the yielding and elastic stricture the position is different, since the scar tissue is not so dense and the nerve endings may be successfully anaesthetized but, on the other hand, this is the type which rapidly attains its previous diameter and surgical interference becomes inevitable. When once a reasonable passage is obtained, dilatation is no longer necessary and one has merely to test the calibre from time to time. Should narrowing recur, the patient has once again to undergo a painful procedure with frequent accompaniments of catheter fever, bacteraemia and other complications.

In the author's experience the finding of an uncomplicated urethral stricture at the out-patient department of the Provincial Hospital, Port Elizabeth, is extremely uncommon. The patients usually present with badly neglected or improperly treated lesions, including cases of failed dilatation with multiple false passages and cases presenting with a low suprapubic cystostomy. With persistent and careful dilatation, commencing usually with a filiform guide and Phillips' catheter, it has been possible in most cases to produce a passage of reasonable diameter, only to find that the patient then disappears for some months and usually does not attend again until these complications are again present. The final outcome of treatment under these circumstances is usually disappointing and it was because of this that the author considered radical surgery might provide the best means of permanent cure. Robinson [1] states: 'The patient with stricture is never cured and it must be impressed upon him that regular, even if infrequent, passage of an instrument is essential to ward off serious trouble. Prognosis is relatively bad if gross sepsis has occurred before treatment is initiated or if it persists in spite of treatment.'

Until very recently text-book descriptions of surgical procedures in urethral strictures were those devised many years ago. Wheelhouse's classic external urethrotomy and the surgical instruments he used were described in 1876,[2] since when there had possibly been minor changes in technique and improvements in methods of drainage but no real advance in knowledge. All methods adopted were liable to produce further scar tissue and recurrence of the stricture. It makes little difference whether one totally excises the stricture, opens its floor, or incises its roof as in internal urethrotomy. Continued dilatation is advised after all these procedures. Statistics of local cases of stricture in which surgical intervention has been necessary are not available, but it is common experience that when once the older surgical procedures were carried out a vicious circle was set up, since almost invariably repeated operations followed by dilatation became necessary, particularly in the presence of complications.

THE DENNIS BROWNE TECHNIQUE

The introduction by Dennis Browne[3] of his highly successful operation for the treatment of hypospadias in children was soon followed by the application of his method to the radical cure of urethral stricture. Results have been published by Bonnin [4] and Swinney.[5] Although techniques differ on minor points, and in Johansen's operation [6] there is greater variation in his use of scrotal skin, these reports have shown a great improvement on previous results.

The basis of the operation is the formation of an interrupted length of hypospadic urethra which includes the area of the stricture. The length of urethra involved depends on the length of the stricture and partially on its position. In the penile and perineal sections the distance exposed may be minimal, since the skin and urethra when incised lie on adjacent planes or can easily be brought into juxtaposition. On the other hand, in the scrotal and membranous parts I have found it necessary to expose and lay open a greater length; in earlier cases a minimal length of urethra was opened, which led to the formation of a fistulous tract rather than the open gutter of a hypospadias, and closure at the second stage was difficult although results have been satisfactory. Careful attention has been given to the preservation of all mucosa. The second stage, done 4-6 weeks later, consists in burying the strip of mucosa and skin to give a lumen of about 0·8 cm. diameter to the new urethra. This requires a strip 2·5 cm. (1 inch) in width. I have used rubber tubing instead of the beads recommended by Dennis Browne [3] to obtain eversion of the edges. Latterly, I have been using large Michel clips as reported by Swinney.[5] I am also coming round to the idea that diversion of urine is unnecessary until the second stage unless infection is present, when a suprapubic cystostomy should be performed immediately.

My experiences have convinced me that radical surgery with the intention of permanent cure of urethral stricture is the treatment of choice.

The following case reports show the different methods used, in the various types of complicated or uncomplicated strictures, depending on their site.

CASE REPORTS

Penile Shaft Strictures

The skin and urethra are incised on a metal sound distal to the stricture for ½ inch. The stricture is cut through and the incision is lengthened proximally to the stricture for ½ inch. Gross bleeding points are clipped and tied off with 00 plain catgut. The urethral cut edge is sutured to the skin edge with Deknatil. A urethral catheter is inserted through the proximal opening and left for a few days. When the catheter is removed the patient passes urine through the gutter. Four to six weeks later the hypospadias is closed according to the method of Dennis Browne. Here an extensive relieving incision, which may leave half of the penis uncovered, is necessary on the dorsum of the penis. Epithelium grows over this area very quickly, leaving a soft pliable scar. Urinary diversion is effected by perineal urethrostomy.

Case 1. A Coloured taxi-driver aged 53 years. This patient gave a history that a partial amputation of the penis had been performed on him 6 years previously. This was followed by a meatal stricture. Repeated dilatation of the latter caused damage to the anterior urethra, resulting in a stricture of the entire urethra of the penile shaft. He was treated surgically at another urological centre but the stricture recurred and he had been receiving dilatations intermittently for some years. When an adequate calibre had been obtained, he invariably disappeared for some months, during which period he dilated himself with knitting needles. On his reappearance, I invariably had to start with filiforms.

He was operated upon over one year ago. His urethra accommodates a 20 French bougie and he has not required dilatation since operation. He carries on his normal work.

Case 2. A Coloured labourer aged 43 years. This man gave a prolonged history of stricture and he was passing most of his urine through a pin-head fistula on the side of the shaft. Micturition took about 10 minutes. Dilatation has been performed elsewhere and was attempted in the out-patient department without success.

The stricture was exposed and treated as above described. At the first stage the fistulous tract was completely excised. A second unsuspected stricture was found in the perineal portion and treated as in case 4. A small fistula on the shaft recurred after the second stage. This closed satisfactorily after surgery. The urethra now takes a 20 French panendoscope without difficulty. Dilatation has not been necessary.

Scrotal Urethral Strictures

Exposure of these strictures is obtained in the usual manner but the incision should extend on to the penile shaft and back to the perineum. If only a short length is exposed and the cut edges sewn to the scrotal skin, the effect will be to create a fistulous-like tract once the scrotum adopts its normal hanging position, and the final result a stricture where the distal part of the urethra is sewn to the scrotum.

Case 3. A Native labourer aged 70. This man had received dilatations intermittently over many years. The stricture was slowly narrowing and finally retention occurred. At operation, a short by-pass false passage was found skirting the stricture. This had been the object of the previous dilatations. When the stricture was incised the resulting width of the mucosa was only 2 mm. Only a short length was exposed and sewn to the scrotum. A stricture developed at the distal part of the urethra. A second operation splitting the scrotum was performed with complete success. The new urethra now takes a 26 French bougie.

Perineal Urethral Strictures

These if uncomplicated lend themselves very well to operation. The procedure carried out is similar to that of strictures of the shaft, but no relieving incisions are necessary.

Case 4. A European ex-serviceman. This man's original stricture followed the accidental use of chromic acid as a urethral douche. He had had previous surgical treatment elsewhere and now required dilatation every 6 weeks. These dilatations were painful and there was no increase in calibre. Routine reconstruction was done and when last seen the urethra accommodated a 19 French bougie.

Watering Can Perineum

In these cases all urethral surgery is preceded by suprapubic diversion of urine. In cases with extensive and numerous fistulae I now make an inverted-Y incision. The vertical incision can be extended to split the scrotum; I have frequently found a fistulous tract running up to the area of the symphysis pubis behind the scrotum, invariably on the left side. The arms of the Y extend in a curved line to the sides of the anus. All scar tissue must be excised and skin edges of fistulae trimmed. In view of the possible difficulty in freeing the perineal skin at a second stage, I use the scrotum to create the gutter in the manner described by Johansen. The second stage is done in the usual fashion.

Case 5. A Native labourer aged 52 years. This man gave a long history of repeated perineal abscesses with continual leakage of urine. Operation was carried out as above described but it was impossible to sew the scrotum on to the urethra as advised by Johansen. A second stage was uncomplicated. The urethra takes a 24 French bougie with ease.

Case 6. A European aged 59 years. This man gave a history extending over 20 years, with multiple abscesses and sinuses. For the last year he had been unable to sit comfortably; he walked with a stoop and with his legs apart to avoid contact with his trousers and had lost about 30 lb. in weight. He had been treated surgically in another urological centre. An inverted-Y incision was made, but it was found impossible to remove all the tracts and scar tissue through this. There were 2 large tracts running up on each side of the shaft, which required splitting of the scrotum and its subsequent reconstruction. Finally an area of skin 6 by 4 inches was excised. This extended well on to both thighs and posteriorly past the right side of the anus, completely denuding the perineum. The underlying scar tissue was excised and when this was completed the two crurae were seen to be stripped and the urethra, denuded of its muscle and cavernous tissue, was bulging. On passing a sound it was now found that the urethra would take a 24 French. Nothing further was done and the wound was allowed to granulate over. The patient had to return to the theatre 2 weeks later for drainage of a small abscess which formed at the base of the penis where the scrotum was reconstructed. He now takes a 20 French without discomfort. During his stay in hospital he regained 20 lb. in weight and now walks upright and can sit on a hard chair. This case is reported to show the importance of full excision of scar tissue; here the narrowing of the urethra was entirely due to extra-mural compression.

Membranous Urethral Strictures

In these cases I have closely followed the method of Johansen with good results. Owing to the depth and relative fixity of this part of the urethra I have found that it is difficult to get the posterior and more proximal sutures to hold if perineal skin is used. A lengthy gutter should be made which comes well forward into the perineum and allows easy secondary closure.

Case 7. A Native labourer aged 55 years. This man had been dilated intermittently for a stricture proximal to the bulb. His attendances were spasmodic; he finally arrived with retention and a cystostomy was performed. The only point of difficulty was

finding the entrance to the stricture. In other areas it is always possible to find the proximal urethra and so demonstrate the stricture, but in the membranous area this is impossible and a sound passed distally from above through a suprapubic cystostomy may be necessary. Closure was satisfactory and the patient takes an 18 French Coude bougie.

Case 8. A European youth aged 14 years. In this case I was unable to bring the skin back into contact with the urethra. Instead the urethra was allowed to reform around a catheter. The inevitable infection caused stricture formation. This boy had been run over by a lorry and suffered a complete tear of the urethra at the apex of the prostate together with other multiple injuries. At operation, elsewhere, they had managed to introduce a Jacques catheter, but no effort was made to approximate the bladder and prostate to the triangular ligament. It says much for the initial treatment that the boy shows no other disability than a urethral stricture.

When the catheter was removed, retention recurred and a suprapubic cystostomy was performed. At a subsequent operation an approach from the perineum was unsuccessful. Rectally, the whole area was one mass of scar and fibrous tissue. This was so dense that a metal sound in the membranous urethra could not be felt per rectum. A second perineal approach was made. Extensive scar resection was necessary and finally a mucosal tract was found, leading to the apex of the prostate which, on a subsequent cystogram, was shown to be elevated about 2 cm. above what was left of the triangular ligament. It was found impossible to bring either perineal or scrotal skin down to this depth. The thin strip of mucosa was left lying open and a new urethra was allowed to form around a perineal catheter. This perineal urethrostomy opening was later allowed to close. This boy required regular dilatation, but when last seen could be easily dilated to a 22 French. Dennis Browne [7] makes mention of this attribute of mucosa and greater use should be made of it to fill gaps in urethral continuity once the urethra is marsupialized.

Bonnin [4] has described a somewhat similar case which he successfully treated by bringing skin down to the apex of the prostate, but a stricture formed.

An interesting feature of this case is the length of unsupported lax urethra lying between the triangular ligament and the apex of the prostate. If this boy tries to use pressure to micturate or if his bladder becomes overful, he immediately precipitates a retention. When a desire to micturate arises, he has to wait for urine to trickle into his lax length of urethra and fill it. Once this has happened, he can use as much force as he desires without interfering with the passage of urine. The only explanation I can offer is that this unsupported urethra kinks on pressure from above when empty but when full of urine becomes a semi-rigid tube.

If the stricture in this case becomes difficult to manage, it may be necessary to make another effort at radical cure when the perineal tissues have settled down.

Complications

In this series two small fistulae have formed where the everting stitches had been introduced. These were due to two factors: The first and most important was that the sutures were too tight and local ischaemia was caused; the second factor was the use of braided nylon as a suture material. I now use very fine mono-filament nylon. Only one of these fistulae required further operation.

Apart from two fine hairs seen in one case, no trouble has arisen from buried hair growth as reported by Bonnin [4] and suggested by Smith.[8] Perhaps the fact that the Bantu has a relatively hairless perineum, accounts for the absence of this complication.

Results

Apart from case 8, no patients have required dilatation after operation; the follow-up in some cases has been short but, as this is the usual finding after the repair, I do not anticipate that any narrowing will develop in the future.

No patients have complained of after-dribbling as reported by Johansen. This I attribute to two points: The first is that no strip more than 1 inch wide was buried. The second is minimal freeing of the surrounding skin at the second stage, which avoids an unnecessary dead space and prevents gaping of the buried strip edges; if gaping is present, the final calibre is much wider than required.

SUMMARY

The methods and results are reported in a selected series of cases operated on for stricture by the Dennis Browne technique of burying a strip of mucosa and skin.

The author's minor modifications of technique, used for different types and sites of stricture, are described.

The fact that cure and not temporary relief is the aim of the operation, is stressed.

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