THE ROLE OF THE UROLOGIST IN THE TREATMENT OF VESICO-VAGINAL FISTULAE

WILLIAM HOUSTON, M.D., M.CH., F.R.C.S., F.R.C.S.I.

Honorary Surgeon to the Bulawayo Hospital Group, and Consultant in Urology to Mpilo Central Hospital, Rhodesia

In Africa vesico-vaginal fistula is a major problem; at a special 'V-VF' clinic which was established at Mpilo Hospital in January 1962, we saw 30 new cases of the condition in the first 10 months. This provides a challenge which we must accept, for it is, in the main, a preventable handicap. At present many influences combine to militate against much reduction in these numbers, not the least being shortage of doctors, so that we must do all in our power to minimize the lethal potentiality of this injury, which makes life a misery to those afflicted by it. It is my belief that many of us are dealing with this problem in too much isolation, and that an improvement in results will only be achieved when there is a wider appreciation of what is possible, and a greater awareness of the necessity for team work.

I do not need to emphasize the fact that the urinary tract is a unit in which damage to any portion, especially in its lower reaches, may have widespread repercussions. It is therefore essential to take a holistic view, and not to become so hypnotized by the local pathology that treatment becomes just a matter of successful cobbling of an abnormal opening in a tantalizing situation that is often difficult of access. The sheer technical *tour de force* needed to place the right stitch in the right place at the right time is such that many learned volumes have been devoted to this subject. But it is my view that this attitude is too narrow, and that, as O'Connor and Sokol[1] have said, closure of a vesico-vaginal fistula should not be regarded as the prerogative of any surgical specialty and a combined approach by an integrated team will give better results.

AETIOLOGY

But two factors have, instead, tended to direct all patients suffering from this injury to gynaecological departments. The pioneer work of Marion Sims[2] more than 100 years ago focused attention on the vaginal component. Furthermore, the underlying causes of these fistulae are such that these patients will have had recent contact with gynaecological departments, and will naturally gravitate back to them. These underlying causes are three in number, as follows:

1. Trauma, often surgical, e.g. during or following hysterectomy. Certain 'sling' operations in the region of the bladder neck are not without this danger, and caesarean section provides its own inherent hazards.

2. Radiotherapy, usually when used to treat carcinoma of the cervix by radium application.

These two initiating factors (trauma and radiotherapy) are responsible for most cases seen in countries where adequate medical attention is available to all.

3. Obstetrical neglect or injury. Cases arising in this way are now seldom seen, except in under-developed countries, but they form the largest group among the non-European inhabitants of this continent.

It is not, therefore, surprising that patients with vesico-vaginal fistula are closely linked to gynaecological departments, and it is only fair to say that most of them are best treated by surgeons with constant experience of and practice in plastic vaginal operations.

The underlying cause of the fistula has some bearing on treatment, although certain authorities will not accept this fact. A good illustration is the post-hysterectomy fistula, which is usually situated at a high level in the vagina, and is always very near to the peritoneal cavity. One or other ureter may well be in close proximity. It is therefore often much easier and safer to approach this type of fistula through an abdominal incision; the actual repair may be carried out as a completely extra-peritoneal exercise, or more commonly by a combined intra- and extra-peritoneal method. Should there be any question of damage to the ureter, the urologist is the logical choice of operator, and Scott Russell[3] has suggested that, as a general rule, the low fistula should be dealt with by the gynaecologist, while the high fistulae, and those with a likelihood of ureteral damage, should be treated by a urological surgeon.

Again, the post-irradiation fistula presents its own problems. The fibrosis, the general devitalization of surrounding tissues, and the narrowness of the introitus, all make a vaginal approach difficult, and lessen the likelihood of primary healing. In such cases it may be wiser, on occasion, to abandon orthodoxy and use the abdominal route, bringing fresh healthy tissue to the damaged area, as in the omental-interposition technique described by Turner Warwick.

In pursuance of this theme, the widespread occurrence of bilharziasis in the vesical tissues of African patients adds to the difficulties in cases seen in our part of the world. This causes marked submucosal fibrosis, and often calcification, rendering separation of layers extremely difficult. Moreover, the resultant distortion of the bladder

base and stenosis of the ureteric orifices make accurate identification of these structures quite an exacting task. Under these circumstances we in Bulawayo have had recourse, on several occasions, to a 'synchronous combined' transvesical and vaginal approach, and have been impressed by the improvement in exposure and safety attainable in this way.

METHODS OF TREATMENT

Turning now from the general to the particular, the following principles governing treatment would be accepted by all workers in this field:

1. The exact site of the fistula must be accurately determined, remembering that there may be multiple openings, and that a recto-vaginal fistula may also be present.
2. The relation of the ureteric orifices to the abnormal opening must be determined precisely.
3. All possible measures to eliminate infection should be undertaken before operation.
4. Since the first attempt at repair gives the best chance of a successful outcome, it should not be undertaken until the patient's general condition has been brought to the best level attainable.
5. Adequate exposure is essential.
6. There should not be any tension on the suture lines.
7. Continuous bladder drainage should be maintained after the operation for at least 10 days. The advantage in certain cases of drainage in the prone position should be borne in mind.

The first three of these principles, taken together, mean full urological investigation, and this implies the following:

(*a*) Excretion urography.

(*b*) Cystoscopy with ascending pyelography, if indicated, and collection of urine specimens for culture and sensitivity tests.

(*c*) Possibly the injection of coloured fluid into the bladder or ureter to assess the position of the fistula.

(*d*) Intravenous injection of indigo carmine or methylene blue may be necessary in the all-important step of locating the position of the ureteric orifices.

Now, while all these procedures are second nature to a urologist, those trained in other disciplines may not fully realize their importance. In certain situations consultation and team work will reap a rich harvest. For example, pre-operative recognition of a complete pyelon duplex may mean the difference between success and failure. Again, the purely technical difficulties of cystoscopy and ascending pyelography may be such that only a trained urologist is likely to be successful. In the purely vesico-vaginal fistulae, even if large, it is usually possible to obtain an adequate view with either a conventional cystoscope or one of the Braasch type. But where there has been considerable destruction of the bladder neck and proximal urethra direct inspection may be all that is possible. Good lighting is essential and a head-lamp may prove most useful. The knee-elbow position may be helpful in keeping the vault of the bladder from prolapsing over the critical area. In these circumstances a Kelly cystoscope or a small illuminated proctoscope may be used with advantage.

The essential investigations having been satisfactorily completed, a plan of treatment can be mapped out. General measures to improve the nutritional state and general condition of the patient, such as blood transfusion and vitamin injections, are of the utmost importance. Eradication of infection of the urine, and improvement of the local condition of the vagina by suitable douches or baths to eliminate incrustations and sepsis, play their part. A colostomy may be necessary if there is a sizable recto-vaginal fistula. Then arises the question of timing of the operation proper. Most writers on this subject insist on a delay of at least 6 months from the time of development of the fistula until repair is undertaken, to allow for stabilization of the local condition. To me this seems unnecessarily protracted, with every probability of increasing rather than decreasing sepsis. A recent report by Collins *et al.*,[4] of good results following early intervention, giving 100 mg. of cortisone three times a day for 10 days before operation, seems promising.

It is, however, worth remembering that vesico-vaginal fistulae, except those due to malignant disease, have an inherent tendency towards closure, and there are numerous instances of cure, either spontaneous or following a period of bladder drainage only. It is probably this *vis medicatrix naturae* that is responsible for occasional success following simple electro-coagulation. The consensus of opinion does not favour this procedure, although O'Connor is quite enthusiastic about its use in certain small fistulae.[3]

When the stage has been reached where operation is obviously necessary, most cases can be repaired satisfactorily by the standard vaginal approach and a technique such as that so ably described by Chassar Moir.[5] It is perhaps worth knowing that, although all writers emphasize that the first operation gives the best chance of success, it is by no means unusual for this success to be achieved at the second, third, or even fourth attempt. My gynaecological colleagues at Mpilo assure me that, in dealing with the larger fistulae, if the initial operation does not, as they hope, achieve success, it will often make the opening so much smaller that a successful outcome to a second attempt can be anticipated.

Another point worth bearing in mind is that the main objective of operation is to secure watertight closure of the bladder, as was emphasized by Quinby.[6] If this desirable state of affairs can be attained, the vaginal mucosa will look after itself. This consideration seems to me an argument in favour of the more widespread adoption of the 'synchronous combined' type of operation to which I have already alluded.

Grosser Degrees of Vesico-vaginal Fistula

But it is when we come to the grosser examples of vesico-vaginal fistula, where large portions of the bladder have been irretrievably lost, and where there may also be considerable destruction of the urethra, that the greatest exercise of judgment is called for and the necessity for collaboration is most urgent. Under these conditions, while it may be possible to refashion a urinary receptacle, the patient is no better off unless this is continent. On one occasion that is the end-result we achieved after enlisting the services of a plastic surgeon and inser-

ting a tubed pedicle of lower abdominal skin into the defect. The bulbocavernosus interposition of Martius, a gracilis transplant, or the levator ani flap advocated by Ingelman-Sundberg,[7] may help. Experimental procedures in animals, claiming good results from specially prepared ileal loops, have been described and other avenues may prove fruitful. But once this stage has been reached I think that one must seriously consider diversion of the urinary stream.

Such a procedure serves several useful purposes. It will promote the desirable improvement in the local condition by removal of incrustations and by allowing the sodden tissues a chance to return to normal. It will help to raise the morale of the unfortunate patient, a not inconsiderable factor. It may allow definitive repair in cases where this would not otherwise appear possible, and, should a continent reservoir be established, there would be little difficulty in restoring the normal arrangement. If a suitable technique of diversion is employed, all these advantages can be gained without compromising renal function, which will allow unhurried reassessment of the total problem. Finally, if repair should prove impossible, it will provide the best permanent solution.

At first sight, it would seem that bilateral uretero-sigmoidostomy is the logical procedure. But there are several grave objections. Because of the damage to the recto-vaginal septum, anus, and anal sphincters, which is so often associated with vesico-vaginal fistula, continence would often be unobtainable. And even if it were, is this procedure justifiable in young adults, as most of these African patients are? What is the average expectation of life after this procedure? Does anyone really know? The likelihood of supervention of pyelonephritis and hyperchloraemic acidosis is high, although Reed Nesbitt[8] would seem to think that good results are the rule rather than the exception.

While there are many reports of long survival in good health after this procedure, and while it may be possible to keep reasonably educated patients who enjoy a high standard of living and of medical attention in comparatively good health, I do not think that this would apply to our more primitive patients. I would agree with Stamey[9] that 'except where rapid and continuous run-off occurs from a short segment, the operation of uretero-sigmoidostomy should probably be abandoned'. And, as I have mentioned, the concomitant damage to the perineum and anus rules out what would probably be the most suitable form of diversion, that is ureteric transplantation into the defunctioned rectum with either a terminal left iliac colostomy or a pull-through of the sigmoid colon between the fibres of the sphincter ani. So it seems that an ileal or colonic conduit is the only practicable manoeuvre. I have discussed this problem more fully in an article that will appear in the *Central African Journal of Medicine*.

Since the establishment of our 'V-VF' Clinic at Mpilo in January 1962, I have carried out a procedure of this nature on 9 occasions with no mortality and very little morbidity. These 9 cases have been drawn from the total of 30 new sufferers seen between January and October 1962. Although the African has a horror of artificial excretory stomata, such is the misery engendered by the fistula that no patient to whom the operation has been offered has refused it. One of the early patients in this series has now had her fistula closed, although at first examination this had appeared to be virtually impossible. Tremendous improvement in the local condition has been observed in all the others at follow-up, and we hope soon to be able to report further successes.

Another advantage of the ileal conduit is that, if a continent bladder and urethra can be reconstructed, it will be a relatively simple matter to detach the ileostomy stoma from the abdominal wall and implant it into the bladder. The crux of the matter is the question of continence, but with better appreciation of the physiology of the urethra, for which due credit must be given to the work of Lapides, this problem should not be insurmountable.

CONCLUSION

In conclusion, I would define the role of the urologist in the treatment of vesico-vaginal fistulae as threefold. In the first place, he should assist in the pre-operative assessment and investigation of each case. Secondly, he should be responsible for the treatment of those fistulae which, because of their high situation or associated injury (e.g. to the ureter), are best dealt with by a transvesical or transperitoneal approach. And, thirdly, in those cases in which there is very extensive destruction or loss of tissue, he should provide the most suitable form of urinary diversion, either temporary or permanent.

ADDENDUM

At the meeting at which this paper was presented, several speakers were enthusiastic about the merits of the O'Connor operation.

Mr. A. Jacobs said that he would regard uretero-sigmoidostomy in vesico-vaginal fistula as a confession of failure, and felt that this operation should not be performed.

Various possible methods of later repair of the fistula were suggested, but none of these had yet been carried out.

REFERENCES

1. O'Connor, V. J. and Sokol, J. K. (1961): J. Urol. (Baltimore), **66**, 579.
2. Sims, J. M. (1852): Amer. J. Med. Sci., **45**, 59.
3. Scott Russell, C. (1962): *Vesico-Vaginal Fistulae and Related Matters*. Illinois: Charles C. Thomas.
4. Collins, C. G., Pent, D. and Jones, F. J. (1960): Amer. J. Obstet. Gynec., **80**, 1005.
5. Moir, J. C. (1962): *The Vesico-Vaginal Fistula*. London: Baillière, Tindall & Cox.
6. Quinby, W. C. (1935): Trans. New Engl. Surg. Soc., **18**, 243.
7. Ingelman-Sundberg, A. (1960): *Gynaecological Urology*. Illinois: Charles C. Thomas.
8. Nesbitt, R. M. (1960): J. Urol. (Baltimore), **84**, 691.
9. Stamey, T. A. (1956): Surg. Gynec. Obstet., **103**, 736.