

URETHRO-VAGINAL AND VESICO-VAGINAL FISTULAE*

A SUMMARY OF 57 CASES ENCOUNTERED IN THE GROOTE SCHUUR HOSPITAL, CAPE TOWN
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An opening connecting the bladder or urethra or both to the vagina is a most distressing anatomical defect. It is a source of great discomfort to the patient mentally and physically. The lot of a woman who is for ever wet and smelling of decomposed urine must be one of the hardest on earth to bear. The very thought that in most cases it is a result of inferior practice of medicine—be it obstetrics, gynaecology, surgery or radiotherapy—is a cause for great concern. As a general rule it may be stated that the better the medical services in a given community the lower is the incidence of vesico-vaginal fistula. A high incidence of vesico-vaginal fistula is a sad reflection on obstetrical services. In certain parts of South Africa the incidence of vesico-vaginal fistula is appalling. This is not necessarily the result of inferior medicine; it is often due to great distances, abject poverty and apathy—or really antipathy—to modern methods. In dealing with persons who still firmly believe in their witch-doctors this attitude of mind can be understood. The medical practitioner is only summoned when almost all is lost. However, a change of attitude in the Bantu is taking place at an ever increasing rate. This is evidenced by an almost overwhelming increase in attendance at antenatal clinics and a readiness for medical consultation in sickness. It is only human that great difficulty is met with in severing bonds with age-old magical and mystical practices. Few people are completely devoid of superstition. It is therefore understandable that the lower the level of true education the tighter is the clinging to magical aids.

ETIOLOGY

Although a major cause, *inferior obstetrics* is not responsible for all vesico-vaginal fistulae. In Johannesburg, Charlewood¹ and Lavery³ state that with few exceptions their cases resulted from difficult deliveries. Chassar Moir's figures,⁷ on the other hand, correspond with those of Norman Miller,⁶ and show that in the UK and the USA not only are fistulae uncommon but most of them arise as complications following upon operative procedures. Roughly one-third of their total number of fistulae were of obstetrical origin and two-thirds resulted from operative procedures. The series I am dealing with is small, but it is of interest to note that in percentage the figures for Whites roughly correspond with those of Moir and of Miller, and for the Bantu with those of Charlewood and of Lavery. In our Coloured people an intermediate figure is found.

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In Table I the 57 cases in the series now presented are classified by race and etiology. The figures for the 3 races may well be taken as a reflection of different social levels.

TABLE I

Race	Post-operative	Labour	Inflammatory	Total
White	5	2	—	7
Coloured	7	19	3	29
Bantu	0	20	1	21
All Races	<u>12</u>	<u>41</u>	<u>4</u>	<u>57</u>

It is to be stressed that vesico-vaginal fistula is a very unusual labour complication in urban areas. With very few exceptions the Bantu women in this series developed their labour sequelae at a great distance from medical aid in their Territories, viz. the Transkei and Ciskei. All but a few of the total cases of all races came from outlying areas.

Sloughing and *trauma*, or a combination of the two, are the main causes of vesico-vaginal fistulae.

Sloughing

Sloughing may be due to:

(a) *Continuous and excessive stretching of the base of the bladder.* In normal labour, the bladder base, being closely attached to the cervix, is drawn up into the abdomen when cervical effacement and dilatation occur, and overrides the presenting part. Should the presenting part take an abnormally long time descending or should it become impacted during the second stage, the excessive stretching will materially interfere with the blood supply to the base of the bladder. This interference will be aggravated by the gradual distension of the bladder with urine, for both labour and the impaction of the presenting part interfere with the act of micturition, the former physiologically and the latter mechanically. No stretch of imagination is required to picture the result.

(b) *Pressure of the presenting part, usually the foetal head, against the symphysis pubis for an abnormally long time will damage the soft structures caught between these objects.* The brunt of the destruction will therefore fall upon the urethra and the neck of the bladder. It can readily be understood that, if the second stage has been long and possibly static, the irreversible damage may be formidable; and a large vesico-vaginal fistula, with absence of the urethra, may be found at the time of the aided delivery, or developing soon after.

Sloughing of a portion of the bladder wall as a *post-operative* complication is fortunately not commonly

found. After extirpation of the uterus, when sewing up the vaginal vault, active attention should be paid in order to avoid stitches failing to catch up and thus *strangulating a small portion of the bladder wall*. The sloughing that takes place if this occurs will present itself by a leakage of urine starting about the 5th post-operative day. The same applies to vaginal hysterectomies and repairs; faulty concentration may lead to inferior technique, with deleterious results to the patient. After the larger pelvic operations like radical hysterectomy and pelvic lymphadenectomy, or posterior exenteration, not only is the blood supply of the bladder interfered with to a major degree by the very nature of these operations, but the supports to the bladder, especially in the posterior exenteration, are removed. In our unit, fortune has smiled upon the patients undergoing the Wertheim type of operation, and not one of a series of 97 developed a vesico-vaginal fistula.⁴ Of the 12 patients who underwent posterior exenteration, 2 were complicated by vesical fistula (no vagina being left).⁴

On the other hand, *abscess formation* in the region operated upon severely interferes with the local blood-supply. Rupture of an abscess situated between the bladder wall and the vagina, if both organs are severely affected locally, will obviously result in fistula formation. The time of onset of this type of catastrophe in one patient I saw was on the 12th post-operative day. The doctor in charge (and the patient) gave the information that she ran a slight temperature after a total hysterectomy. On the 12th day a little abscess burst into her vagina. After this mishap she was completely incontinent of urine. *Primary inflammatory* causes of vesico-vaginal fistulae are unusual. Three patients in this series gave stories justifying such a diagnosis. The primary lesions in 2 seem to have been urethral diverticuli, because in each case the fistula was found extending from the urethra, through a diverticulum, to the vagina. With excision of the fistulous tract, together with the diverticulum, cure was effected. In one of these patients the following was the sequence of events: She was admitted suffering from an acute abdomen due to a diverticulitis. The abscess burst, producing a vesico-colic fistula. This fistula was operated upon and cured. She then developed, and burst, a peri-urethral abscess, which followed in the wake of the passage of faeces through the urethra. The second attempt at repair of the urethro-vaginal fistula (after excision of the diverticulum) was successful.

Neoplastic infiltration producing fistulae requires no elaboration. Few of these were seen, and they are not included in this series. *Irradiation* fistulae in this unit are very rare. I have not seen one during the period under discussion. This fact is no doubt due to good judgment on the part of our radiotherapists and to the subjection of patients with cervical carcinomatous involvement of the bladder to major surgical procedures.

Trauma

Direct obstetrical instrumental injury of the bladder or penetrating the wall of the urethra are inferior manipulations not warranting discussion. Should

craniotomy or embryotomy be indicated, great care must be exercised, for the *spicules of foetal bone* may be knife-edge sharp. Direct injury to the bladder during a difficult *pelvic* operation is unusual. When this does occur, however, all that is required is an immediate repair together with 'bolstering' sutures, followed by continuous post-operative bladder-drainage. A vesico-vaginal fistula is rarely produced by an *accident*. A patient attending the gynaecological out-patient department for her abdominal pain gave a history of having been knocked down by a motor car whilst she was riding her bicycle many years ago, i.e. as a young girl. Amongst her many injuries it was found that a piece of metal had stuck into her bladder *via* the vagina. The fistula had been successfully repaired soon afterwards. *Intercourse* is a major problem after the operation of successful repair of vesico-vaginal fistula. One of my patients had her fistula repaired on 3 occasions. She volunteered that no sooner had she broken continence (despite contrary advice) than complete urinary incontinence was once more established. Of the 3 failures encountered in the Bantu (Table II) one patient was completely continent when she left hospital but was admitted 3 months later as an emergency suffering from an incomplete abortion. She stated that she had become completely incontinent one month after leaving hospital.

SYMPTOMS AND SIGNS

The symptoms and signs of this condition are usually so painfully obvious that they need hardly be mentioned. The diagnosis may almost be made before the patient is seen. An ammoniacal odour in the out-patients' department or in the ward immediately draws attention to the unfortunate sufferer. The patient usually dates her urinary incontinence to a labour, to an operation, or during the period of convalescence. In individuals suffering from advanced cancer, the usual discharge, bleeding and possible pain may be associated with the development of urinary leakage. Small fistulae may give rise to diagnostic problems; they are to be differentiated from patent urethral incontinence, uretero-vesical fistulae and urethral diverticuli. A good history, together with the usual 3-swab test (3 swabs are placed in the vagina, methylene blue is injected into the bladder, and the swabs are withdrawn; the one stained locates the fistula) and a thorough examination under anaesthesia, possibly aided by the injection of a dye into the bladder at that time will serve to make a positive diagnosis.

TREATMENT

It is sad to reflect that if labour were properly conducted and the proper technique employed in pelvic operations, vesico-vaginal fistula would hardly exist. However, if a fistula is present, its cure immediately demands more team-work between medical and nursing staffs than in most other surgical problems. Although pre-operative and operative principles have to be rigidly observed, it is in the post-operative period especially that the danger of a break-down lies. The

nursing staff should be fully conversant with their importance in the team.

Pre-operative Treatment

Pre-operative treatment consists in dealing with any condition which might interfere with wound healing, e.g. syphilis, vitamin or protein deficiency states, the administration of small doses of oestrogen in post-menopausal women, the rendering of the urine sterile and acid in order to dissolve the crusts around the perineal region and in the vagina, and making sure that no bladder stone is present.

In addition, if the fistula is large, ureteral orifices should be located in order to avoid damage to them during the operation or their possible inclusion in

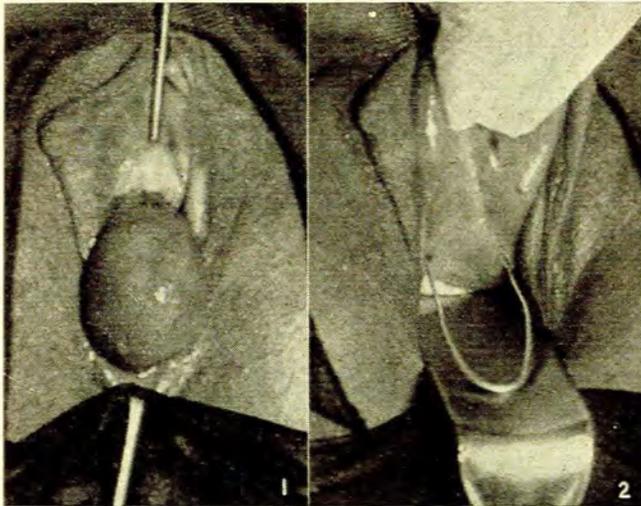


Fig. 1. Bladder wall telescoped through vesico-vaginal fistula.

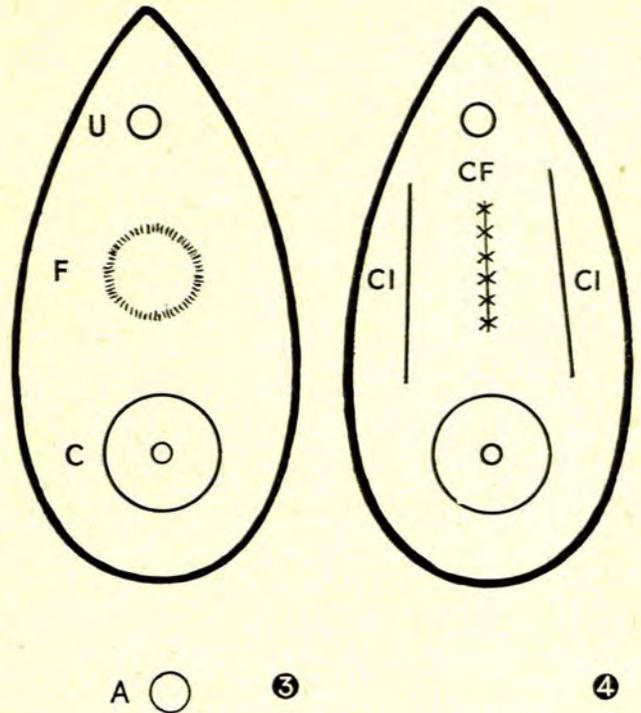
Fig. 2. The points of a bent probe inserted into the ureteric orifices.

suturing. Figs. 1 and 2 caricature this point. In Fig. 2 the two ends of a bent probe are inserted into the ureteric orifices. The patient's blood should be grouped, since with large fixed fistulae the operation may be associated with brisk bleeding.

Operative Treatment

In the operative treatment two main principles must be observed, viz. the raw edges of the fistula must be apposed, and interference with wound healing must be prevented. The nature of the operation depends upon the size and situation of the fistula. Marion Sims's method of excising the scarred rim and suturing the raw edges is both a simple and an effective method of treatment, as is amply demonstrated by Mahfouz,⁵ Moir,⁷ Charlewood¹ and Lavery.³ This is the operation of choice for the small or mobile vesico-vaginal fistula. Should there be the slightest evidence of tension surrounding the suture line, appropriate counter-incisions are made (Figs. 3 and 4).

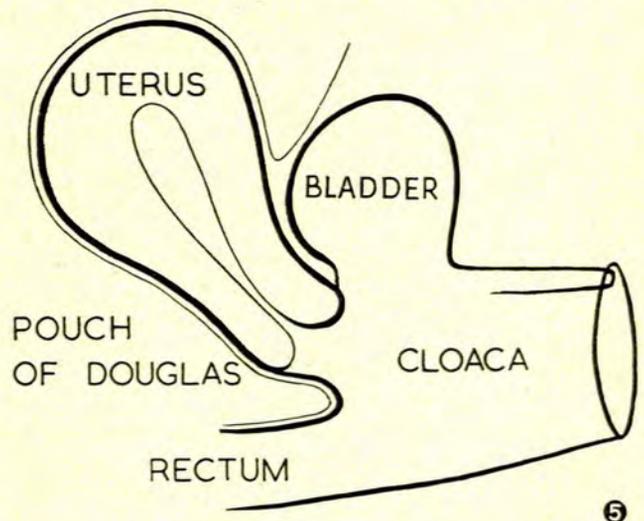
Difficulty is immediately encountered if a large, hard, fixed fistula is present. Once again the scarred



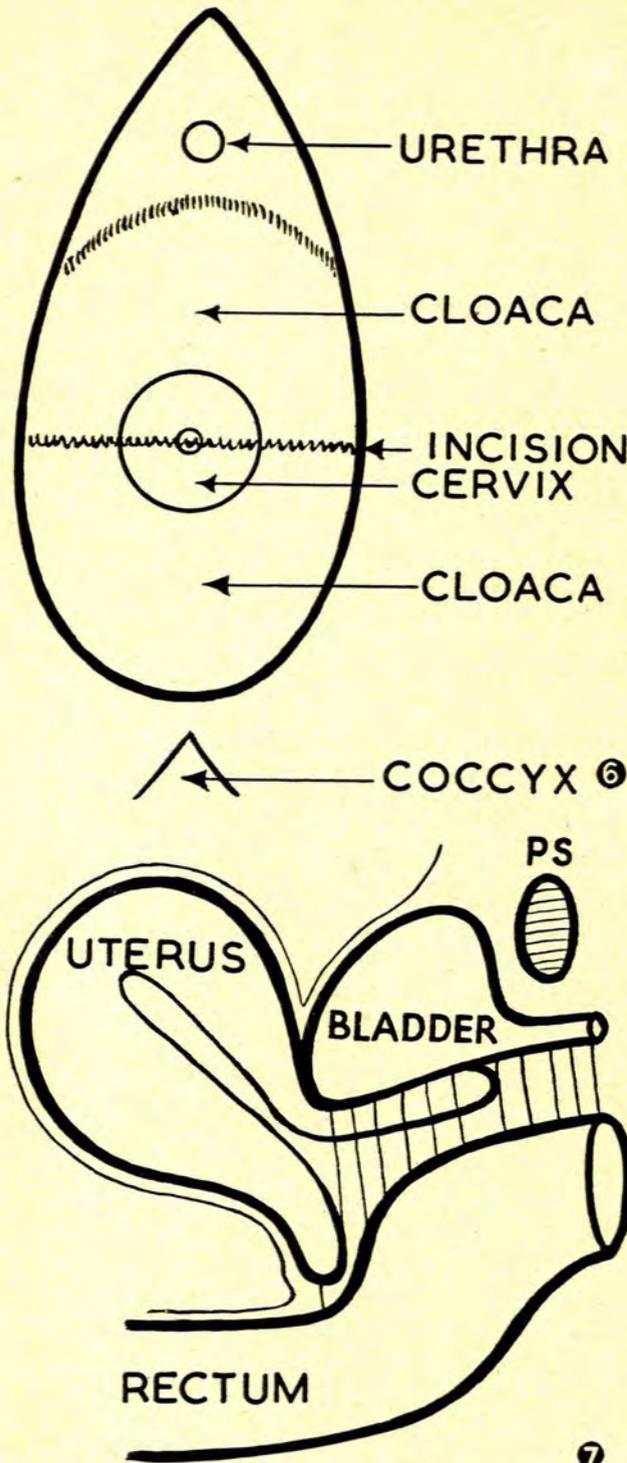
Figs. 3 and 4. Diagram showing closing of fistula, with counter-incisions. U=urethra, F=fistula, C=cervix, A=anus, CF=closed fistula, CI=counter-incision.

rim is excised. Schuchardt's incision might be employed for proper exposure of the field. The fistula may be of such dimensions as to make approximation of its edges impossible. There are various ways of overcoming this difficulty. Neighbouring structures may be used effectively, viz.:

(a) Mobilizing and utilizing the cervix and uterus (Figs. 5, 6 and 7). Two cases were effectively treated by adopting these measures. In a third patient even these drastic measures proved to be ineffective. She had neither bladder base, nor urethra, nor perineum.



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Figs. 5, 6 and 7. Diagrammatic representation of closure of fistula by mobilization and utilization of cervix and uterus.

(b) The labia may be most usefully employed as pedicle grafts. Four cases have been successfully treated by 'swinging' the labium into the vagina, thus closing the fistula (Fig. 8). The latter operation should

be employed more frequently and the former hardly at all. The local condition in these cases requires thorough appraisal and much weighing up before operative procedures are instituted.

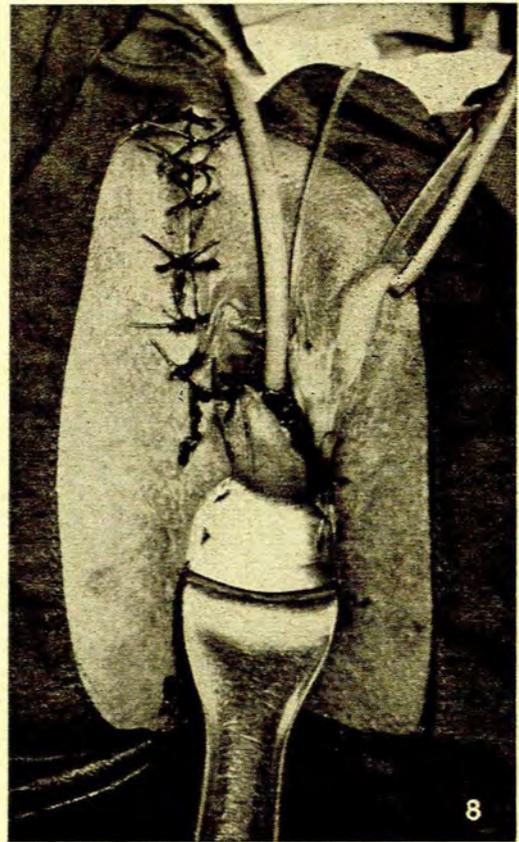


Fig. 8. Pedicle of skin 'swung' into vagina in order to assist in closing the fistula. Note the polythene tube next to the catheter. This tube was inserted into the ureteric orifice.

(c) Ingelman-Sundberg² dissects out a portion of gracilis muscle, making sure of conserving its blood supply, swings it through the obturator foramen and stitches it to the prepared raw edges of the fistula.

(d) M. van Bouwdyk Bastiaanse showed a film at the 1st World Obstetrical and Gynaecological Congress, Geneva, 1952, of an operation in which he mobilizes and closes the large vesico-vaginal fistula, then opens the patient's abdomen, mobilizes the omentum, conserving its blood supply, and stitches the omentum via the pouch of Douglas, over the fistula.

These methods have two factors in common, viz.: (1) closing the fistula, and (2) attempting to increase the blood supply to the operative site. If these requirements are fulfilled, the wound, generally speaking, will heal.

Ureteric transplantation is entirely reserved for the absolutely hopeless case with good anal sphincteric control. It was not undertaken in any of the patients seen by me. Two patients, however, each had a huge immobile fistula with no urethra or perineum. One

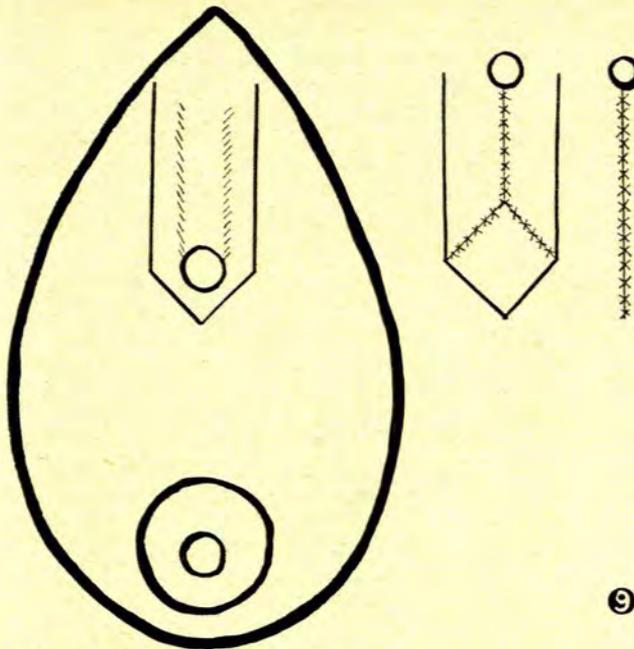


Fig. 9. Diagram of urethroplasty.

had an osteitis of the pubic bone as well. Both these patients underwent some major attempts at closure without success. Finally ileal bladders were constructed in each case, and the women both stated, on their discharge to South West Africa and the Transkei respectively, that they were more comfortable with their colostomies and ileal bladders than with the cloacae inherited from obstructed labours.

of the outer sides of the incised mucous membrane are now approximated, thus completing the new urethra.

In every case, at the completion of the operation, the bladder is washed clear of blood and clots. The surgeon may use any type of needle, instrument or catgut that he finds most convenient for his particular needs. At no time in this series were any instruments used other than the usual scalpel, scissors, needle-holder, catgut, etc. Unless inadvertently done, the mucous membrane of the bladder was never incorporated in a stitch, since this might lead to seepage and a breakdown of an area in the wound.

Post-operative Treatment

Post-operatively, the emphasis is on preventing interference with the blood supply to the wound. Towards this ideal efforts are made by preventing infection; suitable antibiotics are administered. Urinary distension of the bladder is avoided; the indwelling catheter is washed clear 8-hourly in order to prevent blockage. This catheter is removed on the 12th day, and thereafter the patient is made to void urine 3-hourly for 3 days and 4-hourly for a further 4 days. She is told not to allow her bladder to become full for at least 2-3 months and that intercourse is to be avoided at all costs for 3 months. Should she become pregnant, her doctor must be informed that she had a vesico-vaginal repair.

Results

Table II shows the results in the series of 57 operations for urethro-vaginal and vesico-vaginal fistula carried out in accordance with the principles set out above. There were 7 failures in the 57 cases. The failures may be listed as follows:

TABLE II

Race	Post-operative		Following Labour		Inflammatory		Total	
	Cure	Failure	Cure	Failure	Cure	Failure	Cure	Failure
White	4	1	2	—	—	—	6	1
Coloured	6	1	17	2	2+1*	—	26	3
Bantu	—	—	17	3	1	—	18	3
All Races	10	2	36	5	3+1*	—	50	7
Total	12		41		4		57	

* Sloughing of urethra following the application of an 'ointment' given her by a 'friend'.

In all cases a suitable catheter is stitched into the urethra post-operatively. This is connected to a low-pressure continuous suction apparatus. Thought must be exercised and the type of catheter which might produce tension on the wound is not used.

If the urethra is damaged in addition to the bladder base, or if the injury is primarily urethral, the urethroplasty demonstrated in Fig. 9 is performed, either as an extension of the repair of the fistula, or alone. Two parallel incisions are made through the mucous membrane. The edges are freed and sutured over an indwelling catheter. Whatever muscular and fibrous tissue can be collected on either side is approximated centrally over the newly created canal. The raw edges

White (1), following upon a posterior exenteration. The bladder was found to be densely adherent to the sacrum. The presence of a persistent, non-responding proteus infection and the patient's death 15 months after the operation made a further attempt at repair of this fistula impossible.

Coloured (3). Complicated labour was responsible for 2 of these cases. One patient left hospital with an ileal bladder and colostomy. Her cloaca could not be repaired. One attempt only was made in the other patient; she did not return to hospital for a further operation. It was a small fistula and should have healed after the first attempt. The 3rd patient was 82 years old. She had a sarcoma of the uterus removed

and sustained a bladder injury during the operation. The repaired fistula did not hold, and the patient has since died without a further attempt having been made to cure the fistula.

Bantu (3). One of these cases was cured but broke down 1 month after her discharge from hospital—probably owing to intercourse as she was admitted having aborted incompletely 3 months after discharge. In another patient the first attempt was unsuccessful. It is a fistula which should be closed relatively easily. She, however, has failed to report back. The last patient has been referred to above; she has a cloaca together with an osteitis of the pubic bone, and left hospital with a colostomy and ileal bladder.

CONCLUSION

Since the appearance of a report of a William Meredith Fletcher Shaw lecture delivered by Mahfouz,⁵ the full text is awaited with interest. This great gynaecologist has repaired 968 vesico-vaginal fistulae. His last 300 cases were all successful. Excellent results are reported by Charlewood,¹ Lavery,³ Miller⁶ and Moir.⁷ In most

cases the operation is straightforward and therefore it is unnecessary to resort to transplanting ureters into the rectum unless the patient has been given a full chance of having function restored to an organ which in most instances can be made to function normally. No stone should be left unturned in attempting to cure vesico-vaginal fistulae. There are few patients on this earth who are more relieved mentally and physically than those suffering from this preventable and distressing defect.

That these patients in our unit have done exceptionally well is in no small measure due to the first-rate attention given to them by the nursing staff, house surgeons and registrars.

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