

## OBSTETRIC FISTULA

by

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Obstetric fistulas, particularly urinary fistulas, are the worst and most distressing wounds which women can have as a result of complicated childbirth.

An obstetric fistula is largely a preventable condition and as such, with improvement in obstetrics, it is becoming very rare in advanced countries, but in some areas of India obstetric facilities are still very poor and we get quite a number of bad types of obstetric fistulas in the district hospitals.

Fortunately the good old days of Simpson, when the condition was described as "beyond all relief and hope", are gone and at the present day cure is rather the rule and not the exception.

It was James Marion Sims (1852) who broke the conception that vesicovaginal fistula was an incurable condition. Before his epoch-making paper (1852) some isolated cases had been cured by Gossett in London, Mattauer in Virginia, Heyword in Boston and few others, but it was Sims who first impressed the world with his successful attempt to cure this distressing condition.

In advanced countries where very few fistulas are seen by average

gynaecologists it is advocated that these cases should be sent to special centres to be treated under ideal circumstances by surgeons who are specially experienced in dealing with them. But fistulas are so common in our district hospitals that it is just not practicable to send so many cases to the more equipped hospitals and I feel that there is no need for that. In this paper I have reviewed 31 cases of obstetric fistulas which I have come across in B. C. Hospital, Burdwan, from December 1960 to April, 1964, and have tried to impress that highly successful results can be achieved even in ordinary district hospitals by gynaecologists who are really keen to relieve this distressing symptom.

### *Aetiology*

Obstetric fistulas are almost always due to bad obstetrics. The incidence is very high in our district hospitals, partly due to lack of proper obstetric facilities in the surrounding villages and partly due to reluctance on the part of the patients and their relations to have obstetric care even where facilities are available. The causes are shown in Table I.

### *Pressure Necrosis*

In 21 out of 31 cases of this series the fistulas were due to pressure necrosis. These were cases of ob-

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TABLE I  
Showing Etiology of Obstetric Fistulas  
in the Present Series

Aetiology	No. of cases
Pressure necrosis .. ..	21
Trauma .. ..	10
Operations and manoeuvres:	
Craniotomy ..	3
Decapitation ..	1
Forceps ..	1
Caesarean section ..	1
Breech extraction ..	1
Repair of complete perineal tear ..	2
Rupture of uterus ..	1
Total No. of cases .. ..	31

structed labours with presenting part lying in the pelvis for a long time leading to ischaemic necrosis and separation of devitalised tissues with formation of fistula. The separation takes place in 5-10 days' time. It is mostly the head which presses on the bladder causing vesicovaginal fistula. Out of these 21 cases of pressure necrosis, in 10 cases the baby was delivered by craniotomy and in 4 cases by forceps. But as the leakage started not before the 5th postoperative day in any of these cases it is assumed that the cause is not the operation itself but the pressure necrosis.

#### Trauma

Trauma was responsible in 10 cases in this series, of which 4 were faecal and 6 were urinary fistulas. Usually the leakage of urine starts in traumatic cases within 24 hours. Faecal incontinence may be delayed for a few days or may not be apparent

at all till liquid stool is formed naturally or by medicine or till bowel is evacuated by enema.

Craniotomy was the cause in one urinary and two faecal fistulas which were due to injury by the perforator or by bony spicules while the perforated head was being delivered. In two of these cases the patients had intrapartum eclampsia. Decapitation was responsible for one case of urinary fistula. The fistulas in these cases were not detected at the time of operation.

Forceps was the cause in one case; in this the forceps blades were applied outside the undilated os, leading to bad tear of the cervix involving the bladder.

In performing lower segment caesarean section in cases who had previous sections, particularly if infected, sometimes the bladder is injured while being pushed down due to firm adhesions. Sometimes, while the uterine wall is being sutured, bites of bladder tissue are taken inadvertently leading to fistula formation. In one of our cases there was history of previous caesarean section with leakage of urine soon after the operation.

When through an undilated cervix the after-coming head of a breech is extracted forcibly the cervix gets torn and sometimes the bladder is involved in the tear leading to fistula. In one case we had such history of difficult breech delivery elsewhere.

While doing repair of complete perineal tear sometimes the uppermost point is missed, or the repair breaks down partly, forming rectovaginal fistula. In two of our cases this happened when the house-



surgeon tried to repair them in eclamptic patients. It would have been better for him not to have tried to repair the complete tear under such unfavourable circumstances. Rupture of uterus in the lower segment sometimes involves the bladder, leading to vesicocervical or vesicouterine fistula. Out of 44 cases of rupture uterus reported earlier by myself (1963) we had 7 cases of bladder injury, of which there was actually rupture of bladder in 5 cases. Attempts were made in all the cases to repair the vesical injury during the laparotomy but in one case the bladder was markedly soggy and repair could not be done properly. This was a case where rupture of uterus happened 3 days before she arrived at the hospital. This case developed vesicocervical fistula.

In Moir's (1962) 67 cases of obstetric fistula, 61 were due to prolonged labour or forceps delivery, 3 to caesarean section, 2 to uterine rupture and 1 to symphysiotomy.

#### Characteristic Lesions

The types of lesions are shown in Table II.

TABLE II  
Showing Types of Lesions

Types	No. of cases
Faecal fistula	
Rectovaginal fistula .. ..	4
Urinary fistula	
Vesicocervical fistula .. ..	4
Vesicovaginal fistula with or without urethral involvement .. ..	23
Total No. of cases .. ..	31

Out of 31 obstetric fistulas there were only 4 faecal ones, 2 of which were due to craniotomy and the other two were due to defective repair of complete tear. Two of these cases were of very small size and healed naturally in 3 months' time and the other two were of about  $\frac{1}{2}$  inch diameter and were repaired successfully. The large majority (27 out of 31 cases) of these fistulas were urinary ones. Four of them were vesicocervical fistulas and were due to rupture of uterus, caesarean section, forceps delivery and breech extraction. The latter two were associated with deep cervical tears on the right anterolateral sides. The one due to rupture of uterus was high up in the cervix and was repaired abdominally. Characteristics of vesicovaginal fistulas are shown in Table III.

TABLE III  
Showing Characteristics of the Vesicovaginal Fistulas

Characteristics	No. of cases
(a) Varieties	
Simple .. .. .	14
Complicated	
with deficient posterior urethral wall .. .. .	2
with closed urethra .. .. .	4
with complete detachment of cervix .. .. .	3
(b) Size	
Less than $\frac{1}{2}$ inch .. .. .	8
Between $\frac{1}{2}$ inch to 1 inch .. .. .	12
More than 1 inch .. .. .	3
(c) Situation	
High (near the cervix) .. .. .	8
Middle (urethrovesical junction with or without involving urethra .. .. .	15

Characteristics	No. of cases
(d) Number	
One .. .. .	22
Two .. .. .	1
(e) Duration	
Less than 3 months ..	3
Between 3 to 6 months ..	13
More than 6 months ..	7
(f) Scar tissue	
Nil (healed spontaneously) ..	2
Slight .. .. .	5
Dense .. .. .	16
(g) Other associated lesions	
Cicatrix below fistula ..	3
Adhesions to pubic bones ..	4

As is evident from the above table obstetric vesicovaginal fistulas are usually of big size particularly those which are formed due to pressure necrosis; 15 out of 23 cases of this series were larger than  $\frac{1}{2}$  inch in diameter. The biggest one was 2 inches in diameter involving most of the base of the bladder, urethrovesical junction and upper  $\frac{1}{3}$  inch of the urethra; 15 of our 23 cases were situated at the urethrovesical junction.

Fistulas due to pressure necrosis are usually surrounded by dense scar tissue, as these are formed due to separation of the central parts of large devitalised areas. Sometimes they are fixed to pubic bones, making approach extremely difficult.

In 7 of our cases the duration of fistula was more than 6 months. A patient had a fistula for 10 years during which period she had 3 children. The duration of fistula did not affect our success rate.

Traumatic fistulas were of small sizes and were situated mostly in between cervix and urethrovesical junction.

### *Management of Faecal Fistula*

#### *Spontaneous Cure*

Two out of 4 cases in this series healed spontaneously within 3 months of delivery.

#### *Preoperative Care*

The patients were given pathalyl-sulfathiazol 2 tablets thrice daily and liquid paraffin 1 ounce twice daily for 3 days before operation. All these days bowel was evacuated daily in the morning with simple water enema which was followed by bowel wash with condy's lotion and vaginal douche with dettol solution. Light diet was given one day before operation.

#### *Operation*

In both these cases fistula was situated within  $\frac{1}{2}$  inch of the rectal sphincter. The sphincter was cut, the fistula was converted into complete perineal tear and repair of complete tear was done. The rectal wall was sutured with 2 rows of interrupted sutures with chromic catgut No. '00'. The knots were placed outside the bowel lumen. The first layer of stitches was placed in the bowel wall including the mucous membrane. The second layer of stitches overlapped the first layer. Sphincter was tied with 2 or 3 mattress stitches of chromic catgut No. 1. Vaginal mucosa was stitched with interrupted sutures of chromic catgut No. 1.



A catheter was introduced in the rectum and stitched to the skin. Self-retaining catheter was placed in the bladder.

#### *Postoperative Care*

Antiseptic care of the wound was taken as usual. Both the catheters were removed on the 5th postoperative day. The patients were given prophylactic penicillin and streptomycin for 5 days. Liquid paraffin,  $\frac{1}{2}$  ounce twice daily, was administered from 2nd postoperative day. The bowels were moved on the 5th day with glycerin olive oil enema. Light non-residual diet was given from 2nd to 4th postoperative day and full diet was restored from the 5th day, after the movement of the bowel. The patients were given bed rest for 7 days.

#### *Results*

Both the fistulas healed well with good sphincteric control.

#### *Urinary Fistula*

##### *Diagnosis*

In the majority of our cases the diagnosis was not at all difficult as the fistulas were big. Difficulty arose in vesicocervical fistulas and in cases where, after first repairs, tiny fistulas persisted in 5 of our cases. From the history true incontinence was diagnosed from urgent or stress or overflow incontinence. A catheter was passed to see the patency of the urethra and diagnose the fistula. In cases of big fistulas catheter could be seen or felt through the fistulous openings. In difficult cases the

patients were examined in the operation theatre and methylene blue tinted sterile water was introduced into the bladder and the fistula looked for by speculum examination.

#### *Continuous Drainage with Catheter*

In all cases of recent fistulas continuous catheterisation should be done for 2 weeks; 2 of our traumatic fistulas healed by continuous drainage.

#### *Ideal Time for Operation*

We prefer to wait for about 3 months following delivery before undertaking operation because, if done earlier, the tissues remain friable, soft and haemorrhagic, leading to tearing of flaps during repair, and chance of infection is also greater. Collins et al (1960) have used cortisone in 20 cases of urinary fistulas and have operated after 2 weeks of fistula formation with cent per cent success. Hodgkinson (1962) reported 50 per cent reduction in the time interval by use of cortisone in 3 of his cases. Our experience with cortisone in this field is very limited. In only one case was cortisone given and repair attempted 1 month after delivery. Fistula did not heal well. In that case due to friability of tissues we had much difficulty during repair. This patient was also most non-operative and did not keep in the catheter. Whether the failure was due to faulty postoperative management or due to too early intervention, it is difficult to say. This case was cured at a second sitting after 6 months. Nothing is gained by waiting for more than 3 months, except

that it increases misery of the patient, the surrounding scar tissues become more firm, and chance of hydronephrosis and pyelonephritis increases.

#### *Preoperative Care*

No special investigation except ordinary urine and blood examinations is done.

Before operation each patient is examined carefully in the operation theatre so as to note the characteristics of the fistula. Any sign of infection is looked for and plans of the operation are chalked out. In big fistulas ureteral openings are carefully looked for. No anaesthesia is given in any case for preoperative examination.

Local soggy areas, if any, are treated with boric acid ointment.

For 4 days prior to operation the patients have sulphadimidine 2 tablets thrice daily, bladder wash with lotion acriflavine 1 in 1000 solution and vaginal douche with dettol solution daily.

#### *Choice of Route of Operation*

Phaneuf and Graeves (1949) emphasised the common belief that "most vesicovaginal fistulas can be closed by the vaginal route". It is really amazing to see how an apparently hopelessly large and difficult fistula can be repaired vaginally if attempted with patience and care. All the cases except one in this series, who needed abdominal operation, were cured vaginally. Some of them were very difficult indeed. One case had a vesicocervical fistula obstructed by a circular contracture in the upper part of the vagina which ad-

mitted only the tip of the index finger. Even the fistula could not be seen before the contracture was cut transversely. There was no descent of the uterus. A generous episiotomy was done and extended upward to cut the scar, and with great difficulty the fistula could be repaired with success.

The only case of vesicocervical fistula, which followed rupture of uterus and which was situated near the level of the internal os, was repaired by abdominal route.

#### *Suture Material*

Thread, silk and braided nylon have all been abandoned now because these cause tissue reaction and inflammatory exudate and this, in the presence of less vascular tissues surrounding most obstetric fistulas, favours infection and disruption of the wound. Marion Sims (1854), the pioneer surgeon in the field of vesicovaginal fistula, got extremely good results by using silver wire. Moir (1961) used silver wire with great success in his first 50 cases. Now he prefers monofilament nylon which is equally good. We used nylon at the beginning of this work. No failure could be attributed to this suture material but the drawbacks are if the tissues are friable it is difficult to use nylon; sutures are always to be removed at a later date either with great discomfort and pain to the patient or with the help of anaesthesia; sometimes it is very difficult to remove stitches which get deeply embedded in the wound area, and hospital stay is prolonged. For these reasons in all our cases, except the first four, we used chromic catgut with great success. There is no



failure due to suture material and all the drawbacks of removal of stitches at a later date are avoided.

#### *Positioning of the Patient*

Lithotomy position with a sandbag below the buttocks and the head end tilted downward is the most suitable position for operation, particularly in cases where the fistulas are fixed to the pubic bone. In exaggerated Sims' position or knee-chest position blood and urine collect in the operation field during operation requiring very frequent swabbing; surgeon has to work at an awkward angle, either standing or bending forward, which is tiresome and it is very difficult to repair episiotomy of Schuchardt's incision in these positions.

#### *Adequate Exposure*

In cases where there is scar tissue in the vagina or the fistula is fixed behind the symphysis pubis or situated high up, deep episiotomy or Schuchardt's incision should be made. We prefer median episiotomy for this purpose; we used it in 4 of our cases. If the vaginal outlet is very lax, as happened in many of our cases even in difficult fistula, episiotomy is not needed.

The fistula is brought down either by applying vulcellum on the cervix or by applying tissue forceps around the fistulous tract.

We tried to bring down the fistula with good result by introducing a Foley catheter through the fistulous opening, inflating and pulling it as advocated by Falk et al (1963). This method also helps in the dissection and lessens bleeding.

#### *Flap Splitting Technique of Repair*

This technique was applied in 24 out of 25 patients of vesicovaginal and vesicocervical fistulas who needed operation. After proper exposure of the operation field about 5-10 ml. of adrenaline solution ( $\frac{1}{2}$  ml. of adrenaline in 10 ml. of distilled water) is injected around the fistula for haemostasis. An incision is made on the vaginal wall just around the fistulous opening. Two separate incisions of  $\frac{1}{2}$  inch in length are made from two opposite poles of the previous incision, usually in the anteroposterior direction. Anteroposterior incision is most useful in the region of urethrovesical junction because only then can extra mattress stitches be applied so as to bring the surrounding tissues in the midline over the sphincteric region to prevent stress incontinence. Transverse incisions are more advantageous when the fistula is situated higher up so that there is no pulling in of the ureteric openings leading to constriction of the ureters and formation of hydronephrosis.

Mobilisation of bladder wall from the vaginal wall is the most important step of the operation, because, otherwise, the sutures may be on tension leading to disruption of the wound. Sometimes in big fistulas, in front of the cervix or involving the anterior cervical wall, it is necessary to separate the bladder from the cervix. This was necessary in 3 of our cases of vesicocervical fistula where there was involvement of the lower part of the anterior cervical wall and also in 2 very big fistulas just in front of the cervix. This wide mobilisation is essential in cases of big fistulas. The separation of



vaginal mucosa is done by sharp dissection with curved scissors or scalpel with fine small blades. Mobilisation should be continued till all the fibrous bands around are cut and the bladder and vaginal openings can be closed without tension. Flaps must be made with meticulous care so that there is no 'windowing' of the flaps or damage to the ureters. Too much separation of flaps led to sloughing in 2 cases but in both the cases the fistulas were cured by first intention. In big fistulas at the base of the bladder, care is always taken to look for the ureteral openings from where spurts of urine can be seen in most cases. During operation, small cotton plugs soaked in adrenaline solution are used for haemostasis. The edges of the bladder wound should not be cut, as this may lead to unnecessary haematuria. After mobilisation the bladder wall is repaired with mattress stitches of chromic catgut No. '000' or '00' on an atraumatic or non-cutting semicircular small needle. The sutures are placed in such a way that the edges are inverted inside the bladder. Complete closure is tested by instilling gentian violet solution, about 80 ml., into the bladder. Whenever possible a second layer of stitches of the same type was inserted over the first layer. This was not possible in 4 of our cases, in one of which the wound did not heal. The redundant portions of vaginal flaps, if any, together with dense scar tissues are excised. The vaginal walls are apposed with mattress sutures of chromic catgut No. '0'. The sutures are placed in such a way that there is no gap left between bladder and vaginal wall

for collection of blood and the apposed vaginal edges are directed towards the vagina. Two vertical incisions are sometimes made quite away from the repaired area to release tension. The wound area is touched with spirit and dettol, a rubber catheter with side-eyes is stitched with silk to the anterior urethral wall at the urethral meatus. Only about 1½ inches of the catheter is pushed above the sphincter.

#### *Extraperitoneal Intravesical Repair*

The only case of high vesicocervical fistula following rupture of uterus was repaired by this technique. The fistula was so high that it was thought that vaginal repair would not be possible. Due to previous laparotomy for rupture of uterus intraperitoneal adhesions were expected. As such we opened the bladder extraperitoneally by a vertical incision. After identifying the ureteric openings and the fistula a circular incision was made around the fistula. Troublesome oozing from the bladder mucosa was controlled as much as possible with adrenaline soaked small cotton swabs. The bladder wall was separated and the fistulous tract was removed by cutting with scissors. Cervical rent was repaired with chromic catgut No. 1 with interrupted stitches followed by the repair of bladder wall in one layer of interrupted stitches through muscle and mucosa of bladder, using chromic catgut No. '00'. Anterior vesical opening was closed in 3 layers using catgut No. '00'. A Malécot catheter was introduced through the urethra after closure of the abdominal wound.



### *Postoperative Care*

The most important points are the maintenance of free drainage of urine and prevention of infection. For these purposes good nursing care is essential. The drainage can be maintained with an ordinary medium-sized rubber catheter with 2 openings made in the sides within  $1\frac{1}{2}$  inches from the tip. This catheter is pushed inside the bladder in such a way that the lower opening lies just above the urethral sphincter. The catheter is stitched to the anterior wall of the urethra at the meatus with silk in such a way that the catheter can be replaced without affecting the fixation stitch at the urethral opening. Self-retaining catheters are not suitable in fistulas which lie near the urethrovesical junction, as they may damage the repair. When the fistula is situated high up they can be used with advantage. Polythene catheters are also good but sometimes they cause damage to bladder wall producing haematuria. Continuous suction drainage is maintained for 10 days wherever feasible. When it could not be maintained due to bad nursing care or non-co-operation of the patient the results were not good. The nurses are instructed to keep a record of urinary output every hour and to inform the doctor whenever there is no urine excretion in any one hour or where in spite of slow drainage of urine the patient complains of fullness of bladder. The patients are asked to inform the nurse or doctor whenever they feel fullness of bladder. Whenever there is retention of urine the catheters are rotated, moved slightly upwards and downwards and sometimes cleaned with 3% acid

boric solution which cleans the mucous plugs. Failing all these the catheters are changed. In spite of all care sometimes leakage of urine takes place by the side of the catheters particularly when small-sized catheters are used in cases of fistulas at the urethrovesical junctions. In these cases sometimes constant wetting of the vaginal canal is prevented by keeping sterile cotton wool plugs at the outlet which are changed often.

The results were not satisfactory in those cases where perfect drainage of urine could not be maintained. TeLinde (1962) advocated vaginal or suprapubic cystostomy in difficult cases of repair. This was not done in any of our cases. Prophylactic penicillin and streptomycin were given for 7 days.

The patients are allowed to sit or walk only after the catheters are removed, that is 10 days later. Other postoperative care is as in any other major vaginal operation.

### *Results*

Success was achieved in 26 out of 27 cases of urinary fistula cases. Out of these, 2 cases healed, after continuous drainage only. Of 25 cases operated upon, there was only one case where there was small leakage left on discharge which we thought would heal spontaneously, if not, certainly at a second operation. This case was done only 2 months before I left that area. So, our absolute cure rate is 96 per cent. But from practical point of view, excluding that case where treatment and follow up is not yet complete, our apparent cure rate comes to cent per cent.

TABLE IV

*Showing Comparison of Results of Operations for Vesicovaginal Fistula*

Author	No. of cases	Cure rate in percentage	Remarks
Present series (1964)	25	96	The only case of failure is the one which is still awaiting spontaneous cure or a 2nd attempt.
Mengert (1962)	32	96	
Moir (1961)	230	100	Apparent success.
Mahfouz (1930) last	100	95	Reported total 300 cases.

Table IV shows that our success rate can be compared with those of others, though our experience is very limited while compared with that of the great surgeons like Mahfouz or Chassar Moir. Out of 25 cases operated upon there was primary failure in 5 cases, most of which were in the early part of undertaking this work. The causes of failure were defective maintenance of postoperative drainage of urine, non-co-operation of patient, inadvertent passage of catheter by the house surgeon through the repaired wound into the vagina while attempting to change the catheter, too much tension in the repaired wound due to very big size of the fistula and relative inexperience of the surgeon.

Out of these five cases, in one case the leakage stopped spontaneously within 3 months due to shrinkage of fibrous tissues. In one case time did not mature for the second operation. In 3 others fistula was cured at second operation.

Stress incontinence was present in 6 cases at the time of discharge from the hospital. In 3 cases it subsided spontaneously within 1-3 months, in 2 cases it was present slightly but was showing gradual improvement. As

such no further operations were undertaken for stress incontinence. Advice regarding perineal exercises was given to all of them.

*Attitude Towards Further Pregnancy*

In one case ligation of the tubes was done at a separate sitting. It should be done in all multiparas who have the desired number of children.

Contraceptives or abstinence was advised for 6 months. All patients with successful repair were advised to have proper antenatal care in future pregnancies and were clearly told that in future the babies must be delivered by caesarean section, otherwise there will be recurrence of fistula which may be beyond repair.

*Prevention of Obstetric Fistula*

Prevention is better than cure. Obstetric fistulas are preventable as is seen from the falling incidence of obstetric fistulas in advanced countries.

Unfortunately the obstetric facilities in our countryside are still very poor. Attitude of the ignorant patients also should be made to change by mass education and propaganda. More and more health cen-



tres, manned by doctors with obstetric experience, should be opened. With the help of midwives and health visitors the village women, reluctant to come to hospital, should be looked after during pregnancy at their homes. With improved transport facilities all abnormal obstetric cases should be transferred to bigger hospitals in the districts where specialists' services should be available under proper surroundings.

#### *Discussion and Conclusion*

Obstetric fistula, though rare nowadays in advanced countries, is not rare in many parts of our country particularly in the rural areas where obstetric facilities are still very poor and the village people are very reluctant to have obstetric care even where it is available. As a result many of these village women suffer from this miserable condition.

In this paper I have reviewed 31 cases of obstetric fistulas which I came across in a district hospital within 3½ years. Out of 31 cases there are 4 cases of rectovaginal fistula of which 2 healed spontaneously, and 27 cases of urinary fistulas of which 2 had spontaneous cure. The 2 rectovaginal fistulas were cured easily by repairing them after converting them into complete perineal tear by cutting the sphincter. Twenty-one out of 31 cases were due to pressure necrosis the result of prolonged pressure of the presenting part over the maternal tissues, particularly bladder and urethra, against hard pelvic bones. Ten cases were traumatic fistulas due to caesarean section, decapitation, craniotomy, forceps, breech extraction, etc.

Rupture of uterus was the cause of fistula in one case. In the large majority of the cases the cause was obstructed labour which is always preventable.

Obstetric fistulas, particularly those due to pressure necrosis, are of an extensive type, as will be evident from the type of lesions described in Table III. Many of the present cases were of very big size with dense scar tissue around, sometimes complicated with deficiency of upper part of posterior urethral wall, tear of anterior cervical wall, closure of urethra or presence of scar below the fistula, making vaginal approach extremely difficult.

Kelly (1899) stated that "the great difficulty in handling certain cases of vesicovaginal fistula is due to two facts; in the first place, the fistula may be a very large one, and in the second place, there may be such an amount of scar tissue surrounding the fistula that its resistance prevents bringing together the parts". In many of our cases of pressure necrosis we had both the conditions prevailing, making repair difficult.

Vaginal approach is successful in most cases, as is evident from our cases, except one high vesicocervical fistula which was repaired by extraperitoneal intravesical approach, all the other cases were repaired vaginally with great success. In some, the abdomen was prepared surgically and vaginal operation was attempted tentatively but all these difficult cases could be repaired successfully per vaginam.

Three months' time interval between fistula formation and operation is considered optimum by us.

Though we have very limited experience of using cortisone in the puerperium in cases of fistula to lessen the time interval, it seems to be well worth trying.

Flap-splitting method was used successfully in all cases of urinary fistula operated on vaginally. The key to success lies in adequate exposure, proper mobilisation, careful suturing with catgut without tension, maintenance of proper drainage of urine postoperatively and prevention of infection of the wound. To achieve this there is extreme need of full co-operation between surgeon, house-surgeons and nursing staff, without which this operation should not be attempted.

Prevention is better than cure and so the broad preventive measures have been advocated in the contents of this paper.

Our cent per cent apparent cure rate only shows that at least a large majority of these cases can be cured by average surgeons working in district hospitals.

This article is ended by quoting the great exponent of this surgery, Chassar Moir (1961). "My reason for presenting the foregoing statistics is to substantiate my claim that a vesico-vaginal fistula, far from being an unmanageable injury, is, with few exceptions, an eminently curable lesion".

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