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URINARY FISTULAE IN WOMEN WITH SPECIAL
REFERENCE TO THEIR OPERATIVE TECHNIQUE

by

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It is a great honour extended to me by your kindly inviting me to deliver this the second lecture of the Kedarnath Das Memorial Oration. It was with great trepidation that I accepted it. It was this feeling of my own unworthiness to satisfactorily carry out this wish of yours that made me hesitate so long in accepting it. I apologise for the inconvenience caused by my delay in replying to your kind invitation. I realise the oration must be one worthy of the great father of Obstetrics and Gynaecology in India, in whose memory this has been founded. I rejoiced to find from his devoted son that the subject I have chosen was one which Sir Kedarnath Das was keenly interested in. A copy of a reprint on the subject

Sir Kedarnath Das Memorial Oration
delivered at Calcutta, March 1959.

"Remarks on the operability and operative technique of vesico-vaginal fistula" from the Indian Medical Gazette, Vol. LXIII (No. 12. Dec. 1928) by the late Sir Kedarnath Das was kindly sent to me. In it Sir Kedarnath describes "the Bengali woman who presents herself for the relief of her miserable condition is feeble, physically wretched and malaria stricken" and I am sure this description can well apply to the women of Andhra Pradesh, Tamil Nad and Kerala, and I would add anaemia due to malnutrition and infestation with hook-worms and round worms. The average height of these women works out to 4 ft. 6 inches or 4 ft. 9 inches, though the type of pelvis in the majority of them is gynaecoid. (Table I.)

With prolonged labour and attended on by unskilled and untrained handy women, their labours end in still-births and pressure necrosis of

TABLE I

Type of pelvis	No. of cases	Natural	Forceps	Craniotomy	Percentage incidence of fistula
Gynaecoid	11	7	3	1	34.4
Small Gynaecoid (Generally contracted)	1	1	—	—	3.1
Android	9	1	6	2	28.1
Android Gynaecoid	8	2	3	3	25
Gynaecoid/android	1	1	—	—	3.1
Platypelloid	1	—	—	1	3.1
Anthrapoid	1	1	—	—	3.1

the soft parts with urinary and/or faecal fistulae. The utter misery of these patients prompts one to do all one can to relieve them of their complaint. The constant dribbling of urine, the irritation and soreness, due to excoriation of the parts, and the odour makes them shun society. They are generally of the poorer class who could not obtain skilled obstetric aid at the time of delivery. It was even so in the West. This is what Marion Sims said, "I have already said that operations for vaginal fistulae are rarely paid for, except in gratitude, because the patients are nearly always poor. I must have operated on two or three hundred cases and I have not yet been remunerated to an extent which would pay for the instruments I have bought for the purpose." Sir Kedarnath says, "I should like to record the supreme satisfaction felt at the look of gratitude and satisfaction of the thirteen patients, when they were discharged from the hospital. I tell my students that one successful operation for vesico-vaginal fistula counterbalances the glamour, glory and "Kudos" of one hundred caesarean sections".

We all know the 'V.V.F. smile' of joy and gratitude of the patient.

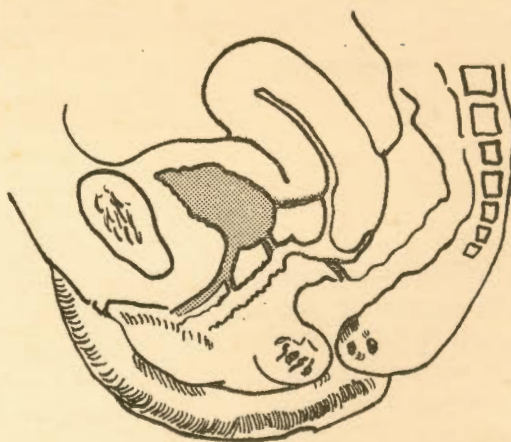


Fig. 1
Diagrammatic representation of genital fistulae.

In these cases it is often noticed that extensive soft tissue has been destroyed, the anterior lip of the cervix or the whole cervix may not be in existence, much of the base of the bladder may have sloughed away as well as the vagina up to the vault or the fold of the utero-vesical pouch. In addition there may be absence of the upper part of the urethra or destruction of the whole urethra, a complete tear of the perineum, or a recto-

vaginal fistula high up in the posterior wall of the vagina with dense cartilaginous cicatrices in the vagina decreasing the size of the outlet to even 1 cm. or less. It is surprising how these patients survived with neither sulphonamides nor antibiotics. Are they all forest trees and not hot-house plants or is it due to early ambulance and auto-immunity produced by the conditions under which they live?

I shall not go into the historical survey of the treatment of these deplorable conditions, which conditions must have been in existence from time immemorial. Mahfouz of Cairo reports a case of an Egyptian mummy of 2050 B.C. with a large vesico-vaginal fistula and a complete tear of the perineum. Facilities in the West for parturient women have greatly improved, and fistulae are now not due so much to prolonged, difficult or obstructed labour but to operative gynaecology or treatment with radium. Much has yet to be done in India for women in labour. It is hoped that there will be enough of trained personnel to staff the existing hospitals, Primary Health Centres and Maternal and Child Welfare Centres, and that every District Headquarters hospital will have an Emergency Obstetric Squad to go out, resuscitate and bring in such cases, for safe delivery of mother and child.

Other causes of urinary fistulae are due to operative gynaecology, urinary calculi and other foreign bodies in the bladder or vagina. In my series there were three cases due to sticks and one due to a calculus, one was a case of retroverted gravid uterus with reten-

tion of urine. A village handy-woman passed a sharp piece of bamboo 9 inches long and $\frac{1}{4}$ inch thick into the bladder to empty it. Four inches of the stick was exposed to the bladder cavity, one end was embedded in the bladder wall, the other end worked its way out to above the right inguinal ligament forming a fistulous opening 2" below the right anterior superior iliac spine and was discharging pus and urine. A calculus formed round the part of the stick in the bladder and the specimen with the whole stick, after removal, looked like an Indian-corn. In the second and third cases, a stick 3" x $\frac{1}{8}$ " lay, transversely in one and obliquely in another, with both ends embedded in the bladder wall, and a calculus formed round the exposed portion of the stick like a spindle and perforating the bladder wall and vagina. The fourth was a case of urinary calculus, pyramidal in shape, with the sharp point working its way through the walls of bladder and vagina.

I am pleased to report that in all the hospitals that I worked, there was no fistula (either vesical or ureteric) as the result of Fothergill's operation. But there were four cases due to total hysterectomy with bilateral salpingo-oophorectomy, one of them being a Wertheim where a ureter was ligatured and sprang a leak. One was an ovarian tumour with a broad base and the third was a case of hysterectomy which had dense adhesions due to previous myomectomy. Here also the ureter was inadvertantly ligatured.

A case of total hysterectomy performed in another hospital came in

with an opening in the bladder $2\frac{1}{2}$ " x 1" with a bunch of No. 3 silk sutures lying in the vagina.

The last interesting fistula case to report was that of an elderly primigravida delivered in her home by forceps. There was separation of the symphysis with a tear in the bladder $2\frac{1}{2}$ " x $1\frac{1}{4}$ " deep under the right pubic ramus.

Congenital deformities also give rise to urinary fistulae. I had one where the girl menstruated through the urethra. There was occlusion of the vagina by a septum while there was another septum in the vagina itself lying obliquely from left to right and a small cut $\frac{1}{4}$ " deep leading into the urethra and causing incontinence of urine. There were a few cases of fistulae due to carcinoma cervix; those due to tuberculosis being rare, I have not come across any so far. Lymphogranuloma venerealis and infective granuloma destroying the urethra are not infrequent.

Table II is a statistical analysis of the etiology of 242 cases in King George Hospital, Visakhapatnam between 1948-1957.

Types of Fistulae in order of Frequency

1. The commonest fistulae one meets with are the vesico-vaginal, lying transversely under the pubic bone and closely adherent to the pubic bone. There is very little of vaginal or bladder tissue left and the fistula is fixed to the proximal end of the urethra, the urethra being occluded. This is one of the most difficult types to repair. The ureteral orifices may be close to the posterior edge of the fistula.

TABLE II
Statistical Analysis in 242 Cases in King George Hospital Visakhapatnam, 1948 — 1957

ETIOLOGY			
Obstetric	..	..	230
Post-abortive	..	..	1
Calculi	..	..	3
Post-operative	..	..	1
Post-irradiation	..	..	0
Stage IV Carcinoma Cx	..	..	1
Lymphogranuloma Vene.	..	..	3
Post-traumatic	..	..	2
Nil identified	..	..	1
Obstetric Cases	95%		
Non-instrumental	160	69.9%	
Forceps	64	27.8%	
Craniotomy	6	2.6%	

2. The next commonest, the mid-vaginal where the urethra may or may not be patent and there is not much cartilaginous scar tissue though the fistula is a large one. It lies between the urethra and the cervix.

3. Juxta-cervical is one which lies close to the cervix and next in frequency.

4. Urethro-vaginal may be congenital or acquired due to lymphogranuloma and infective granuloma or trauma, but those due to trauma are more common than the congenital.

5. Vesico-uterine and vesico-cervical are very rare.

6. Uretero-vaginal, chiefly due to operative accidents, a few due to obstetric accidents.

7. Uretero-cervico-vaginal also are rare.

Diagnosis

The history is generally of difficult labour, 95%. In most cases the lesion is quite evident when the opening is large. With the patient in the lithotomy — Trendelenburg position, the

opening may be quite evident. The bladder sometimes is found herniating through the opening but reducible (Fig. II). Where the

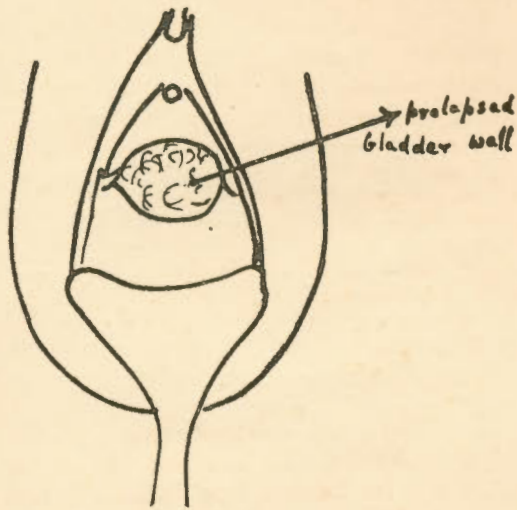


Fig. 2

fistula is deep under the symphysis it is better visualized with the patient in the knee-elbow position. A lesion in the urethra is identified without any difficulty, the leakage being during micturition. A pin-point opening into the vagina or one leading into the cervix or uterus may be diagnosed by filling the bladder with milk or methylene blue solution when a stream of coloured fluid spurts out through the opening. In the case of uretero-vaginal or uretero-cervical fistula the urine in the vagina remains colourless while the bladder content is coloured. Cystoscopic examination may reveal a dimple indicating the opening into the vagina, cervix or uterus, while in the case of ureteral fistula diminished flow through the ureteral orifice is recognised. An intravenous ureterogram

generally shows a hydroureter on the affected side with hydronephrosis.

Pre-operative Treatment

The general condition of the patient and the condition of the parts round the vagina and vulval outlet should be attended to; the haemoglobin should be built up; an examination of the stools for ova should be done and the patient treated for ascariasis or ankylostomiasis. If not treated, *ascaris lumbricoides* may work their way out through the nostrils causing vomiting or into the vagina, interfering with the sutures.

Treatment

The best time for operation is soon after the monthly period, if menstruation has been re-established. I generally advise the patient to come about the third month after the delivery, but I have operated in the sixth week after labour, and the opening healed by first intention. Patients who come from a distance cannot afford always to go home and return later. The parts should be healthy and resolution more or less complete. These were mid-vaginal ones and the parts were healthy, and healed by first intention.

For vesico-vaginal fistula I invariably do the flap-splitting operation but in some cases the sacculation operation.

For Operative Technique the following are essential:

1. *Good exposure:* In some cases the patient is placed in the knee-elbow position with pillows under the abdomen and the knees wide apart.

The Regina table has gadgets for this position. This balloons out the vagina, and the immobilisation of the bladder and insertion of sutures is facilitated. Most often I have the patient in the Trendelenburg-lithotomy position on an operating table which can be horizontally moved from side to side to catch the light at the angles of the fistula.

To avoid cross lights, I generally use blue or green drapings on the patient: a head mirror and a spot light add still further to proper exposure and illumination. Where there is an annular stricture of the vagina or the vagina is narrowed by cicatrization a medio-lateral episiotomy or Schuchardt's incision is made, a pad of sterile gauze is placed over the incision and a posterior speculum, weighted or otherwise, inserted. A plastic repair of the cut surface is made by stitching to it a piece of vaginal mucous membrane from a patient of the same blood group. A Jayle's self-retaining speculum is useful in retracting the lateral vaginal walls. (Fig. III). The advantage of a

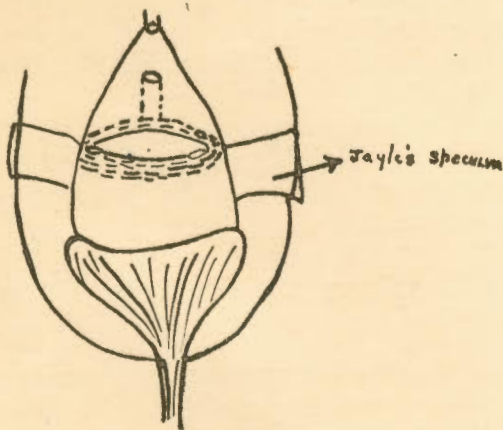


Fig. 3

division of the pubic bone in effecting a good exposure of fistula situated under the bone was well illustrated in the case previously mentioned, i.e. fracture of the pubis and a vesicovaginal fistula. The opening into the bladder was $2\frac{1}{2}'' \times 1\frac{1}{4}''$ and lay obliquely to the right of the middle line and under the pubic bone. It was well exposed and easy of access. The fistula was sutured before wiring the bone at the same sitting. The opening healed by first intention.

2. *The urethra and the ureteral orifices should be patent.* If the urethra is not patent, a metal catheter should be passed and the proximal end opened with a sharp knife against the catheter. (Fig. IV). A metal

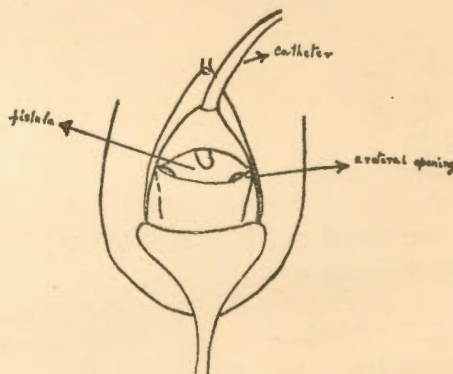


Fig. 4

catheter in the urethra facilitates reflection of the anterior flap without injury to the urethra and also keeps back a prolapsed bladder wall and avoids closing up the ureteral orifices which may be lying close to the posterior rim of the fistula. Marion Sims is reported to have done this and his patient died on the 5th day of the operation.

3. *Suture Materials and Instruments:* For dissecting up the flaps it

is well to use a toothless long dissecting forceps and straight angular or curved fistula, cleft palate, tonsilectomy, tenotomy, or iridectomy knives and scissors. Light instruments have an added advantage as the tissues should be handled gently. The long handles are a distinct advantage. If V.V.F. fishing-hook-form needles are not available, eye needles make a good substitute. The size of the needle varies with the angle at which the fistula lies and the space available for inserting it. I use No. 00 chromic catgut for closing the bladder, with a stitch in the most difficult angle or a stitch in each angle of the fistula. Otherwise begin from left to right. A needle is threaded to each end of the catgut; the first stitch is passed from before backwards in the angle of the fistula into the bladder wall, but not into the mucous membrane, and is knotted. One of the needles is then inserted parallel to the edge of the anterior margin of the fistula and the second in the opposite

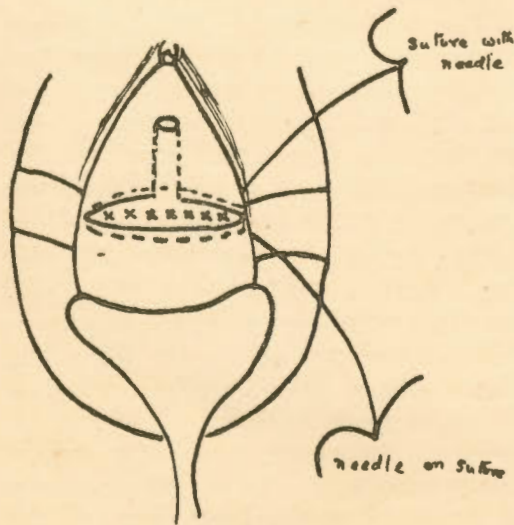


Fig. 5

posterior margin and knotted, thus invaginating the edges by Cushing's stitch, knotting the catgut at each stitch. (Fig. V). This ensures security of the rest of the sutures even if any were to give way or were absorbed early. A second similar layer of sutures is inserted but this time working from right to left. The lighter the needle holder and the finer the needle, the better the results, as a thick needle and a heavy needle holder by its weight are more likely to tear the sparse bladder wall. A bladder wash may be given at this stage to ensure that there is no leakage. I do not always give a bladder wash as the clots in the suture line help better healing. The vaginal wall is now closed by interrupted or continuous No. 1 chromic catgut sutures. A No. 9 rubber catheter is left in the bladder, not self-retaining. The catheter is transfixed above the symphysis with adhesive plaster. If the catheter is allowed to hang down, its weight stretches the urinary sphincter, resulting in incontinence even though the fistula has healed perfectly.

I do not use a Pezzer's nor Foley's self-retaining catheter, as in removing it you are apt to cause trauma where the urethra was sutured on to the bladder. The incision in the vagina or the episiotomy wound is closed with catgut, or a piece of vaginal mucous membrane from a woman of the same group is sutured in the raw area, as already stated to widen the vagina. When a recto-vaginal fistula or a complete tear of the perineum complicates the urinary fistula, I close this at the same time. Of the 128 cases I had in a period of 7 years,

there were 5 with recto-vaginal fistulae, all of which healed by first intention. There is no indication for a colostomy as a first step in healing a fistula. An opening into the urethra is closed in the same way as in the bladder. Where the urethra has been destroyed by ulceration or trauma a new urethra has to be built by flap-splitting, directing the urethra upwards towards the clitoris. This keeps the patient dry while in bed. There is no sphincter action but a mechanical control, unless some fibres from the pyramidalis or gracilis muscle are brought down and transfixed to the newly constructed urethra, or interrupted sutures are inserted under-running the urethral area.

In the case of a uretero-cervico-vaginal fistula, X-Rays showed a hydro-ureter on the right side. The right ureter was transplanted into the bladder intra-abdominally, the proximal end of the distal segment being ligatured. The result was good.

4. *Free Mobilisation of the Layers* is essential to avoid tension of the sutures, but sufficient mobilisation is often difficult. When the fistula lies transversely, an incision inclined slightly upwards or downwards is made in the vaginal wall extending laterally from each angle. This incision is next carried round the fistula reflecting the flaps anteriorly and posteriorly — See fig. II. Injury to the urethra and ureteral orifices, if lying near the edges of the fistula, must be carefully avoided by working externally to them. In mid-vaginal or juxta-cervical fistula where there is generally more tissue available for mobilisation I make an

antero-posterior incision anterior and posterior to the fistula and separate the vaginal wall from the bladder wall. The flaps should be reflected for at least $\frac{1}{4}$ of an inch, if not more. The opening in the bladder is closed transversely from left to right, and the vaginal wall antero-posteriorly.

4. *Closing the Fistula:* Before this is attempted it is essential to see that the bladder is empty of blood clots, calculi, cotton wool or rags. I had a case in which the patient plugged the fistula with a rag which had slipped into the bladder and a calculus formed round it.

Post-operative Treatment:

The patient is encouraged to lie on the side opposite to where the leakage was greatest. Lying in the prone position is trying for the back. The advantage is that the suture line is not likely to have any pressure from urine, especially if the urine is continually syphoned off by drainage through the catheter.

The patient is constipated for 5 days, after which, whether she had an operation for a urinary or faecal fistula, on the 6th morning she is given an oil enema to soften the faeces, having been given liquid paraffin the previous night.

The catheter is kept in the bladder for a period of nine days. As a precautionary measure the patient is given a urinary antiseptic for a few days before and after the operation. If the urine is turbid a bladder wash is given, not more than four ounces being put in at a time. The catheter is removed on the tenth day and the patient is encouraged to pass urine

every two hours when awake. She is advised to come into hospital for her confinement, not necessarily for a caesarean section.

Ureteral Transplantation:

This is not a cure but a relief of the incontinence of urine. Patients do not appreciate the frequency of defaecation but more than that is the dyspareunia they complain of. The sensitive bladder mucous membrane is exposed to contact and causes the pain.

Inoperability of a fistula is a relative term depending on the operator. These cases need much patience on the part of the operator, the patient and the nursing staff. Even if the bladder wall cannot be covered by vaginal mucous membrane, it is surprising to find how nature helps to cover an extensive area of bladder wall provided the blood supply is not destroyed. I have undone a case of colpocleisis performed by another surgeon and did a plastic repair of the V.V.F. and R.V.F. at the same sitting and both healed by first intention. Also cases put up for ureteral transplantation were done vaginally by me with good results.

If the whole fistula does not heal at one sitting do not be discouraged. The greater part of the fistula generally heals at the first sitting. A pin-point leakage causes the same distressing symptoms of incontinence but it is easier to treat it than a wide opening if within convenient reach. I operated on a case that had been operated on sixteen times previously by others. She had a complete tear of the perineum as well. I operated on the fistula and repaired the peri-

neum at the same sitting and the result was good, both healing by first intention. The patient was restored back whole to society and to her husband. There is no need to do a colostomy first and then the repair of the faecal fistula or of a complete tear of the perineum before repairing a vesical fistula.

TABLE III

Analysis of Cases Operated by me at the Victoria Hospital, Visakhapatnam, 1922-30

Total number	49.	Result-cured	47,	colpocleisis	2.
Operated on	once	and cured	..	25	
"	"	twice	"	"	.. 17
"	"	thrice	"	"	.. 6
"	"	four times	"	"	.. 1
		colpocleisis	..	2	

All the above cases but one were due to difficult labours attended on by untrained dais. One was due to urinary calculus.

Three patients were fourteen years old, one was 40 and multiparous.

TABLE IV

King George Hospital, Visakhapatnam, 1948-1957
Percentage of cures of flap-splitting operations

Number of operations per patient	% Cures
1	80 %
2	16 %
3	3 %
4	.5 %
5	.5 %

Subsequent deliveries of 27 cured cases who returned for it:—

Caesarean Section—21 (13 Para II
4 Para III
1 Para VI

Three of the above had associated cephalopelvic disproportion.

Forceps 4. Normal labours 2.

The difficulties one encounters in India is the marked amount of destruction of the soft tissues of the bladder, vagina, cervix, urethra and rectum. Where the antero-lateral part of the bladder is destroyed and very close to the symphysis and pubic ramus, I do a pubiotomy or symphysiotomy, avoiding injury to the urethra, allow the cut ends to fall apart, immobilise the bladder from above downwards and also the vaginal wall, and then bring the torn edges of the bladder wall together. The pelvic bones are drawn together and kept in position with a piece of adhesive tape. I have adopted this method in five cases with good results in four.

In cases of generally contracted pelvis I would advocate a bone graft as described by Albee (Fig. VI). Symphysiotomy would help an easier approach to the fistula and to immobilise the bladder. After repairing the rent in the bladder a wedge of bone from the anterior ridge of the tibia could be taken and embedded between the cut ends as per Fig. VI. A

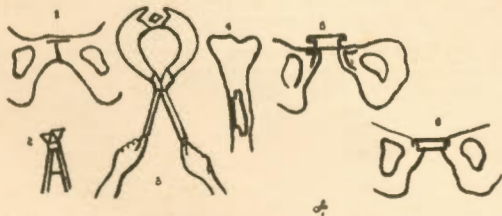


Fig. 6

- (1) Grooving pubic bones on either side of pubic bones.
- (2) Spreader for pelvis.
- (3) Spreader for pelvis in action.
- (4) Shape of graft obtained for this.
- (5) Bed of graft. Note the drill holes for the insertion of heavy kangaroo tendon; also the graft ready to be inlaid.
- (6) Tibial graft inserted with kangaroo-tendon in place.

second case of separation of the symphysis, during forceps application was brought to me. I did a plastic repair. The patient was sent back cured. She remained dry for twenty-three days and sprang a leak which was a pinpoint and high under the pubic ramus and difficult to visualise. She returned to hospital for her delivery. She had low prophylactic forceps, the leak was not worse but a catheter was left in the bladder for ten days in the puerperium with the hope that the fistula may heal. It did not do so. She was advised to come three months later for repair.

Where there is absence of the cervix and a high tear in the bladder, I would go in transperitonally and repair the bladder and vagina from above without resorting to ureteral transplantation or colpo-cleisis.

From Table V you will find that the number of ureteral transplantations fell from 9 and 8 in 1954 and 1955 to 1 & 2 in 1956 & 1957. I entered the department in the last quarter of the year and my colleagues were willing and anxious to do the plastic repairs vaginally. More careful decisions were made before pronouncing cases as irreparable from below.

I am of opinion that every young gynaecologist and obstetrician should attempt at healing a fistula. You do not always need very special instruments nor an operating table. You can place the patient in the knee-elbow position with pillows, on a low bedstead (charpois) or table. Use an ordinary narrow bladed scalpel and an artery forceps or mosquito forceps as a needle holder. My young D.G.O. students are encouraged to

TABLE V
Urinary Fistulae Cases operated on from 1949-58
King George Hospital, Visakhapatnam.

Year	Ureteral transplan.	O.D.	Died	Plastic repair	Cured	Relieved	O.D.	Died
1949	1	1	—	34	25	9	—	—
1950	3	3	—	31	9	3	19	—
1951	—	—	—	34	10	7	17	—
1952	2	2	—	6	3	3	—	—
1953	4	4	—	17	5	6	6	—
1954	9	8	1	21	4	8	9	—
1955	8	8	—	32	14	17	1	—
1956	1	1	—	66	42	15	9	—
1957	2	cured	—	50	39	5	5	1
1958	5	4	1	53	19	1	33	—
	35	31	2	344	170	74	99	1

operate on V.V.F. cases by giving them mid low cases and their results have been good. Do not use sewing cotton for the bladder. It is easy to work with it but it soon forms calculi.

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