

## (a) A Case of Hydrops Foetalis

### Case Report:

(Presented by Dr. Chan Kong Thoe.)

Registered No. 1282 — CY. Chinese — Age 24 years — Gravida 6, Para 5, Unbooked.

Admitted on 20.1.56 at 9.00 p.m.

LMP. 13.5.55 — EDD. 20.2.53.

### Past Obstetric History:

1st child alive, 9 years old, labour prolonged.

2nd child alive, 7 years old, easy labour.

3rd child stillborn, pregnancy ended at 8/12; cause of still-birth unknown.

4th child alive, 3 years old, easy labour; birth weight 8 lbs. 3ozs.

5th child stillborn, pregnancy ended at 9/12 baby "very swollen."

Past Medical History:—Irrelevant.

History of Present Pregnancy: Uneventful.

Labour pains commenced midnight 19th-20th January 1956.

Examination: General nutrition good.

9.00 p.m. — Pulse = 88/min. B.P. — 120/70 Slight oedema of legs.

Heart and lungs — clinically clear.

### Obstetric Examination:

Fundus at level of term.

Impression, a large baby.

Vertex presentation. R.O.A. Head engaged.

FHH = 140/min.

### Laboratory Investigations:

	Mother
Blood Kahn Test	Negative
Blood group	B
Rh	+
Coomb's Test	—
Blood sugar	100mgm%
Urine	Acetone Nil. Sugar nil.
Father out of Colony and unavailable	

### PROGRESS OF LABOUR:

21st January 1956 — 9.00 a.m. Strong contractions from 8.00 a.m. but progress shown.

### Vaginal Examination:

Os fully dilated.

Membranes intact.

Small bag of forewaters.

Right Occipito-Posterior.

Pelvis adequate for vaginal delivery.

9.20 a.m. Delivered foetus, with all the features of Hydrops foetalis.

The cord was very thick with much Wharton's jelly. Abdominal palpation: Uterus still very large but well contracted. Broad fundus at level at 2" above umbilicus.

9.30 a.m. Placenta expressed by fundal pressure after spontaneous separation. Intravenous ergometrine given. Cord blood taken for serology. Uterus well contracted; total blood loss = 6 ozs.

### Examination of Foetus:

Female baby born alive — breathed in gasps for about 3 minutes and died.

General anasarca especially involving the face and trunk.

Ascites +++ No Jaundice. Moderate anaemia.

Malformed mouth, ears, neck, arms and legs.

Birth weight: 6 lbs. 4 ozs., 18" long.

### Examination of Placenta:

Large placenta weighing 5 lbs. 12" diameter and 2" thick.

## SUMMARY OF CASES OF HYDROPIC FOETUSES BORN IN K.K.M. HOSPITAL

There were 5 cases of hydropic foetuses born in the Hospital in 1953. All were still-born. 3 were delivered before term and the duration of gestation was unknown in the other 2 cases. There were 4 female babies and 1 male. 2 cases were associated with hydramnios. 2 were breech

deliveries, one vertex, one face and one involved destructive operations on the foetus. Two of the babies weighed over 10 lbs. but the other 3 were well below average weight. There was no associated A.P.H. or P.P.H. Only 2 cases were associated with toxæmia.

Tabulation of the cases:

Reg. No.	Birth Weight	Period of Gestation	Alive or Still-born	Method of Delivery	Condition of foetus	Hydrom-nios	Placen-tal	Toxæ-mia
1744	4:03	34/52	S. B.	Normal vertex	Hydrops		2:10	
3811	3:04	?	S. B.	Breech	H. Foet-alis	Hydram-nios	?	
13161	10:03	32/52	S. B.	Breech	Foetal ascites	Hydram-nios	?	
18239	4:00	29/52	S. B.	Crainio-tomy & perforation of abdomen	H. Foet-alis		?	+
1004A	10:12	?	S. B. Macerated	Face: LMP. spontan-neous	Foetal ascited		?	+

Dr. Chan Kong Thoe, who presented the case, said that he had consulted Dr. Gibson-Hill of the Blood Transfusion Department who stated that the anti-sera used for Rh typing in this case consisted of 6 factors, and there was no incompatibility between maternal and foetal blood when tested with the anti-sera available.

### Discussion.

DR. RODDIE said that the discovery of the Rh factor in human blood and the recognition that human beings can be classified as Rh positive or Rh negative, according as to whether or not their blood corpuscles are agglutinated by anti-Rhesus serum, led to the solution of two problems that had long vexed clinicians. These were erythroblastosis foetalis, which we now call haemolytic disease of the new born, and the haemolytic reactions which sometimes follow blood transfusions even of compatible ABO Group.

Although it has not been proven that this patient showed evidence of iso-immunisation to the Rh antigen the baby clinically resembled the condition of hydrops foetalis.

He defined iso-immunisation as the formation of immune anti-bodies by a member of a given species against some antigen, absent from its own body, but present in that of another member of the same species.

In practice two circumstances could be envisaged in which blood from one person may be introduced into the circulation of another. One is the deliberate injection of blood for prophylactic, therapeutic or experimental purposes, and the other is the possibility of the passage of blood across the placenta from foetus to mother. In both these cases, iso-immunisation will occur only if the blood introduced contains a blood group antigen, which is absent from the erythrocytes of the recipient and the recipient is capable of responding to the stimulus.

There are several varieties of Rh antigen and also of Rh anti-body, but the form of antibody first discovered and called anti-Rh, occurs so much the most frequently that it may be said to be responsible for 95% of all the dangers due to the Rh blood groups. This antibody is

made by Rh negative people immunised by the Rh positive antigen. From this point of view there are 2 types of blood, one agglutinated by anti-Rh serum and called Rh positive, and not agglutinated and called Rh negative. The latter is uncommon among Chinese but occurs in about 17% of Western women. It may well be the older Chinese civilisation has, by a process of elimination, bred out this undesirable factor. There are 6 common Rh antigens in the red cells of Europeans. They are called: + C, c, D, d, E, e.

The relationship between the members of these pairs, for example C & c, is one of genetic allelomorphism. That is to say a chromosome can carry C or c but not both. All the nucleated cells in the body, except the sex cells, carry a double set of chromosomes; they therefore carry 2 Rh chromosomes. These two chromosomes may both carry C genes and the genotype is cc (homozygous).

As regards the antibodies the commonest is anti-D and occurs in 2 forms. One, the form first to be discovered, will agglutinate red cells containing the antigen D when they are suspended in saline. The other form, originally called "incomplete" or "blocking" will not agglutinate D positive cells suspended in saline; it will however so affect D-positive cells that become incapable of being agglutinated if they are subsequently exposed to saline agglutinating anti-D. It is now known that the "incomplete" type of anti-D will agglutinate D-positive cells if these cells are suspended in albumin.

Clinically the finding of Rh anti-body in the serum of a pregnant Rh negative woman who gives a history of past stillbirths or neo-natal deaths will provide very strong evidence that these accidents have been due to the woman's sensitization to the Rh antigen, and the birth of another affected child must be expected. The starting point of the damage is the entry into the mother through the placenta barrier of the Rh positive cells. The anti-body then passes back across the placenta and causes an increased rate of destruction of the infant's red cells. Coating of the infants red cells with Rh anti-body can be demonstrated at birth by the anti-human-globulin test (Coombs test). This was however, found to be negative in the present case and one

must decide whether to accept this result or not in the light of the clinical and post mortem findings.

There are 3 main ways in which the child can be affected:—

### 1. *Hydrops Foetalis*.

Typically the foetus is grossly oedematous and usually dies in utero about the 34th to 36th week early as the 26th week, or the of pregnancy; death may occur as foetus may survive until term and be born alive. Usually the onset of labour is premature due to the larger size of the foetus and to the enlarged placenta. Whether born prematurely or at term the infant does not survive for more than a few hours.

### 2. *Icterus Gravis Neonatorum*.

The infant is born at term and is either jaundiced at birth or becomes so during the 24 hours following delivery. An enlarged spleen can usually be felt and in severe cases the liver is also enlarged. As a rule anaemia is not obvious at first though the Hb. % is lower than normal.

The most striking morphological abnormality of the blood is the increased number of nucleated red cells in the peripheral blood—erythroblastaemia; when present this feature is usually but not invariably accompanied by polychromasia and a high reticulocyte count.

These jaundiced babies if they survive, may develop "Kernicterus" due to damage of the basal nuclei in the brain by the bile pigments.

### 3. *Congenital anaemia of the New Born*.

Here the infant is born apparently normal and rapidly develops marked anaemia. The type of infant is the one most likely to survive if treated. The treatment of this type as also in icterus gravis is by exchange transfusion.

Thus from the obstetrician's point of view every pregnant woman should have her Rhesus blood

group determined as part of the ante-natal care Rhesus negative women should be tested for antibodies at the 12th and 30th week of pregnancy when the presence of antibodies will indicate the possible involvement of the foetus with erythroblastosis. It should be remembered that the type of antibody does not appear to bear any relation to the severity of the disease

Sometimes one must consider the question of a false positive Rh. That is the antigen C may occur in a person's red cells unaccompanied by D. If the usual kind of anti-Rh serum, namely, anti-D, is used to test the red cells, they will fail to react, and will thus be described as "Rh-negative," meaning simply D-negative. If however, the only slightly less common kind of anti-Rh serum, which is a combination of anti-D+anti-C, is used to test the red cells, they will react positively and might then be wrongly classified as Rh positive.

DR. BALASINGHAM commented on the post-mortem findings of the baby.

**Macroscopically:** The body was that of a female child, and was in a well nourished condition. There was universal oedema of the subcutaneous tissues. Definite anaemic-looking appearance.

Both pleural and peritoneal cavities contained nearly half a pint of transudate which was slightly bile-stained.

Other positive findings were as follows: Liver  $1\frac{1}{2}$  times normal size. Brownish in colour. Kidneys showed petechial haemorrhages in cortex. Bone marrows; red throughout. Other organs, including brain normal.

**Microscopically:** Showed excess of erythropoietic centres in liver and spleen. Skin showed oedema.

The findings in all the internal organs did not show the advanced changes one would expect in erythroblastosis. The case, both naked-eye and histologically strongly suggested Hydrops Foetalis. The only proof of the diagnosis was the Rh grouping of the parents blood.

It was also important to have a serum bilirubin estimation carried out. There was no evidence of any infection (e.g.) congenital syphilis to account for the exaggerated erthropoeisis.

He ventured that, from the available data, one could arrive at only one diagnosis—Hydrops Foetalis, and it was not possible to clinch the etiology and pathogenesis for lack of information regarding the Rh groups of the parents.

The cord blood-smear from the baby was next projected on the serum, and compared with that of a normal new-born baby. It was quite obvious that the blood smear from the case under discussion contained an excessive number of immature red cells and some immature white blood cells.

The differential blood count was:			
Mononuclears	-	-	33%
Eosinophils	-	-	41%
Neutrophils	-	-	26%

88 Nucleated Red Cells per 100 white blood cells.

PROFESSOR SHEARES was one of the opinion that in this particular case the Rh factor could not be blamed for the obvious erythroblastic condition of the foetus. Various other antigens are also present in the red cells of man, but these, fortunately, are mostly weakly antigenic, and anti-bodies are either not naturally present at all, or occur in relatively low titres.

He enumerated the other known antigens in the red cells—The M. N. and S. the P.; the Le (Lewis); the K (Kell), and the Lu (Lutheran) systems. More recently two more blood groups have been added—The Duffy (Fya) and the Kidd (Jk.). It is probable that many other genetically independent blood group systems will be discovered in the future.

Immunisation to these factors is extremely rare, so that typing for them is necessary only in instances in which the clinical problem is not solved by the study of the more common antigens.

The K antigen is capable of producing antibodies in persons whose red cells do not contain the K factor. It comes next to A. B. and D. as an antigen causing haemolytic disease and transfusion reactions, but the incidence is so low that routine typing for the K antigen is not necessary.

Lu antigen produces antibodies in lue-negative persons, but of low titre, and clinical problems related thereto are as yet unknown.

Fya antigen is weakly antigenic, has been reported responsible for haemolytic transfusions, but not haemolytic disease of the new-born.

JK antigen was found in a woman who had delivered an erythroblastotic infant. He ventured that it was possible that an entirely new antigenic substance might be present in the red cells of man of this geographical region of the world. It would be possible only by intensive research, by a group of trained serologists, to discover such a new antigen, but till then the answer to some of our problems of erythroblastosis will not be known. He also ventured that the reason for the

non-haemolysis of the foetal red cells of this case when mixed with the mother's serum was obtained one week after the delivery, by which time the anti-bodies might have been eliminated or destroyed.

DR. LUMSDEN then pointed out that in his experience in K.K. Hospital there had been several cases of babies who were born with the typical appearances of hydrops foetalis, and yet the baby's blood cells, and the parents when tested showed no incompatibility. In one case he mentioned, the blood of the baby, and its parents were sent by air to England and even then no blood factor was discovered to account for the cause of Hydrops foetalis. He thought in these cases the cause of Hydrops foetalis picture was not necessarily a blood incompatibility but might be some other cause of foetal anoxia which had not been discovered.

## (b) A Case of Vesico — Vaginal Fistula

### Case Report:

(Presented by Dr. T. H. Lean).

Case 184-B—K.P. Indian—Age 30 years—  
1 abortion at 4 months 14 years ago.  
1 normal pregnancy and normal delivery 15 years ago.—Infant died at 1 year of age.

Case was first seen in October 1955 as an out-patient. Her complaint was leakage of urine per vaginam after an abdominal operation 14 years ago in connection with her pregnancy of 4 months. Details of the operation are not known but it had been carried out in the General Hospital after the abortion in K.K. Hospital.

It would appear that the foetus was still in uterus at the time of the operation.

Over the years she had to become used to this constant leakage of urine per vaginam but the pruritus vulvae was a distressing symptom.

#### Examination:

General condition was good.

Both kidneys were functioning normally. Blood urea-23 mgm%.

#### Gynaeco-Surgical Condition:

Supra-public midline incision operation scar.

Cervix and Uterine body not discerned.

Shortened, much scarred vagina. A fistulous opening, 0.5 cm. diameter, was found connecting the bladder and the vagina and in the midline high up in the vagina. The bladder mucosa was everted through the fistula.

At the summit of the scarred vagina, a small unepithelized blind recess was present—Skin of vulva and perineum eczematous.

#### PROGRESS OF CASE:

The case was admitted a week prior to plastic surgery. Sepsis was cleared by therapeutic doses of antibiotics (Penicillin and Streptomycin) and the urine was acidified by administration of Ammon Chlor. and Acid Sod. Phosphate orally. Assessment of renal functions showed them to be normal.

Repair operation was performed on 31st January 1956. The bladder was continuously drained by a constant suction pump.

### Discussion.

DR. T. H. LEAN, who presented the case, tabled the etiology and incidence of 15 cases Vesico-Vaginal Fistula treated by PROF. SHEARES in the 3 years 1953, 54 and 55.

Total Cases	Cong.	Obst Injury	Op. Injury	Malignancy	Others
15	Nil	87%	6.5%	—	6.5% (with calculus)

## INCIDENCE

1953	-	-	6 cases in 7,300
1954	-	-	3 cases in 8,000
1955	-	-	6 cases in 8,000

Gynaecological cases seen	1:1200
"	"
"	"
"	1:2600
"	"
"	1:1300

Dr. Lean spoke on the history of Vesico-Vaginal Fistula. He said that Archaeologists discovered the presence of vesico-vaginal fistula in mummies even as far back as 2050 B.C.

In the literature—the first mention of a fistula was made in a passage in El-Khanoun by Ibn Sina, also known as Avicenna. This observer noted that the occurrence of urinary fistulae in women was a sequel to difficult labour. In European literature Plato was first credited with the description of a vesical fistula in a young girl following a difficult labour.

Since then much has been achieved to improve operation results. No one man is responsible for this addition to one knowledge. A mass of facts has accumulated through the years dating back from the 17 century. Treatment of this condition has evolved from the fantastic and empirical suggestion that a pulverised toad be worn in a bag placed over the pit of the stomach (Johannes Fatle) to the present day high-stepping precision operations.

The first real contribution was made by a Hollander named H. VAN ROON-HUYSE of Amsterdam. He recommended:

1. The lithotomy position.
2. 'The satisfactory exposure of the fistula by a speculum.
3. Careful pairing and denudation of the edges.
4. The approximation of the edges by means of quills of a swan and held in place by silk threads.
5. The dressing of the wound with balsam, and the use of absorbent vaginal dressings.
6. The patient kept immobilised in bed until the parts had healed.

Little progress was made until 1839 when George Hayward of Massachusetts described the important technical point of

detaching the bladder from the vagina. Anaesthesia came into and was used for the first time in the fistula operation by Hayward in 1847.

At this time METZER of Prague described a Sim's like speculum and JOHN MATTEUR of Virginia introduced lead sutures. In 1852 MURTZER of Bonn used suprapubic drainage.

In 1852, MARION SIMS of Alabama working amongst Negroes published a method whereby he achieved a cure rate of 230 cases out of a total of 312. He invented the duckbill speculum for exposure and used silver wire for the repair of the fistula, which he claimed was "the most important contribution as yet made to the surgery of the present century."

At this time Sim's contemporaries in Great Britain viz. Baker, Brown and Simpson, also claimed success using the steel wire. They also invented some new instruments to facilitate exposure of the operation field.

In 1890—TRENDELENBERG introduced the suprapubic approach and in 1899, 1. von DITTEL first described the trans-peritoneal approach. COLLIS of Ireland was the first to devise the flap-splitting operation, but it was MACKENRODT in 1894 who developed COLLIS' operation by advocating wide separation of the bladder from the vaginal walls on all sides prior to suturing each layer independently.

In 1896—KELLY described his method of closing a large bladder defect by freeing the bladder from the cervix; he also recommended ureteric catheterisation prior to repair.

In 1894—LATZKO described the technique of closing vesico-vaginal fistulae resulting from Hysterectomies by obliterating the vaginal vault by a partial colpocleisis.

## INCIDENCE AND AETIOLOGY:

An accurate picture of overall incidence is difficult to obtain but some figures available are as follows—

	Cases Seen	No. cases of Fistula	Percentage
PHANEUF - - -	10,000	10	1 in 1,000 (0.1%)
SHEARES—1953 - -	7,000	6	1 in 1,166 (0.09%)
—1955 - - -	8,000	6	1 in 1,300 (0.08%)

Vesico-Vaginal Fistula as seen to-day fall into three groups:

1. Those resulting from Obstetric injuries
2. Those resulting from operative accidents.
3. Those resulting from Tissue Necrosis as a result of advanced malignant neoplasms of the cervix

and Vagina either per se or in combination with the effects of irradiation therapy.

In addition—there are those rarer ones that are caused by ulceration from pessaries or granulomatous venereal diseases, bilharzia, and erosion of bladder wall by Vesical Calculi. Congenital Fistulae have been described.

An aetiological classification of incidence as listed by various authors is as follows:

	Obstetric Injury	Operative Accidents	Malignancy	Others
ALDRIDGE (New York)	85% in 1920 23% in 1948	60%	12%	—
CHASSAR MOIR (Edinburgh)	about 30%	64%	6%	—
MAHFOUZ PASHA (Egypt)—400 cases	98.5%	—	—	Bilharzia 1% Congenital 0.5%
KRISHNAN (Madras)	99% including 1 abortion	—	—	Lymphogranuloma 1%
SHEARES (Singapore)	87%	6.5%	—	Calculus 6.5%

## CLASSIFICATION OF ANATOMIC TYPES:

In 1945, THOMAS described three types classified anatomically:

1. Large Fistula involving the bases of the bladder at an appreciable distance from the cervix and from the internal urinary meatus—THE MID-VAGINAL FISTULA.
2. Fistula near to or actually involving the internal meatus of the mother or even the urethra—THE JUXTA-URETHRAL Fistula.
3. Fistula adjacent to the cervix—THE JUXTA-CERVICAL Fistula.

In 1947 CHASSAR MOIR classified his Vesico-vaginal fistula as follows:—

1. Mid-vaginal fistula — usually a large fistula.
2. Urethro-vaginal fistula.
3. Fistula adherent to the descending ramus of the pubic bone.

In 1949 KRISHNAN classified his fistulae into four types by the addition of a fourth type which he called the Combined Fistula, to THOMAS'S three types.

## SYMPTOMATOLOGY & DIAGNOSIS:

Almost always the diagnosis of a Vesico-Vaginal Fistula is very evident. By and large symptoms depend a great deal on the size and position of the fistulous opening. With a small fistula the leak may be so small that it might be confused with incontinence or stress incontinence. With large fistulae, sufficient amount of urine will not collect in the bladder to permit voiding, as might occur with a small fistula. With marked leakage of urine the vulva and adjacent skin usually becomes excoriated. Ammoniacal deposits may collect on the skin and the odour becomes characteristic. Pustules, ammoniacal dermatitis and intertrigo develop on the vulval skin and thighs.

In the larger fistulous opening the mucosa of the bladder wall prolapses through the opening to present as a red velvety mass in the vault of the vagina oftentimes simulating a procidentia (Chassar Moir).

The diagnosis has sometimes to be made from:—

- (1) Sphincter or Stress incontinence
- (2) Ureteric Fistula.

Important steps in the investigation are:—

1. Position of the patient—SIM'S Position or more preferably the knee-chest position, although, in frank cases, the simple lithotomy position may be all that is necessary.
2. The use of SIM'S Speculum for exposure of the field.
3. By asking the patient to cough during the examination — Two points will help in the differential diagnosis:
  - (a) Urine will squirt out in jets from the Urethra if it is a case of stress incontinence.
  - (b) Tell-tale air bubbles will rush in and out as the patient breathes and coughs in the case of vesico-vaginal fistula and will help in identification of the site of the fistula.
4. It may be necessary to inject coloured dye into the bladder to reveal the fistula. Methylene blue has been advocated.
5. A simple test as devised by CHASSAR MOIR serves to differentiate the three anatomical sites of the fistula—Three small cotton wool swabs are placed in the vagina—one at a high level, one at a low level and one just at the introitus.

About 10 ounces of water heavily stained with Methylene Blue is injected

into the bladder and the patient is requested to walk for 10 minutes.

The swabs are then examined. If only the lowest swab is stained blue it is a case of Stress Incontinence.

If the highest swab and the mid-swab are stained blue—it is a case of vesico-vaginal fistula.

If the highest swab is wet with unstained urine, it is a case of uretero-vaginal fistula

In all cases the diagnosis should be confirmed by cystoscopic examination which will also indicate the actual site of the fistula in relation to the ureteric orifices.

The air method of cystoscopy, using the Kelly cystoscope is best suited for the examination of these fistula.

DR. LUMSDEN spoke on the pre-operation management of vesic-vaginal fistulae, based the management under two headings:—

1. Those common to any major operative procedure.
2. Those peculiar to fistula operations.

He stressed:

Systematic examination, heart, lungs, blood etc.  
Nutritional study.  
Electrolyte Balance.  
Physiotherapy—Breathing exercises etc.

Psychotherapy as the patient was frequently depressed and this would enable her to face a fairly prolonged post-operative period of immobility.

Diseases such as syphilis and diabetes had been excluded (Carter in his series found syphilis associated with 20% of his failures and diabetes with 30%).

He said that the management differed from most systems of pre-operative management usually covered months rather than days.

Firstly, a decision had to be made as to how soon after the occurrence of the fistula operation should be undertaken. Te Linde, Counsellor, and most authorities recommended an interval of not less than 3 months and up to 6 months or more,



depending on the condition and size of the fistula.

On the other hand Everard Williams pointed out that these patients were extremely miserable, that epithelialisation

of the fistula tract occurred rapidly in one or two weeks and once this had occurred spontaneous closure was impossible, and he saw no advantage in waiting longer than 6 weeks. *Mahfouz Pasha* quoted a case in which the opening admitted two fingers and which healed spontaneously within two months.

The essential points were that spontaneous closure should be given a chance to occur and that operation should not be undertaken until the area had completely epithelialised, the tissue reaction had died down and an adequate blood supply has been re-established.

During this period of waiting, the patient had to be made as comfortable as possible.

If the fistulous opening were 2 m.m. or less in diameter, braided thread could be passed through it, and out through the urethra and the two ends tied in the vagina to stop leaking.

In the case of larger openings a Foley's catheter could be passed into the bladder through the opening, and the bulb made to obstruct the opening. Urine is drained through the catheter.

In very larger fistulae no satisfactory method of preventing leakage had been developed.

The vulva in these cases was constantly sodden with alkaline urine and a severe vulvitis, often with phosphatic encrustation on the hairs and skin, is present. Weak lactic acid douche followed by the application of paraffin and zinc oxide cream would usually clear this rapidly

Heat applied to the vagina either as hot Sitz baths or as diathermy would

speed up the resolution of the inflammatory exudate.

Cystitis of some degree was usually present. This could be treated by warm potassium permanganate irrigations to the bladder to remove phosphatic encrustations. The urine was cultured and suitable urinary antiseptics given. The maintenance of the pH of the urine around 5.5. was one of the most important measures.

The state of the *whole urinary tract* was investigated by the usual measures.

1. Blood urea and renal function tests.
1. Intravenous pyelography.
3. Cystoscopy.

Special care should be taken to exclude the presence of a foreign body such as a calculus.

The presence of *other pelvic pathology* such as ureteric or rectal fistulae, salpingitis, parametritis etc. had to be excluded.

Cystoscopy should always be carried out shortly before operation. If the opening were small the indirect cystoscope can be used. In all cases, whether large or small, Kelly's air cystoscope could be used.

The points to be noted were:—

1. Size and position of the opening.
2. Its relationship to the ureteric opening and internal urethral meatus.
3. The patency of the urethra.
4. The presence of a foreign body or encrustations.
5. The passage of ureteric catheters if doubt were entertained that ureters were involved.

## (a) OPERATIVE TREATMENT OF VESICAL VAGINAL FISTULATE.

PROFESSOR SHEARES spoke on the  
Fistulae.

operative treatment of Vesical Vaginal  
of Urinary Fistulae.

### *Types of Operation for Closure*

#### OPERATION

#### REMARKS

##### A. Vaginal Route.

Safe and almost always applicable.

1. Paring of edges and sutures (saucerising=Sim's type operation.

Relatively simple. Applicable to all but few cases.

2. Flap-splitting. Separation of bladder from vagina and independent suture of each.

Effective, but sometimes technically difficult.

3. Formation of vaginal flaps to fold over the fistula.

Seldom necessary and often difficult. Must be reinforced by a covering of vaginal wall or other tissue.

4. Use of split labium minus to cover the fistula.

Very seldom necessary. Reserved for cases of exceptional difficulty, or for reinforcing insecure suture lines.

##### B. Transvesical Route.

Less safe. Reserved for exceptional cases of high fistulae.

1. Extra-peritoneal approach.

No easier than vaginal approach, more difficult and no more certain of success.

2. Transperitoneal approach  
(Bladder split down to level of fistula. Separate suture of vagina and bladder).

Danger of escape of infected urine.

##### C. Intra-abdominal operation

(Freeing bladder from cervix and vagina. Separate suture of each).

Usually difficult because of fixation of parts. Ureters liable to damage. Escape of infected urine. Might be indicated in very high fistulae (e.g.) vesico-cervical fistulae.

##### D. Transplantation of ureters.

Very seldom necessary. High primary mortality and late danger of pyelo-nephritis.

*Mahfouz Pasha* (1938) with experience of 400 cases states:—

"For the last 8 years I have not resorted to any abdominal operation. I find the vaginal route safer, and if I fail to close the fistula by the vaginal route I seldom succeed to do so by the abdominal."

Transplantation of the ureters is perfectly feasible but it is an operation of defeat. *Mahfouz Pasha* wrote, "Few survived the operation for more than 3 years." *Jacob* in 1952 reported 38% mortality. Of 22 cases done for vesico-vaginal fistula, 3 died from primary mortality and 4 more within a short period. *Chassar Moir*, in his series of 110 fistulae, transplantation of ureter was resorted to only on 3 occasions.

#### ADEQUATE EXPOSURE OF THE FISTULA

Satisfactory repair is only possible when there is satisfactory exposure. By use of suitable methods, even the highest fistula can usually be brought within reach. It is wise, and in the end a great saving of time, to make the preliminary examination under anaesthesia. The patient is placed on the operating table, first in the lithotomy position, and then in the kneeling position, to find which gives the better exposure. Cystoscopy is preferred at this preliminary examination, and the urinary calculus, if present, removed by vaginal cystotomy.

For almost all cases the lithotomy position is suitable and adequate.

The use of 3 or 4 pairs of Allis' Forceps placed around the fistula enables the operator to bring it well within reach.

In difficult exposures, use the kneeling position as advocated by *Grey Turner*, but most operators find the lithotomy position.

Generous episiotomy (*Schuchardt* incision) if perinaeum is tight.

#### EXCISION OF SCAR TISSUE.

Union cannot take place unless the apposed edges are entirely healthy and vascular; approximated bands of fibrous tissue will not unite. Thorough excision in order to get beyond the scarred area is essential, and may be difficult. Tough

avascular scar (sometimes cartilaginous) must be excised and only soft bleeding tissue used in the opposition. The further one dissects away from the fistulous opening, the better the blood supply becomes. Interrupted is preferable to continuous suture.

#### RELIEF TENSION.

No one method is universally applicable. The bands of fibrous tissue exerting harmful traction are identified by gentle palpation with the tip of the finger. A cut is then made on one or both sides of the vagina, parallel to, but well separated from, the suture line. These incisions are made after the closure of the fistula, for oozing of blood may otherwise embarrass the operator. The resulting wounds are left open.

#### FLAP-SPLITTING. (MACKENRODT).

Consists in making an incision with a sharp, fine-pointed knife round the edge of the fistula and freely separating the vaginal and bladder walls from each other. To find the line of cleavage it is an advantage to start the dissection a little distance from the fistula; the initial steps are then somewhat similar to those of a colporrhaphy.

Fine chromicised 000 c.g. in an atraumatic needle infold the edges of the bladder opening, after which the vesical edges are co-opted (not superimposed), 2nd row reinforce the first.

In specialised work such as the repair of vesico-vaginal fistulae surgeons naturally tend to develop individual methods. Fistula repair has a fascination of its own. The time to close a fistula is at the first sitting.

Double drainage of bladder for the difficult cases by *Therapeutic fistula*. No such thing as a typical closure in a condition in which there is such great variation.

*Marion Sims* (1852) — only innovation was the use of silver wire.

#### THE LATZKO OPERATION.

Repair of vesicovaginal fistula which follows abdominal total hysterectomy by the *Latzko* technique of high partial colpocleisis.

Denuded posterior vaginal wall is used as a flap to cover opening in the bladder which is always at the vault and on the anterior wall. The transverse scar in the vault forms the posterior margin of the fistula. Just behind this scar is the post-vaginal wall and the cul-de-sac of Douglas. The fistula is deep, fixed and inaccessible. The raw surface of the posterior vaginal wall is soon covered by a thin layer of bladder mucosa by this technique which does not require the vesical edge of the bladder to be denuded.

## PREVENTION OF INJURY TO THE

### BLADDER AT HYSTERECTOMY:

At time of hysterectomy, in order to preserve the circulation, the bladder, together with its fascia intact must be separated from and well down the vaginal tube. Haemostasis of the bladder wall by clamp and suture must be superficial. No traction on bladder by hook, clamp or suture, as this might cause perforation. Some surgeons advise that the initial incision in the vagina should be in the posterior vaginal vault and then carried anteriorly close to the cervical attachment.

## TECHNIQUE OF THE LATZKO OPERATION:

### 1. MOBILISATION

(a) Foley catheter inserted through fistula (if large enough) and drawn upon.

(b) 4 heavy linen traction sutures placed laterally to the fistula.

### DENUATION.

A square area is marked off laterally above and below the fistula with sharp knife. Begin denudation with posterior quadrants, and denudation carried right up to opening of the fistula.

The edges of the fistula are not freshened, nor are they united to each other.

The area denuded must be large enough to permit its invagination by 3 rows of sutures running sagittally—00 e.g. on a small fully curved needle.

Small sutures are placed from above downward in order to co-opt the denuded surfaces of the anterior and posterior

vaginal walls. All the first row of sutures are placed and then tied. This is repeated for the other 2 rows.

## DRAINAGE OF BLADDER.

A retention catheter is left for 24 hours and the patient ambulated. Catheterise every 2 hours with gradually increasing intervals between catheterisations.

*The Post-Operative Management of Vesico-vaginal fistulae* was discussed by DR. J. W. F. LUMSDEN.

He said that this involved two major considerations:

1. Free drainage of the bladder to prevent strain of suture line.
2. Prevention of urinary infection and maintenance of urinary acidity.

In order to promote free bladder drainage, nursing of the patient in the prone position has been recommended by some surgeons presumably in order that the air bubble instead of urine may lie over the suture line but he said this appeared to have little advantage provided free drainage is maintained and the urine removed. The Gomco intermittent suction apparatus used here has many advantages. It is quiet in operation slight negative pressure is maintained to assure emptying of the bladder, and it ensures that the mucous membrane of the bladder cannot be damaged by being sucked into the eye of the catheter.

The bladder should be irrigated at frequent intervals, say 6 hourly, in the first 72 hours post-operation using a few c.c. only of boric acid solution.

A suitable urinary antiseptic is employed, and the acidity of the urine is maintained by putting the patient on an acid diet and ammonium chloride grs. 30 and acid sod. phosphate gr. 10 t.d.s.

Maintenance of urinary sterility and acidity are of paramount importance from the point of view of successful healing, as the deposition of phosphate or mucus on

the wound may well cause breakdown in even the perfectly repaired case. A vaginal examination is contraindicated in the first 14 days post-operation.

3. The length of time during which drainage is maintained will vary with the type of fistula. Te Linde recommends removal of the catheter the day after operation, in the case of small fistulae and getting the patient to empty her bladder hourly. She is catheterised for residual urine until this is less than 50 c.c. In most cases the catheter should be left in situ for 2 weeks or longer.

Urologists usually prefer suprapubic drainage to an indwelling catheter. Gynaecologists prefer counter drainage through an artificial vesico-vaginal fistula made in healthy part of the vaginal wall.

Coitus is interdicted for at least 3 months.

#### OPEN DISCUSSION:

DR. SINHA stressed that the choice of treatment depended on the site and extent of the fistula. There are some fistulae, in his opinion, which would defy repair even by the best of Surgeons. He pointed out that transplantation of ureters in MAH-FOUZ PASHA'S time was done before the advent of anti-biotics. Nowadays with the

absent of antibiotics, patients after transplantation of ureters into the large gut are made less likely to electrolyte disbalance. He believes the best place for transplanting ureters is in to an isolated loop of the ileum with a good bag to receive the urine outside. The method may prove quite satisfactory.

PROFESSOR SHEARES stressed that the best time for the fistula to heal is at the first sitting, and, therefore, it is in the best interests of the patient to pass her on to a Surgeon who does experience in this type of plastic work. He added that with modern advances in plastics and prosthetics appliances may be envolved later which might solve the problems for those cases where operative repair is impossible

DR. RODDIE said that in Nigeria, where he has worked, Vesico-Vaginal Fistulae were very common, and he saw about 2 per week. These patients were badly nourished and had usually been pushed out of their homes by their husbands. In some cases the fistula was so big that the bladder and the vagina appeared almost as one cavity. Transplantation of ureters into the colon had one big drawback in these cases because the anal sphincter was so lax that the patient continued to remain incontinent. Operations done to reinforce the anal sphincter were not very successful except in those cases where the operation field became very septic resulting in excess formation of scar tissue.