

VAGINAL ATRESIA

*Dr. R. K. Keswani, M.S., F.R.C.S.(C), D.A.B., **Dr. Ajay Sobti, Postgraduate Student,
 Dr. Usha Verma, M.D., and *Dr. Susheela Rathee, M.D.

Vagina arises as a solid tube of cells derived from the phallic portion of urogenital sinus, which later gets canalised (Inderbir Singh, 1976). This region lies very close to the fused paramesonephric ducts (the future cervix and uterus). Failure of development of vagina is mostly associated with anomalies of the uterus e.g. it may be atrophic, infantile or bicornuate and a high incidence of anomalies of the urinary tract. The ovaries are ordinarily unaffected, so that the secondary sexual characteristics—libido, breast development, vaginal introitus and triangular pubic hair pattern—are normal. TeLinde (1962) has stated, 'in our personal experience we have never seen a woman with a congenital absence of the vagina who was not typically feminine physically'.

Surgeons all over the world have been trying to evolve a method of reconstruction of vagina from the beginning of the 20th century. But the earlier procedures like pedicle grafts from the labia (Graves, 1908) and thighs (Beck, 1900) were too complicated and involved a very long hospitalisation of the patient. This is particularly true of the phased tube pedicle method of Frank and Geist (1927). The ileal transposition popularised by Baldwin was also not generally accepted because of a profuse and annoying mucous discharge.

The method widely used today is the McIndoes method of cavity grafting using rigid moulds. But the main drawback in this technique is the impossibility of securing adequate immobilisation due to movements or reflex contractions of perineum (Castanares, 1963). Also, these rigid moulds can cause pressure necrosis of adjoining tissues leading to urethrovaginal and rectovaginal fistulae. So the original hard moulds have been replaced by softer moulds like sponge rubber, polyurethane foam (Joya Chowdhury, 1968) and the unique packing procedure of Castanares using xeroform impregnated gauze. But Stabler in 1966 modified the original hard acrylic mould in a way that it became self retaining and is devoid of causing pressure by virtue of a urethral groove anteriorly.

We used the classical McIndoes procedure in our series of 14 cases. Cylindrical acrylic moulds were used in 12 cases while subsequently we used the Stabler's self retaining mould in 2 cases.

Analysis of Cases

Table I shows the findings on clinical examination. Twelve cases were between 16-22 years in the age while two were 25 and 30 years old. Seven were married while 7 were unmarried. Secondary sex characters were well developed in all the cases. On

*Professor of Surgery.

**Postgraduate Student, Department of Surgery.

***Professor of Obstetrics and Gynaecology.

****Professor of Obstetrics and Gynaecology Medical College, Rohtak (Haryana) India.

examination (Table 2) there was a mere dimple in place of vagina in 12 cases, 5 of whom were married. Vagina was 4-5 cms deep in 2 cases, both of whom were married. This was probably because of pressure by repeated intercourse. This phenomenon was at first recognised by Frank in 1938 who advocated manual pressure with graduated tubes in place of surgery.

The State of uterus and ovaries was assessed by per rectal examination only and no laparotomy was done. Uterus and ovaries were rudimentary in 13 cases but there was haematometra in one case.

No associated congenital anomaly was detected in 13 of the 14 cases. One case however had cubitus valgus and webbed neck deformity.

Special investigations (Table 3) were done for academic interest only to rule out element of hermaphroditism or any endocrinal abnormality. Buccal smear for sex chromatin was done in 4 cases and was positive in all of them conforming the female sex chromatin. Urinary 17-Ketosteroids were estimated in 2 cases and were normal in both. I.V.P. was done in 7 cases, one of them showed malrotation of a kidney. This is an essential investigation and should be done in all cases because of a reported high incidence of urinary tract abnormalities, most precarious of them all being the pelvic kidney which is vulnerable to operative trauma. X-ray skull was done in 2 cases and both showed a normal pituitary fossa.

Operation Data

We used the McIndoes technique in operating all the cases (Table-4). The depth of dissection varied between 8.5-12

cms. In the beginning we were not sure as to the adequate depth of vagina, but later 12 cms appeared very deep and now we have settled to a depth of about 9.5-10 cms. The moulds used were cylindrical acrylic moulds (Fig. 1) in 12 cases which were fixed in place by strings around the thighs and abdomen (Fig. 2). The size of these varied between 8-12×2.7-3.9 cms. The weight of the first mould used was 80 gms and was very uncomfortable. The other moulds were about 25 gms in weight and were well tolerated. In later 2 cases we used the Stabler's mould (Fig. 3) which is self retaining and light.

Bladder drainage was done in all the cases using Gibbon's in 1 and Foley's catheter in 13 cases.

Results of Operation : Refer (Table-5)

The graft was well taken up in 10 cases (2 out of which were given Stabler's mould) while 4 developed haematoma or infection. The loss of graft in these could be because of slipping of the mould as the cylindrical moulds are very difficult to stabilise. The first case developed anterior urethral fistula because of heavy mould and also the anterior diameter was 3.5 cm. which is rather large for Indian women. Ideal is slightly less than 3 cm.

The depth of vagina on 10th post-operative day was 7.5-9.5 cm and 7-8 cm after 3 months. All the cases were instructed to wear the mould for 6 months post-operative. Intercourse was allowed after this to the ones who were married. The unmarried girls were instructed to wear the mould once or twice a day till marriage. One case got married after 3 years of operation. The depth got reduced to 6 cm but subsequently it became 8 cm.

TABLE—1
FINDINGS ON CLINICAL
EXAMINATION

Ag in Years	No. of Cases
16—22 Yrs.	12
25—30 Yrs.	2
Marital Status	No.
Married	7
Single	7

Secondary sex characters—well developed in all cases

TABLE—2
FINDINGS ON CLINICAL
EXAMINATION

Depth of Vagina	No.
Dimple 4—5 Cm.	12 (5 Married) 2 (Married)
Uterus & Ovaries (P/R)	No.
Rudimentary	13
Haematometra	1
Associated Anamolies	No.
Nil	13
Webbed Neck and Cubitus Valgus	1

TABLE—3
SPECIAL INVESTIGATIONS

Investigation	No. of Cases	Observations
Buccal Smear	4	Chromatin + Ve in 4
17 Keto steroids I. V. P.	2 7	Normal in 2 Normal — 6 Malrotation of Lt. Kidney—1
X-Ray Skull	2	Normal Pitui tary fossa in both

TABLE—4

RESULTS OF OPERATION—14 CASES

Graft well taken up	10
Infection/Hematoma	4
Anterior Urethral Fistula	1
Post op. Vaginal Depth	7.5—9.5 Cm 10 th Day 7—8 Cm. 3 Months
U. T. I	14

TABLE—5
OPERATION DATA

No. of cases operated	14
Technique	Mc Indoes—14
Depth of dissection	8.5—12.0 Cm,
1. Acrylic cylindrical—12 mould	3.9×11.5 (1) 3.5×12.0 (1) 3.0× 9—12 (5) 3.3×11.5 (2) 2.7×11.5 (2) 2.7—3.5×8(1)
2. Stabler's Mould—2	L—9.75 Cm W : Max. 4.2 Cm Min. 2.3 Cm D : Max. 3 Cm Min. 1.6Cm Ur.Gr. 3 Cm
Bladder Drainage	5—7 Days Foleys—13 Gibbons—1



Fig. 1. Balsa wood and Cylindrical acrylic moulds used in different patients.

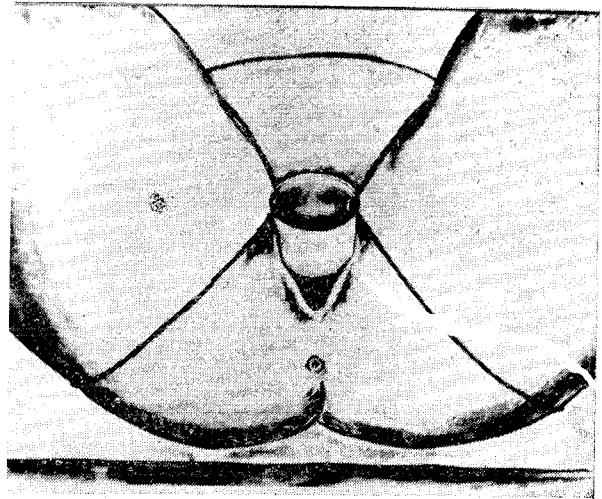


Fig. 2. Shows the method of keeping the cylindrical mould in position with strings around, the thighs and lower abdomen.

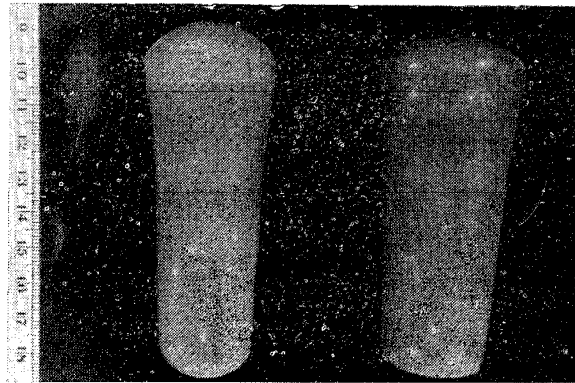


Fig. 3. Stabler's self retaining mould. It is wider posteriorly and narrow anteriorly. There is a groove on the ventral surface for the urethra.

With cylindrical moulds, there was difficulty of retaining the same for long periods post-operatively due to the necessity for use of straps of some kind or the other to hold them in place. Because of this reason, unmarried girls would not use these for more than 3-4 months. With Stabler's prosthesis, surgery can be offered to unmarried girls, & this self retaining prosthesis can be used without difficulty till the time of marriage.

In our type of culture it is necessary to have a girl with a reconstructed vagina before she can be accepted for marriage.

Urinary tract infection was a problem immediate post-operatively, but all these were cured with treatment based on culture studies.

Discussion

We have found McIndoes procedure using acrylic moulds to be good. The first case developed urethral fistula because of a heavy (80 gms) and wider mould (anterior diameter 3.5 cm). The original McIndoe's (1950) moulds weighed 1.5-2.0 ounces. Subsequently we also used lighter moulds of local make. These were 25-30 gms (about 1 ounce)

with an anterior diameter of less than 3 cm. The length of moulds varied between 8-10 cm which gave a fairly good depth to the vagina. Lately we have used Stabler's self retaining mould in 2 cases, which is made of acrylic but is thin and light and has a groove anteriorly for the urethra. On cross section, this mould is a horizontal oval and thus gives a natural shape to the vagina, which is not absolutely circular on section but is like a tube collapsed anteroposteriorly. The size of the prosthesis has been reduced from that which was published. Instead of a width of 5 cm posteriorly, we use a maximum of 4.2 cm posteriorly and 2.3 cm anteriorly. This we have found to be more than adequate for our patients. In both the cases operated there was 100 per cent graft take up and the patients are continuing to use the mould due to its self retainability and comfort. The dimensions of this mould are as given in Table-4.

The problem of urinary tract infection because of bladder drainage was present in all the cases and we hope it can be overcome by proper nursing care. In any case bladder drainage has to be used for the first 6-7 days post-operatively.

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