

THE RETROVERTED UTERUS

AN EVALUATION OF THE MOSCHCOWITZ OPERATION

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In the last gynaecological paper he wrote before his death, Prof. E. C. Crichton¹ stated that formerly a retroversion of the uterus was regarded as a condition which required active treatment either by operation or pessary, and continued: 'This unreasonable and evil outlook was gradually superseded by the view that only those cases in which symptoms were due to the displacement justified treatment'. Today gynaecologists agree that operative treatment for a retroversion of the uterus is very seldom indicated.

Unfortunately the operation of ventrosuspension is still being performed far too frequently. The abnormally situated uterus is only too readily blamed for complaints of sterility or pelvic symptoms. Patients are often subjected to ventrosuspension operations without even a pessary test having been carried out. This sorry state of affairs becomes even more apparent when one considers how frequently retroversion of the uterus occurs. The aim of this contribution is to foster a conservative attitude, and to suggest a more rational and anatomical approach to the problem in the occasional patient in whom the retrodisplacement warrants operation.

RETROVERSION

Incidence

Retroverted uterus is stated to occur in approximately 15-20% of women.^{1,2} Both Stacy³ and Polak⁴ maintained that 20% of all unmarried women with no history of previous pelvic infection, tumours or pregnancy have a congenital retroversion of the uterus. Plass⁵ examined 1,103 women on discharging them from hospital after labour and found 20% to have retroversion. At the final examination done on 950 of these women, however, 30% had retrodisplacements. Plass concluded that 10% of retroversions are therefore acquired as the result of pregnancy. In quoting Alvarez Bravo, Greenhill⁶ wrote that, out of a series of 7,062 gynaecological patients examined by Bravo, retroversion was found in 18.7%.

By checking the gynaecological case records of 1,000 women in the childbearing age seen in private practice, 197 or 19.7% were found to have retroverted uteri. A surprising fact, substantiating the work of Plass,⁵ emerged when the case records of 500 obstetrical patients were

investigated, and 154 or 30.8% were found to have retroversion of the uterus at the postnatal examination. This shows that at the postnatal examination, which is usually performed 6 weeks after delivery, involution is still incomplete and that at least one-third of these women will spontaneously correct the position of their uteri in due course. Only the very occasional patient in this series had the uterus manipulated, and a pessary could not have been inserted in more than a dozen patients.

Aetiology

In discussing the aetiology of retroversion, the usual causes of acquired retroversion, such as sub-involution of a puerperal uterus, tumours, chronic pelvic infection or endometriosis, are readily accepted, but what causes the congenital type of retroversion where none of the above-mentioned associated conditions are present?

When Van Ravensteyn⁷ found that no less than 88% of Indonesian women had retroverted uteri, he tried to explain this high incidence on anthropological grounds. Curtis⁸ expressed similar views by stating that the abdominal and pelvic viscera were designed for a horizontal position on four limbs rather than an upright position on two limbs as has occurred with the evolution of man.

In his classical description of the repair of enteroceles, Read⁹ stated that 'all gynaecologists have observed the variability of the depth of the pouch of Douglas'. When attention is given to this at laparotomy, it is remarkable how many patients with a retroverted uterus have an exceptionally deep *cul-de-sac* there.

It is generally accepted that the uterus is free to rotate about a transverse axis through its only fixed supports, the cardinal ligaments and paracervical tissues.¹ The round ligaments are the theoretical stays of the uterus, but they are such weak structures, especially after having been stretched during pregnancy, that they cannot prevent the bulky, puerperal uterus from prolapsing into the retroverted position, providing the necessary space is available. Even in the non-pregnant state the position of the uterus is liable to considerable variation. With the bladder full, the fundus of the normally situated uterus is directed towards the sacrum, owing mainly to the laxity of the round ligaments. At laparotomy this has often been noticed. It is therefore correct that the round ligaments should be such flaccid structures, and it is difficult to accept that these two narrow, flat bands, even though they contain

muscular tissue, can play any role whatsoever in maintaining the position of the uterus.

Uhlenhuth and his co-workers¹⁰ substantiated the original work of Cuneo and Veau concerning the origin of the rectogenital septum. Anatomical dissections of the pelvis were carried out in adults, and the variability in the depth of the rectogenital pouch of peritoneum was observed. Their observations in infants are even more interesting. With the exception of 1 female full-term infant, in 36 male and female infants varying in age from 6 to 9 months the rectogenital pouch of the peritoneal cavity had already started to retract out of the rectogenital space, and the rectogenital septum was developed. Applying slight pressure to the bottom of the rectogenital pouch, Uhlenhuth easily succeeded in splitting the septum into the dorsal and ventral walls of the pouch. He concluded that the rectogenital septum, as shown for the first time by Cuneo and Veau, is of peritoneal origin and the result of fusion of the dorsal and ventral walls of the rectogenital pouch of peritoneum.

Based on this important work, Moschowitz maintained that it is conceivable that in early embryological life the rectogenital pouch of the peritoneal cavity reaches downwards almost to the perineum. Later it becomes shut off as described above and gradually recedes higher and higher. If this shutting-off process stops early, it is obvious that the *cul-de-sac* of Douglas will be deeper than normal. In view of the laxity of the round ligaments, it becomes clear that such a deep pouch of Douglas creates the necessary space for the uterus to prolapse into and become retroverted. Before puberty the uterus is relatively small, but with its increased size and weight after puberty, this mechanism probably causes the congenital type of retroversion. After a pregnancy this mechanism also comes into play and causes the retroversion of the puerperal uterus.

THE CLINICAL FEATURES OF RETROVERSION IN 18 PATIENTS OPERATED ON IN PRIVATE PRACTICE

It must be re-emphasized that an uncomplicated congenital type of retroversion of the uterus causes no symptoms in most patients. Should symptoms be present, they are usually due to a complicating pathological process. The exceptional case is seen, however, where there is no such complicating pathological condition, where the so-called 'pelvic-pain syndrome' can be excluded, and where the patient complains of menorrhagia, dysmenorrhoea, dyspareunia, low backache, or sterility. On examination the only clinical finding may be the retroverted uterus, often with prolapse of the ovaries. Bimanual pressure on the uterus reproduces the backache and correction of the uterus into the anteverted position and the retention of this position with some type of pessary, relieves the symptoms. Such patients deserve operative correction of the retrodisplacement. In addition, where the major complaint is dyspareunia owing to a prolapsed ovary, and the advice of *coitus a tergo* brings no relief, suspension of the uterus is justifiable.¹

In this series of 18 patients with retroversion of the uterus where operation was considered necessary, the following aspects are of interest (Table I):

Age

The ages of the patients varied from 22 years (case 4) to 38 years (case 3); the average age being about 28 years.

Parity and Sterility

From the case histories of these patients it becomes obvious that retroversion is hardly ever the cause of

sterility. Sixteen patients had produced from 1 to 4 children. Only 2 patients had produced no offspring — cases 8 and 13 — both of whom had been married for 3 years. Case 8 has still not become pregnant 2 years after operation, probably because her husband's sperm count is below 40,000,000 per ml., with 22% abnormal forms. On the other hand, case 13 had hypertecosis ovarii, which caused anovulatory cycles, and she became pregnant 11 months after operation.

Secondary sterility was present in 2 other patients; for 4 years in case 2, who had endometriosis and bilaterally

TABLE I. CLINICAL FEATURES IN 18 PATIENTS SUBJECTED TO OPERATION

Case No.	Name	Age	Parity		Back-ache	Menorrhagia	Dysmenorrhoea	Dyspareunia	Sterility
			Para.	Grav.					
1.	R.B.O.	32	2	2	+	++	++	++	—
2.	R.M.	24	1	1	—	—	—	++	4 years
3.	J.E.M.B.	38	1	1	+	—	++	++	9 years
4.	D.D.B.	22	2	2	++	—	—	—	—
5.	C.v.d.M.	24	1	1	+	+	—	—	—
6.	P.S.R.	29	2	2	—	—	—	++	—
7.	M.M.	30	3	3	++	—	++	—	—
8.	T.C.S.	25	0	0	++	+	—	++	3 years
9.	C. du P.	31	4	4	++	+	+	++	—
10.	E.H.N.	30	2	2	—	+++	—	—	—
11.	G.H.L.	23	2	2	++	—	++	—	—
12.	J.H.L.	32	4	4	+	++	—	++	—
13.	M.M.W.	26	0	0	+	—	++	++	3 years
14.	N.H.F.	23	1	1	+	++	—	++	—
15.	M.A.V.	30	2	2	—	+	++	+	—
16.	G.L.	28	2	2	—	—	—	++	—
17.	S.M.G.	29	1	3	—	+	—	++	—
18.	M.K.	31	3	6	+	++	+	+	—

Menorrhagia: + = the use of up to 2 dozen pads per period; ++ = the use of between 2 and 3 dozen pads per period; and +++ = the use of more than 3 dozen pads per period.

Other symptoms: + = mild, ++ = moderate and +++ = severe.

occluded fimbrial portions of the fallopian tubes, and for 9 years in case 3, who had no associated pathological condition in the pelvis except a small posterior fibroid. She became pregnant 6 months after the operation, and can be regarded as the only patient in whom the retrodisplacement of the uterus could have been the cause of sterility.

Menorrhagia

Eleven patients (61%) had some degree of menorrhagia. In 6 of these it was mild, requiring up to 2 dozen pads per period. Four patients used between 2 and 3 dozen pads, and only case 10 needed more than 3 dozen pads per period.

Dysmenorrhoea

Only 1 patient did not complain of painful periods. Pain is such a difficult symptom to assess correctly that only the 7 patients (33%) with moderate (++) pain should be considered. No patient complained of severe dysmenorrhoea.

Dyspareunia

Painful coitus was absent in only 2 of the 18 patients, so that 88% complained of this particular symptom, which was moderately severe (++) in 9 (50%) of the patients, and severe in 1 (6%).

Backache

Five patients had no backache at all. Of the 13 women complaining of this symptom, it was present to a troublesome degree in 8, and in 5 it was moderately severe (++).

Further Analysis

Further analysis of this small series of patients showed

that 8 women had no complicating ovarian or pelvic pathological condition at operation (Table II). All of these had dysmenorrhoea; 7 complained of dyspareunia; backache was present in 6; only 4 had menorrhagia, and none were sterile. Apart from the retroversion, 10 patients were

in the usual run of patients with a normally situated uterus, seen in everyday practice.

TABLE II. PATHOLOGICAL FINDINGS IN 18 PATIENTS

Case No.	Date of operation	Ovary prolapsed	Associated pathological findings
1	27.1.58	Yes	Nil
2	3.1.59	Yes	Ovarian endometriosis and bilaterally occluded tubes
3	25.2.59	Yes	Small posterior fibroid
4	18.5.59	Yes	Nil
5	29.8.59	No	Ovarian cyst
6	30.11.59	Yes	Nil
7	3.2.60	Yes	Nil
8	6.2.60	Yes	Bilateral sclerocystic ovaries
9	5.10.60	Yes	Nil
10	22.10.60	No	Hyperthecosis ovarii
11	17.11.60	Yes	Nil
12	21.11.60	No	Bilateral sclerocystic ovaries
13	21.12.60	Yes	Hyperthecosis ovarii
14	14.1.61	Yes	Sclerocystic ovaries
15	25.5.61	Yes	Hyperthecosis ovarii
16	15.9.61	Yes	Sclerocystic ovaries
17	5.11.61	No	Nil
18	27.2.62	Yes	Nil

found to have other complicating pathological conditions in the pelvis to which symptoms could be partly, if not entirely, attributed. An interesting feature is that 7 patients had bilaterally sclerocystic ovaries, 3 of which were histologically proved to be hyperthecosis ovarii. Could this not be the result of the retrodisplacement of the uterus causing drag and congestion in the ovaries with resultant increased activity and hormonal overproduction? Over a long period this may cause the typically enlarged, mottled and congested uterus and the dysfunctional uterine bleeding.

Other Case Records

In studying 92 other case records of patients with retroversion of the uterus where operation was not considered justifiable, the following was found:

1. Menorrhagia was the only significant feature and was present in 44, or nearly half these patients.
2. Dysmenorrhoea occurred in 19 patients and was severe in only 3 of these.
3. Dyspareunia, to a mild degree, was present in 20 women and moderately severe in 5 others.
4. Backache was present to a mild degree in about one-third (32) of the 92 patients.
5. Of 9 patients complaining of primary or secondary sterility, an obvious cause was found in 5.
6. Of the 92 patients, only 2 gave a history of having had 2 or more abortions.

The comparison is made to show that the complaints mentioned above do not really occur so much more frequently in the patient with the retroverted uterus than

SURGICAL TREATMENT OF THE RETROVERTED UTERUS

The surgical methods of correcting a retrodisplacement of the uterus found in most standard textbooks of operative gynaecology include:

- (i) The modified Gilliam operation, which is by far the most popular and most commonly used.
- (ii) The Baldy-Webster sling operation.
- (iii) A combination of either of these two plus the approximation of the uterosacral ligaments.⁸
- (iv) Shortening of the round ligaments by plication or suturing the excess length of round ligament to the fundus of the uterus, e.g. the Coffey operation.
- (v) Ventrofixation of the uterus, which is today of historical interest only,¹¹ and has no place in gynaecological surgery.

Various other methods, such as the Alexander-Adams operation, Olshausen's method, or the vaginal suspension of the round ligaments, only prove that none of the above methods is uniformly satisfactory, and that substitutes are always being looked for.

Plas⁵ realized this more than 30 years ago when he stated: 'The fundamental factor leading to the retroposition is not removed by the usual type of suspension operation'. The main reason for this is that none of the methods, except perhaps the combination of sling with approximation of the uterosacral ligaments, take into account the developmental error responsible for the deep pouch of Douglas as an aetiological factor in the causation of the retroversion.

So many complications resulting from the Gilliam type of ventrosuspension are encountered that serious doubt has arisen about the value of the operation. This is probably one of the reasons why the pendulum has swung so far over to the conservative approach.

Disadvantages of Round-ligament Operation

The disadvantages of all the operative procedures involving the round ligaments, especially the Gilliam type of operation, are:

1. They fail to repair the only anatomical defect present, viz. the abnormally deep pouch of Douglas.
2. Most authorities^{1,8} agree that prolapse of the ovaries is one of the major indications for suspension of the uterus, and the Gilliam operation does not effectively prevent this prolapse from recurring.
3. By performing the suspension operation, the anatomical defect is actually made worse. The retroverted uterus, which perhaps effectively blocked the deep *cul-de-sac* of Douglas, is now suspended and the entire intra-abdominal pressure occurs in the pouch. This could certainly lead to the formation of an enterocele. Read⁹ specifically mentioned that pulsion enteroceles may occur in the patient who has been submitted to ventrofixation, and one must realize that the same may happen after suspension of the uterus.
4. If pregnancy follows this operation, considerable pain may be experienced, especially during the early months. There is also an increased risk of abortion.
5. Pain over the site of the implantation of the round ligaments on the rectus abdominis muscle is marked in the immediate postoperative period, and in many patients it persists for years. This complaint was so troublesome in 3 patients

not included in this series that I was obliged to operate again, and to excise and release the hypertrophied nodules which had formed on the rectus sheath.

6. In cases where the uterus has been suspended too tightly, disturbances of bladder function with resultant frequency of micturition not infrequently occur.

7. Suspension of the round ligaments creates pockets in which loops of small bowel may become strangulated.

8. Suspension creates problems when subsequent hysterectomy becomes necessary. Most gynaecologists regard a previous suspension as a contraindication to vaginal hysterectomy. With subsequent abdominal hysterectomy, the fixity of the uterus and the peritonealizing of the stumps of the hypertrophied round ligaments may cause great difficulty.

THE MOSCHCOWITZ OPERATION

Because of the disadvantages of the Gilliam type of ventrosuspension, this operation should be shelved entirely, and should be replaced by the extremely simple and technically easy operation described by Moschcowitz¹² for prolapse of the rectum more than 50 years ago. It seems a great pity that the operation described by Moschcowitz has virtually been ignored by gynaecologists, and has not received the attention it deserves.

Technique

With the patient in the Trendelenburg position, the abdomen is opened in the usual way. The retroverted uterus is pulled out and held with uterine forceps. Two Morris retractors hold the abdominal walls and retract the appendages out of the way. Retracting the bowel exposes the pouch of Douglas. Three to six circular tiers of interrupted silk sutures are superimposed, so as to close the pouch by approximating the peritoneal layers, the posterior leaves of the broad ligaments, and especially the uterosacral ligaments. When the sutures reach the region of the supravaginal portion of the cervix and the

body of the uterus, the sutures are anchored to these structures.¹²

Before tying each suture, the peritoneal surface is snipped in several places with scissors to raw a few areas for better union. An opening, easily admitting 3 fingers, must be left for the sigmoid colon. Care must be taken not to kink the ureters. The insertion of the sutures closing the deep pouch of Douglas leaves the uterus in the upright or anteverted position, and it is mechanically impossible to replace the uterus manually into the original retroverted position.

Advantages

The following advantages of the Moschcowitz operation, as opposed to the suspension type of operation, must be mentioned:

1. It corrects the anatomical defect that was the major contributory factor towards the retroversion.

2. The closure of the pouch of Douglas is a strong prophylactic measure in preventing, or simultaneously treating, an incipient enterocele or prolapse of the uterus.

3. The operation is technically simple and does not distort the pelvic anatomy to cause a possible intestinal obstruction, bladder trouble, or difficulty with future abdominal or vaginal operations.

4. Neither postoperative complications nor discomfort are caused directly by the procedure, in contrast to the position with suspension of the round ligaments.

5. The Moschcowitz operation does not prejudice a future pregnancy.

6. The results of this operation are probably as good as, if not better than, those associated with the suspension type of procedure.

TABLE III. RESULTS OF OPERATION IN 18 PATIENTS

Case No.	Operation performed	Period of follow-up	Result
1	Moschcowitz only	4 years	Uterus AV and all symptoms improved
2	Resection of endometriosis, salpingostomy and Moschcowitz	3 months	Uterus AV and no complaints
3	Myomectomy and Moschcowitz	3 years	Pregnancy in 6 months — uterus in acute retroversion
4	Moschcowitz only	11 months	Uterus AV and no complaints
5	Ovarian cystectomy and Moschcowitz	6 months	Uterus AV and no complaints
6	Moschcowitz only	1 year	Uterus AV and no complaints
7	Moschcowitz only	2 years	Uterus AV and no complaints
8	Bilateral wedge-resection and Moschcowitz	18 months	Uterus AV, but menorrhagia and no pregnancy
9	Moschcowitz only	13 months	Uterus AV and no complaints
10	Bilateral wedge-resection and Moschcowitz	3 months	Uterus AV and much improved
11	Bilateral wedge-resection and Moschcowitz	—	Disappeared
12	Moschcowitz only	2 months	Uterus AV and no complaints
13	Bilateral wedge-resection and Moschcowitz	18 months	Uterus AV and pregnancy occurred
14	Bilateral wedge-resection and Moschcowitz	3 months	Uterus AV and much improved
15	Bilateral wedge-resection and Moschcowitz	6 months	Uterus AV, but menorrhagia severe
16	Bilateral wedge-resection and Moschcowitz	6 months	Uterus AV and no complaints
17	Moschcowitz and appendicectomy	4 months	Uterus AV and no complaints
18	Moschcowitz only	6 months	Uterus AV, periods improved, but backache severe

AV=anteverted.

Results

During the 5-year period, 1958-1962, out of a total of 579 major operations performed in private practice, 18 patients were subjected to the Moschowitz type of operation (Table III)—an incidence of 3.1% of all major operations. If one takes into account the fact that 10 of these patients had associated pathological changes diagnosed before operation, then the incidence of patients who were operated on solely because of the presence of a retroverted uterus drops to 1.4%. Comparative figures over a 5-year period at Groote Schuur Hospital show that 40 suspensions were done out of a total of 5,060 major operations—an incidence approximating 0.8%.¹

Unfortunately, not all the patients in this series of 18 could be traced later, and 8 patients were re-examined at periods of 6 months or less after operation. The longest follow-up is in case 1, who was recently seen 4 years after her operation. In spite of having had another child, she has no complaints and the uterus has remained anteverted.

Ten patients who were specifically questioned about each of their former symptoms, maintained that they were cured of all their ailments.

In 3 patients there was much improvement (cases 1, 10 and 14), while in case 18 moderately severe backache persisted. No orthopaedic or radiological evidence of pathological changes could be found in case 18. Two patients had no relief of menorrhagia. The one was case 15, who had histologically proved hyperthecosis and in whom an adequate bilateral wedge-resection was done in addition to the Moschowitz operation. She had 3 normal periods immediately after the operation, and then started bleeding more profusely than before. The other patient, case 8, has been followed-up for 18 months after the operation, which included wedge-resection of both sclerocystic ovaries. Her ovaries were found to be normal on histological examination. She still has menorrhagia, and has not become pregnant, probably because of her husband's low sperm count (mentioned above).

Case 3 had had secondary sterility after a single child 9 years before. No associated pathological changes were found at operation, and she became pregnant 6 months after the operation. This success was marred by the fact that the uterus retroverted after the delivery, and has remained in the acutely retroverted position ever since. She has been followed-up for 3 years and has moderate menorrhagia and dyspareunia, but no backache at all. She must, however, be regarded as a complete surgical failure, and one can only conclude that the sutures may have torn out during the pregnancy or delivery. In all the other 17 patients the uterus was found to be in the anteverted position. In the other patient (case 13) who became pregnant and was delivered at term, the uterus has remained anteverted. There is, however, a possibility that pregnancy, or more likely, delivery, may destroy the result achieved with the Moschowitz operation.

It is readily admitted that, apart from the 7 patients who have been followed-up for from 1 to 4 years, the other 11 patients were re-examined at too short an interval after the operation to draw any but the most preliminary conclusions. Because so few of these operations are performed, many years will have to elapse before final conclusions about the permanent efficacy of the operation can be made. In the meantime, however, it seems reasonable to submit that the slightly modified technique of the Moschowitz procedure described above has clear advantages over the Gilliam type of ventrosuspension. It is certainly worthy of trial in the occasional patient with a retroverted uterus where operation is indicated.

SUMMARY AND CONCLUSIONS

1. Although surgical correction of retroversion of the uterus is seldom indicated, careful clinical evaluation will uncover the deserving patient who will benefit from operation.

2. The incidence of retroversion in 1,000 gynaecological case records of women in the childbearing age was 19.7%.

3. In 500 obstetrical case records an incidence of 30.8% of retroversion was found at postnatal examination. Since very few of these patients received any treatment, one can conclude that nearly one-third correct themselves as involution progresses.

4. The major aetiological factor in the causation of retroversion is the anatomical defect caused by a failure of retraction of the rectogenital pouch in early life, which leaves an exceptionally deep pouch of Douglas.

5. The clinical features in 18 patients subjected to operation are analysed.

6. The disadvantages of the commonly performed Gilliam operation are mentioned.

7. The modified technique of the Moschowitz operation is described and the advantages discussed.

8. The results of the Moschowitz operation performed on 18 patients with retroversion of the uterus are mentioned.

9. A strong plea is made for discarding the Gilliam type of ventrosuspension in favour of the Moschowitz procedure, which is anatomically more correct.

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