

VAGINAL HYSTERECTOMY

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I. HISTORY

For this operation we are indebted to Czerny, Schröder, Billoth and Mikulicz.¹ A pioneer of whom Italy can always be proud was Berengario da Carpi, who was said to have performed a vaginal hysterectomy in 1517 A.D. (and again at a later date) using the technique his father developed before him.² As far back as the 2nd century (100 A.D.) Soranos' case was probably the first of which we have definite evidence.^{2, 1} In the course of the following few centuries the operation is said to have been occasionally performed in cases where a prolapse of the uterus made the extirpation both imperatively indicated and reasonably practicable, in conformity with the status of surgery at that time. In 1560 Andrea della Croce performed this operation.² During the 17th century several midwives were credited with having amputated prolapsed or inverted puerperal uteri, and early in the 17th century Schenck of Grabenberg reported a series of 26 cases of vaginal hysterectomy.²

Conrad Langenbeck's case (1813) was really the first well-planned operation of vaginal hysterectomy purposely undertaken to eradicate uterine cancer. Apparently the first to use ligatures on the broad ligaments, in cases of vaginal hysterectomy, was Sauter in 1822, to be followed in this new technique by Blundell (1828) and Recannier (1829).² In 1876 Czerny revived the vaginal-hysterectomy technique of Souter of Constance, and the operation rapidly came into vogue both in Europe and America.³

When at the end of last century aseptic surgery became perfected, abdominal hysterectomy was the operation preferred because the chronic appendix could also be removed, and gynaecologists deserted the vaginal attack on pelvic disease. Fortunately of late years, at least in some clinics, the operation has again found its proper place.

2. INDICATIONS FOR VAGINAL HYSTERECTOMY

(a) *Functional Uterine Haemorrhage*

Under this heading are included metropathia haemorrhagica, irregular shedding and irregular ripening of the endometrium, and subinvolution or those cases described at various times as fibrosis uteri and chronic metritis. In a large number of cases of intractable uterine bleeding, no departure from the normal can be discovered by histological examination. In these cases the uterus may be slightly enlarged and often retroverted. If dilatation and curettage and endocrine therapy fail, as they often do, such cases are preferably treated by vaginal hysterectomy, rather than by the induction of an artificial menopause by radiation. The disadvantages of radiation-induced menopause can be briefly given as follows:

(i) It cannot be used before the age of say 45, without causing

severe menopausal symptoms. Before the age of 40 it is not justifiable.

(ii) Too large a dose will cause a radium burn which becomes a sloughing ulcer; and, even if the dosage is correct, a vaginal gauze pack may slip and cause a radium burn. It never heals and sooner or later may cause serious haemorrhage.

(iii) With too small a dose, for example 1,000 mg.-hours, the bleeding may be worse than before therapy.

(iv) It is possible for post-menopausal bleeding to follow at a long interval after the radiotherapy from the development of a telangiectasis of the endometrium.

(v) There is evidence that the incidence of carcinoma of the body of the uterus is higher in those women who have had intra-uterine radium than in the general population. Corscaden *et al.*⁴ reported an incidence of 15 cases of carcinoma of the uterus (9 corpus and 6 cervix) among 958 patients treated for benign uterine bleeding by radiation-induced menopause. They state that in the same number of women in the general population during the same length of time 4.4 should contract carcinoma of the uterus. Smith and Bowden⁵ found that in 752 patients treated by irradiation for benign uterine lesions 0.93% developed carcinoma of the endometrium 10 or more years later.

(vi) An early carcinoma may be undiagnosed at the time of radium therapy, in spite of preliminary diagnostic curettage.

(vii) Leucorrhoea, sometimes prolonged, may be a sequel of radium-induced menopause which has caused a radio-endometritis.

(viii) Ovarian sterilization is the basis of X-ray therapy in many non-malignant conditions such as functional uterine haemorrhage. The dosage required is comparatively small and the sterility may be temporary only, and the patient may become pregnant again with possible effects on the offspring, such as hydrocephalus, eye abnormalities and intra-uterine amputations. The immediate damage may be insignificant in comparison with the damage that might be caused to the race by reason of the production of gene mutations. Bagg⁶ produced abnormalities in animals similar to those in the human race after pre-conception irradiation.

(ix) A strong argument against radium-induced menopause is that an unhealthy cervix may be left.

In bad-risk cases from an anaesthetic point of view, radiation-induced menopause has a place, provided always that adequate diagnostic curettage has been performed to exclude malignancy. One should be particularly cautious in dealing with cases of menorrhagia where there is a delayed menopause, because a higher incidence of endometrial cancer is said to exist in women with a delayed menopause. Hobbs and Crossen⁷ found a delayed menopause to the age of 50 years in 60% of 56 cases of carcinoma of the corpus uteri.

C. M. Gwillim⁸ gives as his opinion that vaginal hysterectomy is no more dangerous than the use of radium and the risk of the anaesthetic is similar.

A. M. Sutherland⁹ has drawn attention to the fact that in a very large number of women not only is no condition of gross or fine pathology found but curetted endometrium shows no abnormality whatever. He analysed 1,000 cases of functional uterine bleeding, and in over half his cases there was a clinical symmetrical enlargement of the uterus. He divided his cases into 5 categories, viz.:

1. Endometrial hyperplasia 30.8%
2. Irregular shedding of endometrium 1.5%
3. Irregular ripening of the endometrium 3%

4. Endometrial atrophy 1.1%
5. Apparently normal endometrium 63.2%

(b) *Endometrial Conditions*

Under this heading we include senile endometritis and endometrial polypi which have resisted conservative measures, and postmenopausal active hyperplasia of the endometrium, regarded by Novak and Yui as pre-malignant.

(c) *Fibromyomata of the Uterus*

The writer does not undertake vaginal hysterectomy where the uterus is larger than the size of a 12 weeks' cyesis, because of the danger of associated adhesions and the mechanical difficulties encountered during removal. Chronic inflammatory changes in the Fallopian tubes and ovaries are often encountered with fibromyomatous uteri.

One should not attack from below fibromyomata which are known to be intraligamentary, and caution should also be exercised with cervical fibroids, especially those which have grown into the subvesical space.

Large growths may be removed by morcellation if the operator has acquired the necessary skill, but it is usually unwise.

The not infrequent association between fibromyomata and carcinoma of the corpus is well known. It is usually wise therefore to make a thorough examination under an anaesthetic with diagnostic curettage in all cases of fibromyomatous uteri for this reason, making sure that all areas of the uterine cavity have been curetted; the examination under anaesthesia will also give valuable information regarding associated pathological conditions in the pelvis and particularly the presence of adhesive processes.

(d) *Adenomyomata or Adenomyosis*

Provided there is no associated pelvic endometriosis, these conditions lend themselves to vaginal hysterectomy. It is said that 10-30% of adenomyomata are accompanied by some degree of pelvic endometriosis. If associated endometriosis is suspected it is better to operate abdominally. In adenomyoma the uterus is rarely enlarged beyond the size of a large orange and the enlargement is usually symmetrical, this being in marked contrast to a uterus which is the seat of multiple fibromyomata. In some cases of adenomyosis there is extra-uterine spread of adenomyoma into the tissues of the broad ligament, uterosacral ligaments and the recto-vaginal septum, and these cases may present considerable difficulties when attacked from the vagina.

(e) *Pelvic-Floor Relaxations Associated with Uterine Disorder*

This is a frequent indication for vaginal hysterectomy and repair. The diseased uterus can thus be removed at the same time as the repair of the prolapse is undertaken; it saves a combined abdomino-vaginal operation or a second operation. There are many gynaecologists today who still prefer to do a total abdominal hysterectomy combined with colporrhaphy, or they do the colporrhaphy at a later date. The writer is convinced that vaginal hysterectomy and repair is the operation

of choice in these cases and the results are most gratifying.

The operative procedure is usually a very easy one because of the lax, capacious vagina and the easy descent of the cervix upon traction.

The advantage of vaginal hysterectomy and repair at one session is obvious to those who have had to do a repair for vaginal prolapse in cases where the uterus had been removed previously.¹⁰

(f) *Pelvic-Floor Relaxations without known Uterine Disorder*

Here the indication for vaginal hysterectomy is not by any means settled as yet. Certainly in a woman in the child-bearing period the Manchester operation, provided there is no indication for sterilization, remains the operation of choice. What of the older woman who has reached the end of reproductive life? There are those gynaecologists who say that vaginal hysterectomy and repair is the operation of choice for cases of this age in which there is prolapse but a normal uterus, because it is neater and gives a more definite approximation, both of Mackenrodt's ligaments and of the uterosacral ligaments, and supports the vault more efficiently and more easily in the treatment of enterocele,⁸ also that when there is a procidentia or when there is a bulky uterus with a long supravaginal cervix the results of the Manchester operation are less satisfactory.⁸

Weaver and Johnson¹¹ state that any operation to relieve the symptoms due to damaged supports, which leaves the uterus (as in the Manchester, Watkins and le Fort operations), or a portion of the cervix (Spalding-Richardson operation), fails to give the opportunity to inspect, and when necessary, remove, the adnexa, and must be considered an 'incomplete operation'. They point out in response to Sir William Fletcher Shaw (1933),¹² that it is unfortunate that in his follow-up he did not give us some information of the number who later developed carcinoma of the uterus, non-malignant uterine bleeding requiring surgical treatment, and ovarian disease, which might have been eliminated by a 'complete operation' in the first place without increasing the primary mortality rate. They pointedly state that there is a trend towards vaginal hysterectomy and repair even in the British Isles today. Palmer,¹³ Hawkins,¹⁴ Veenboer and Kooistra,¹⁵ Danforth and Reynolds,¹⁶ Cadenhead,¹⁷ and Arthure,¹⁸ are all advocates of vaginal hysterectomy and repair.

On the other hand, Shaw (1950)¹⁹ answers the critics of the Manchester repair by stating that those who advocate vaginal hysterectomy and repair write as though the hysterectomy was an essential part of the cure of the prolapse or that the removal of the uterus allows a firmer union of the cardinal ligaments. He emphatically states that the hysterectomy does not improve the effect of the plastic operation, though it may mar it if the deep tissues are not carefully sutured. He states that those who advocate vaginal hysterectomy with the repair must, in doing a Manchester, fail to place the Fothergill's sutures accurately. In his opinion the Manchester operation will cure practically every case, irrespective of age or parity, because it is the logical cure of the con-

dition, which occurs only when the pelvic floor is weak and damaged.

Te Linde and Richardson²⁰ state that the Manchester operation does very well with 1st-degree uterine descensions and at times even 2nd-degree descensions, but they do not consider it a logical procedure where there is complete procidentia.

3. CONTRA-INDICATIONS TO VAGINAL HYSTERECTOMY

(a) Malignant Disease

This is regarded by the writer as an absolute contra-indication.

Schauta²¹ has proposed a radical vaginal hysterectomy for malignant disease of the cervix, but this procedure has become obsolete.

Bastiaanse,²² in his guest paper read at the 13th British Congress of Obstetrics and Gynaecology at Leeds, makes a plea that vaginal hysterectomy has a place in the treatment of carcinoma of the corpus uteri. He argues that the clinically inoperable group, which is so prominent in many statistics²³ is almost non-existent. He gives an operability rate of 96.2% out of 264 patients with carcinoma of the corpus admitted to the Amsterdam University's Women's Clinic between 1938 and 1951. His primary mortality rate was *nil* as compared with a primary mortality of 1 in 33 cases treated by abdominal hysterectomy. The usual objection to the vaginal route in cases of malignancy is that the uterus is squeezed during the course of operation, giving the cancer cells a chance to become implanted in the vagina; also that the clamps placed on the Fallopian tubes are only employed late in the operation. Bastiaanse states that in the vaginal operation the cervix is brought further and further to the outside and one can also see directly when secretion escapes from the cervical canal. It is his opinion that the chance of implantation must be much less after a vaginal operation than after abdominal hysterectomy, because suturing of the cervix pre-operatively in the latter operation will not always prevent the extrusion of these cells. Follow-up of 217 vaginal hysterectomies revealed one recurrence in the vault of the vagina, whereas in the 33 abdominal hysterectomies a recurrence in the vault was discovered in 3 cases. He gives his 10-year cure rate as 70.2% for vaginal hysterectomy and 57.1% for abdominal hysterectomy.

(b) Technical Difficulties due to:

(i) *The Size of the Uterus.* This was discussed above under *Fibromyomata*. In addition it must be stated that if the exact pathology is doubtful it is better to avoid the vaginal approach.

(ii) Adhesions:

(a) Adhesions caused by previous abdominal operations on pelvic organs.

(β) Adhesions caused by pelvic or generalized peritonitis. The history is important.

(γ) Endometriosis. Insurmountable difficulties may be encountered in these cases.

In patients known to have had previous abdominal surgery a vaginal approach must be carefully weighed,

but it should be recognized that even extensive pelvic operations do not necessarily prevent comparatively easy removal of the uterus from below.^{24, 25, 26} The chief contra-indication to a vaginal removal of the uterus is a cervix so fixed that the uterine vessels cannot be ligated satisfactorily.

(iii) *Narrow Vagina.* To a large extent the experience of the operator is the deciding factor here, and also the use of the correct instruments. Another factor is the amount of descent of the cervix.

(c) Ovarian Tumours

If an ovarian tumour of considerable size is present in a patient for whom hysterectomy is indicated, the abdominal route is preferable. Since one cannot be absolutely certain about the character of the tumour, it is better to avoid the vaginal approach. Puncture of either a dermoid or an unsuspected carcinomatous cyst is disastrous.

(d) Post-menopausal Bleeding

In cases where malignancy cannot definitely be excluded, even after thorough curettage, it is better to use the abdominal approach, when a 'good look around' inside the abdomen can take place.

4. TECHNIQUE

The various techniques used are legion and may be found in the standard text-books. The writer has found the following of practical service to him:

(a) The use of 1 : 100,000 adrenaline solution (1 cc. of 1 in 1,000 adrenalin added to 100 cc. of normal saline). This solution, when injected into the paracervical tissues, is of inestimable advantage in aiding haemostasis. In fact the writer uses it for all vaginal plastic operations, and it is absolutely safe in his experience. Forty c.c. of this solution is usually adequate.

(b) By making the initial circular incision around the circumference of the cervix through the vaginal mucosa as low as possible, in all except cases of procidentia, the vaginal canal will not be unduly foreshortened. This practical point is of importance where marital relationships still exist.

(c) The use of a 2-lb weight hooked on to the forceps holding the ends of the traction sutures in the cervix, helps considerably in the descent of the cervix and gives the assistant a free hand for other work.

(d) If the utero-vesical pouch of peritoneum cannot be visualized owing to lack of descent, then time should not be wasted looking for it by further manipulations and dissections, but the utero-rectal pouch of peritoneum should be opened, when a finger inserted into the pouch and curved over the fundus or the upper edge of the broad ligament will readily reveal the identity of the utero-vesical pouch.

(e) A bulky uterus which cannot be easily delivered should be bisected, commencing at the cervix in the mid-line.

(f) Ligatures on the utero-sacral ligaments should not be tied whilst the latter are on the stretch; the pull on the cervix should be relaxed to allow of accurate

and firm ligation and it is better, after using the aneurysm needle to apply the suture, to transfix one end through the substance of the utero-sacral fold to ensure that it does not slip.

(g) Clamping of the broad ligament is a step which should be taken with the utmost care and it is better to use a Kocher's (straight) forceps plus a Spencer-Wells' on each side, because the broad ligament is often too bulky for a single Kocher's forceps and slipping of the pedicle takes place, with consequent haemorrhage not easily controlled owing to retraction into the peritoneal cavity of the slipped portion.

(h) More frequent use of the bladder sound should be made, especially in cases of large cystocele where the bladder comes right down almost to the level of the external os, or of an excessively adherent bladder.

(i) The traction sutures should be placed on the cervix in such a way that the two outside ones are well lateral in order to gain an even pull on the organ; this thus puts the paracervical tissues on the stretch more readily.

(j) To prevent enterocoele, even in simple vaginal hysterectomy where no pelvic floor relaxation is present, it is important: (i) to approximate the utero-sacral ligaments across the mid-line (it is of advantage also to suture the vesico-vaginal fascia to the conjoined utero-sacral ligaments); and (ii) to excise any redundant peritoneum which suggests sac formation, and any redundant vaginal mucosa at the vault which may suggest incipient enterocoele formation.

(k) The post-operative use of 'Furacin soluble' dressing on the perineal suture line has considerably helped healing of the perineum.

(l) The prophylactic administration of urinary antiseptics in those cases which post-operatively show a residual urine of 2 oz or more.

(m) Early ambulation in the older patients, with daily search for possible thrombotic phenomena.

5. CONCLUSION

Vaginal hysterectomy is a most gratifying operation, to both patient and surgeon alike. Holding no brief for surgical gymnastics such as the removal of huge fibromyomatous uteri through the vagina, the writer feels that many cases are more safely dealt with from below, particularly the obese, the cardiac, the diabetic and the elderly. In fact, most poor-risk patients will withstand a vaginal removal of the uterus more safely than by the abdominal route. Most anaesthetists prefer the vaginal to the abdominal approach in cases which present an anaesthetic problem.

The safety of the operation is demonstrated by the mortality rate of 0.31% in 13,939 vaginal hysterectomies performed by 15 gynaecologists working in different clinics in America.²⁵

Besides the low mortality rate the operation has the following advantages over total abdominal hysterectomy:

- (a) Decreased incidence of operative shock.
- (b) Decreased incidence of embolism.¹¹
- (c) Decreased incidence of bladder and ureteral injuries.¹¹ Many authorities, however, will disagree with this.

(d) Decreased incidence of abdominal distension and of intestinal obstruction.

(e) Complete absence of wound disruption and of post-operative incisional hernia.

(f) The saving of a second or double operation in cases requiring removal of the uterus *plus* colporrhaphy.

(g) No ugly abdominal scar.

Total abdominal hysterectomy and vaginal hysterectomy each have their respective places in gynaecological surgery and every surgeon should be equipped to perform either with confidence.

Heany³ wrote: 'It is interesting to note how those who persist in perfecting themselves in the technique of vaginal hysterectomy gradually disregard more and more of the contra-indications so consistently laid down by those with little or no familiarity with the operation'.

One may perhaps say about this that complacency will only lead the operation into disrepute and strict acceptance of the indications and contra-indications will perpetuate the operation and confirm Werner's apt remark that 'the vagina is a God-given passage to the pelvic organs.'²⁷

SUMMARY

1. The indications and contra-indications of vaginal hysterectomy are discussed.

2. Malignant disease of the uterus has always been regarded as an absolute contra-indication to vaginal hysterectomy, but recently Bastiaanse has presented evidence of the place of the operation in cancer of the corpus uteri.

3. Points in technique found to be of service to the writer are discussed.

4. The safety of vaginal hysterectomy is stressed and its advantages over total abdominal hysterectomy are listed, particularly the saving of a second or double operation in cases requiring removal of the uterus *plus* colporrhaphy.

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MITRAL VALVOTOMY IN THE YOUNGER AGE-GROUPS

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Mitral stenosis represents an end stage of rheumatic carditis. It takes 5-15 years to develop after the onset of the initial attack, and usually occurs during the 2nd or 3rd 5-year period after the initial attack.⁸ Thus the occurrence of tight mitral stenosis of a type suitable for operation is unusual under the age of 16 years. The usual lesion in the 1st decade and early part of the 2nd decade is mitral incompetence.²

There are very few reports of mitral valvotomy operations on patients under the age of 16 years. Most of the large series include patients from the age of 18 years and over.^{1, 6, 9} Logan and Turner⁴ have one case aged 16 years in their 100 cases. Lurie and Shumacker⁵ described 3 cases aged 12, 14 and 15 years in which progressive symptoms and disability led to mitral valvotomy.

It is therefore worth recording 4 further cases between the ages of 7 and 14, where predominant mitral stenosis was diagnosed and valvotomy performed. Three of these cases were aged 14 years and one was aged 7 years.

CASE RECORDS

Case 1. G.D., a 7-year-old Bantu, was admitted to Baragwanath Hospital under Dr. E. Kahn on 28 April 1953, with a history of palpitations and cough for 6 months. One week before admission dyspnoea became severe and sweating occurred. The face, feet and lower abdomen became swollen and the child fainted 3 times at school. Six months before admission he had a fever, with pain in the right knee.

On admission he was in a state of congestive cardiac failure.

There was a prominent left parasternal heave extending into the axilla. On auscultation in the axilla there was a loud 1st sound, a mid-diastolic rumble and an opening snap of the mitral valve. There was no systolic murmur, but medial to the apex a systolic murmur was audible. An *electrocardiogram* showed right ventricular predominance and a mitral P wave.

An *X-ray* showed an enlarged heart. The enlargement was confined to the right ventricle. The pulmonary-artery segment was prominent. There was peripheral attenuation of the pulmonary vessels suggesting pulmonary hypertension. The enlarged left auricle caused an indentation of the barium-filled oesophagus in the right anterior oblique view. The right auricle also appeared to be enlarged. (Figs. 1 and 2).

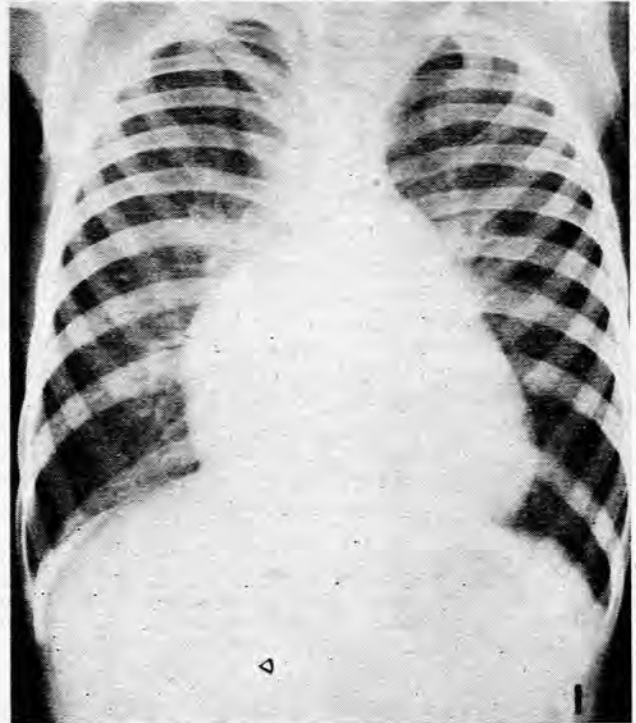


Fig. 1. Case 1: Postero-anterior teleradiogram—Showing selective enlargement of right ventricle, and prominence of pulmonary artery segment.

The child improved on bed rest and the usual treatment with digitalis and mercurial diuretics, but whenever he got out of bed he again went into failure. The erythrocyte sedimentation rate varied, but at one stage was 21 mm. in 1 hour (Westergren).

Operation. Mitral valvotomy was performed on 26 August 1953 by Mr. J. C. v. d. Spuy. A lateral approach was used. The left atrium was large and tense. The mitral valve was funnel-shaped, the orifice being one-eighth of an inch in diameter. The anterior cusp was long and mobile and the posterior cusp was short and thick. The orifice was posterior in position. The valve split easily