

## TOTAL HYSTERECTOMY—VAGINAL OR ABDOMINAL?

HERBERT BURWIG, M.D.

Attending Obstetrician, Deaconess Hospital

BUFFALO, NEW YORK

NO attempt will be made in this paper to justify the accepted procedure of total hysterectomy. Rather, by a review of the indications, limitations and end results achieved, an attempt will be made to attract renewed interest in the vaginal approach. Because it is either forgotten or ignored in some parts of Europe and the United States it is hoped that this study will not only revive but also increase the scope of this now too little employed operation. It was made from the hospital records of the Rudolfspital of Vienna, Germany, on the service of Dr. Paul Werner, and consists of an analysis of 100 consecutive vaginal and 100 consecutive abdominal total hysterectomies. It does not include either Wertheim or Schauta operations as these cannot be classified as simple total hysterectomies. And although it covers but a relatively small series of cases, its value is enhanced by the fact that these operations were all performed by one man who followed closely a uniform technic.

All of these patients were white. They were drawn from the middle and lower classes in which hard, manual work is the rule and not the exception. Their age distribution is shown in Table I to be nearly alike for both the vaginal and abdominal series. Here, as is true in the United States, most of the hysterectomies were performed upon patients between the ages of forty and forty-nine.

The marital status of these patients shown in Table II requires little comment, other than to explain that Roman Catholic nuns have invariably been operated upon by laparotomy in this clinic even though they could have been operated upon through the vaginal route.

It has long been maintained that it is technically more difficult (it has also been considered a contraindication) to perform a vaginal hysterectomy upon a nulligravida than upon a multipara. This is not altogether true, for in the latter as a result of chronic parametritis the operation may be even more difficult due to difficulties in separating the bladder from the cervix, ligating a shortened hard Mackenrodt's ligament and bringing down the uterus. Also women past the menopause may have a vagina so shrunken that the cervix and uterus appear inaccessible. However, an episiotomy in nulligravida and an incision in the lateral vaginal wall in climacteric women will facilitate the necessary approach.

The question of anesthesia is largely one of individual preference. However, spinal anesthesia effects prolonged deep muscular relaxation desirable when performing a panhysterectomy via laparotomy. Because the hysterectomies in the abdominal series were nearly all difficult to perform due to the presence of extensive adhesions and large tumors, spinal anesthesia was employed in 82 per cent of the patients. On the other hand, vaginal hysterectomies are shorter in duration and do not require such deep muscular relaxation. Therefore, intravenous anesthesia was employed in 81 per cent of the series. There were no anesthesia accidents.

In simple vaginal hysterectomies, i.e., those without removal of adnexa and without adhesions, the peritoneal cavity was closed so that the gauze drain was in the vagina only. When adhesions were encountered and adnexa were removed, the peritoneal cavity was left open. In these cases the gauze drain was introduced to just

within the peritoneal cavity. In abdominal hysterectomies, wherever possible, the peritoneal cavity was closed so that only the subperitoneal space was drained. The

(3) postoperative complications developed more frequently. In that series systemic complications played no part (Table VIII). Three patients in the abdominal series re-

TABLE I  
AGE DISTRIBUTION

Age in Years	Vaginal Hysterectomy	Abdominal Hysterectomy
20-29.....	1	0
30-39.....	9	11
40-49.....	56	57
50-59.....	29	23
60-69.....	4	5
70-.....	1	4

Mikulicz's tampon was employed to prevent infection of the peritoneal cavity in which large areas were left raw, rough and denuded of peritoneum following the removal of pus tubes. When absolute surgical

TABLE II  
MARITAL STATUS

	Vaginal Hysterectomy	Abdominal Hysterectomy
Married.....	70	45
Single.....	10	18
Widow.....	13	15
Divorced.....	7	14
Sisters.....	0	8

control of bleeding and oozing surfaces was impossible, a Logothetopoulos tampon was resorted to. One patient was tamponed from above and one from below.

Table VI compares the average number of days spent in the hospital. That average time in days for the abdominal series is greater than for the vaginal series may be accounted for by: (1) the former had more extensive pathology and therefore required more extensive surgery, (2) more than 10 per cent of that series required from ten to forty-five days of preoperative care before surgical intervention could be considered,

TABLE III  
PARITY

	Vaginal Hysterectomy	Abdominal Hysterectomy
Parity 0.....	22	49
Parity +.....	78	51

quired treatment for shock. In all, 18 per cent of the abnormal series could be described as having run an abnormal postoperative course as compared with 12 per cent for the vaginal series. It can be concluded that those patients from whom it is possible to remove the uterus vaginally can be assured of a smoother convalescence and

TABLE IV  
ANESTHESIA

	Vaginal Hysterectomy	Abdominal Hysterectomy
General (open ether).....	18	15
Intravenous (eunarcone).....	81	3
Spinal.....	1	82

a shorter stay at the hospital than when it is removed abdominally, an important factor to remember when operating upon women who must return to their work as soon as possible.

Patients are less apprehensive of vaginal work than of abdominal work, and therefore more readily consent to indicated surgical intervention. There is a lower incidence of postoperative tympanites. Patients are more likely to void spontaneously, and in the presence of respiratory difficulties breathe and cough far more easily following a vaginal hysterectomy than an abdominal hysterectomy. These definite

advantages of the vaginal route over the abdominal route cannot be ignored.

Those patients (Table VIII) suffering from systemic disturbances in addition to their pelvic disorders, severe enough to

TABLE V  
DRAINAGE

	Vaginal Hyster- ectomy	Abdom- inal Hyster- ectomy
Vaginal.....	91	83
Logothetopoulos.....	9	10
Mikulicz.....	0	6
Logo. and Mik. combined.....	0	1

make them poor surgical risks, were given indicated treatment before submitting them to surgery. In the vaginal series four patients were admitted with a past history of adnexitis, one with thrombophlebitis and one with parametritis. In the abdominal series fourteen patients were admitted with a past history of adnexitis, one with a parametritis and one with tubercular peritonitis. All these had been treated non-surgically. In Table IX are noted the operations performed previous to admission upon the patients in both series.

Most operators doing vaginal hysterectomies restrict their work to those patients free from adhesions and to those never previously operated upon. Generally speaking this may be wise, yet it is the experience of this clinic that even some of these (patients previously operated upon and those with adhesions), may be successfully operated upon vaginally. Occasionally, patients are seen whose general condition may be poor and their pelvic inflammation so severe that they cannot be influenced by conservative treatment. For these pelvic invalids the vaginal route is especially advantageous because following the vaginal hysterectomy there will be an absorption of exudates and a relief from symptoms, a most gratifying response to an operation one might reluctantly perform per laparotomy. One real contraindication to a vaginal hysterectomy based upon adhesions is

the presence of a tumor large enough to reach the umbilicus so that the adhesions cannot be brought down to the vagina to be separated under direct vision. Only such severe cases, treated ineffectively for long

TABLE VI  
HOSPITAL DAYS

Average No. of Days	Vaginal Hyster- ectomy	Abdom- inal Hyster- ectomy
Total hospital days.....	19.5	25.4
Preoperative days.....	2.6	5.6
Postoperative days.....	16.9	19.8
Days before ambulatory.....	10.5	11.1

periods, are eventually operated upon per laparotomy.

The complaints (Table X) are similar to those of any larger series of hysterectomies and differ little from each other except that in the vaginal series the incidence of abnormal bleeding was greater and in the abdominal series the incidence of abdominal pain was greater. In a similar table prepared by Dupertius and Zollinger 72 per cent of the abdominal panhysterectomies complained of abnormal bleeding as compared to 25 per cent for the vaginal series. Just why this difference should exist is not known. Although a complete prolapse, especially in older patients, is in many clinics a good indication for a vaginal hysterectomy, only six in this series (none in the abdominal) had a complete prolapse. Evidently, fewer patients presented themselves with this complaint or other operative measures were instituted to control or relieve uterine prolapse.

Table XI reveals that 68 per cent of the vaginal series had a hysterectomy only, while in 70 per cent of the abdominal series both adnexa were removed. That the abdominal series had more pathology and required more extensive surgery does not entirely explain this difference. Today few men when performing a hysterectomy upon a woman near or at the menopause hesitate to remove both ovaries even though they

appear normal and healthy. However, because their removal, when operating from

TABLE VII  
POSTOPERATIVE COMPLICATIONS

	Vaginal Hysterectomy	Abdominal Hysterectomy
Thrombophlebitis.....	5	6
Pulmonary embolism +.....	1	0
Bronchitis.....	1	1
Cystitis.....	10	12
Infection of abdominal wound.....	0	8
Rectovaginal fistula.....	0	1
Pleurisy.....	0	1
Septicemia +.....	0	1
Purulent peritonitis +.....	0	1
Pneumonia.....	0	2

Note: + = death.

below, is not always technically easy and may prolong operating time, it is customary to leave them intact unless they are diseased. On the other hand, when operating from above their removal is so easy that they are usually sacrificed with the uterus.

In the vaginal series anterior colporrhaphy and colpoperineorrhaphy were done when indicated. To facilitate the operation the lateral vaginal wall was incised in five patients who had shrunken vaginas, morcellement in eighteen, enucleation in one, sagittal section of the uterus in eight and incision of the uterus and cervix in two. Because it was not customary to do a routine appendectomy with every laparotomy only two appendices were removed. There were three postoperative and two umbilical herniotomies incidental to the abdominal panhysterectomy.

In the vaginal series (Table XII) the right ureter was injured in one patient. This patient ran a perfectly normal postoperative course until the seventh day when moisture identified as urine escaped from the vagina. When this persisted, three weeks later a cystoscopic examination showed that no urine appeared from the right ureteral orifice. Two weeks later (six weeks postoperative), when spontaneous healing of the ureteral fistula could no

longer be hoped for, an exploratory laparotomy was undertaken. The ureter was exposed to the point of entrance into the bladder without demonstrating evidence of trauma. When division of the ureter at its insertion into the bladder showed urine coming from it, it was decided to implant it into the bladder. That this was successful

TABLE VIII  
SYSTEMIC COMPLICATIONS

	Vaginal Hysterectomy	Abdominal Hysterectomy
Secondary anemia.....	2	1
Cardiac decompensation.....	1	1
Diabetes mellitus.....	1	2
Pulmonary tuberculosis.....	1	0

was demonstrated by the escape of urine from the new ureteral orifice during a cytoscopic examination made two weeks later. In the vaginal series the bladder during its separation from the cervix was slightly injured in one instance but not enough to require repair.

In the abdominal series the bladder was so slightly injured once as not to require repair and three times sufficiently injured to require repair. The rectum was injured in one and the sigmoid in another patient. All these injuries occurred during difficult dissections through dense adhesions and infiltrated areas. All were successfully repaired.

Immediate hemorrhage, that is surface bleeding and oozing at the conclusion of the operation from large wounds or areas denuded of peritoneum whose effective surgical control was either impossible or too time consuming, was controlled with a Logothetopoulos tampon. This occurred four times in the vaginal series, seven in the abdominal. Delayed active bleeding (eighth day) suddenly developed from the right parametrium in one of the vaginal hysterectomies which was readily controlled with simple tamponage.

There was no morbidity in 59 per cent of the vaginal series while 41 per cent required

an average of 5.8 days to become afebrile (30 Celsus). In the abdominal series there was no morbidity in 68 per cent while 32 per cent required 5.9 days to become afebrile. There is, therefore, little difference

in the vaginal series. The ectopic pregnancy was an accidental finding during the abdominal hysterectomy. The carcinoma of

TABLE IX  
PREVIOUS OPERATION

Vaginal Series		Abdominal Series	
Vag. diagnostic curettage..	11	Lap. appendectomy.....	4
Vag. induced abortion.....	6	Lap. enucleation of fibroid..	1
Vag. vaginal tumor?.....	2	Lap. stomach.....	1
Vag. removal of cervical polyp.....	3	Lap. sterilization.....	1
Vag. biopsy of cervix.....	1	Lap. Doleris-Gilliam.....	1
Removal of renal calculi..	1	Lap. drainage of abscess....	1
Vag. anterior colporrhaphy..	1	Lap. cesarean.....	1
Vag. colpoperineorrhaphy..	1	Lap. ectopic pregnancy.....	1
Vag. interposition.....	1	Lap. ovarian cyst.....	1
Vag. vesicofixation.....	2	Vag. induced abortions.....	1
Lap. adnexal tumor.....	2	Lap. adnexal tumor.....	5
Lap. cholecystectomy.....	1	Lap. cholecystectomy.....	1
		Vag. diagnostic curettage..	1

in the temperature reaction between the two series.

An indwelling catheter was employed in nine patients of the vaginal series and in eleven of the abdominal series. Irradiation therapy was given routinely to those in whom a diagnosis of malignancy of either uterus, cervix or ovaries was established. Therefore, eight in the vaginal series and fourteen in the abdominal series were so treated. Two patients in the vaginal series had received x-ray therapy preoperatively in a vain attempt to control functional bleeding of the menopause.

To list all the pathological findings from 200 hysterectomies would be impractical. Therefore, in Table XIII, were enumerated only the chief pathological findings and especially those that appeared to provoke the signs and symptoms indicating a hysterectomy. In common with all other surveys of hysterectomies fibroids occurred most frequently; next, internal adenomyosis for the vaginal series and diseases of the adnexa for the abdominal series. The high incidence of internal adenomyosis is striking especially when it is so rarely listed or even mentioned in similar studies made in the States; yet this diagnosis cannot be questioned, for it was in each instance made by an able pathologist, Dr. Priesel for the Rudolfspital. This finding, however, helps to account for the high incidence of abnormal bleeding complained of by those

TABLE X  
SYMPTOMS

Vaginal Series		Abdominal Series	
Abnormal bleeding....	87	Abnormal bleeding....	52
Back pain.....	21	Back pain.....	20
Abdominal pain.....	30	Abdominal pain.....	57
Urinary disturbances..	3	Urinary disturbances..	6
Leucorrhoea.....	8	Leucorrhoea.....	15
Loss of weight.....	6	Loss of weight.....	7
No symptoms.....	1	No symptoms.....	3
		Pruritus vulvae.....	1
		Sensation of foreign body in vagina.....	1
		Nausea.....	6

the cervix in the abdominal series was not diagnosed preoperatively, otherwise either a Wertheim or Schauta operation would have been performed. The carcinoma of the vaginal series was not diagnosed preoperatively, for the vaginal route is not know-

TABLE XI  
OPERATIONS PERFORMED

	Vaginal Series	Abdominal Series
Hysterectomy.....	68	9
H. + bilateral adnexa.....	20	70
H. + right adnexa.....	5	7
H. + left adnexa.....	1	9
H. + right oöphorectomy.....	1	1
H. + left oöphorectomy.....	1	1
H. + bilateral salpingectomy.....	1	1
H. + left adnexa + right salpin- gectomy.....	1	1
H. + right adnexa + left salpin- gectomy.....	2	0
H. + bilateral oöphorectomy.....	0	1

ingly employed for malignancy of the adnexa.

Follow-up examinations (Table XIV) were made postoperatively at from two to twenty-four months. In the vaginal series eighty-three were asymptomatic at once while eleven required further treatment such as cauterization of granulation tissue or erosion of scar, diathermy treatments, sitz-baths and hot air baths before they became symptom free. Five patients due to anemia, persistent bladder symptoms, sensation of pain in the lower abdomen or to



a sensitive vaginal scar were classified as improved only. In the abdominal series eighty-seven were asymptomatic at once, seven required sitz-baths, diathermy treatments and injection of folliculin before they became symptom free. One patient had a postoperative hernia and three failed to report as instructed.

TABLE XII  
OPERATIVE COMPLICATIONS

	Vaginal Series	Abdominal Series
Injury to ureter.....	1	0
Injury to bladder.....	1	4
Injury to sigmoid.....	0	1
Injury to rectum.....	0	1
Immediate hemorrhage.....	4	7
Delayed hemorrhage.....	1	0

Pulmonary embolism accounted for one death in the vaginal series. This patient ran a perfectly normal postoperative course until the ninth day when without warning she suddenly collapsed and expired within four hours. In the abdominal series there were two deaths. One, on the fifth postoperative day following a panhysterectomy for a large fibroid, started with lobar pneumonia, developed otitis media, acute nephritis and sepsis and expired on the fourteenth postoperative day. The other was an exceedingly poor surgical risk that had been treated conservatively for six weeks preoperatively for pelvic inflammatory disease. Following the difficult removal of the uterus and pus tubes through a mass of adhesions her condition became critical almost at once and, despite supportive treatment, she expired on the seventh postoperative day with a diagnosis of diffuse purulent peritonitis. (All three diagnoses were verified at autopsy.) The first two can really be classified as unpreventable accidental deaths. The third patient was operated upon only as a last resort after nonsurgical treatment had proved ineffective.

A comparison of this mortality rate with that presented by several others is listed in

Table xv. The low mortality rate reported for this clinic may be explained in two ways, (1) other authors have compiled their statistics from the records of several operators with varied technics while this one has been compiled from the records of but one operator; (2) others occasionally perform a panhysterectomy for carcinoma of the cervix or include Wertheims in their

TABLE XIII  
PATHOLOGICAL FINDINGS

Vaginal Series		Abdominal Series	
Fibroids.....	43	Fibroids.....	41
Internal endometriosis	38	Internal endometriosis	14
External endometriosis	2	External endometriosis	4
Salpingitis.....	14	Salpingitis.....	29
Cystic ovary.....	7	Cystic ovary.....	22
Carcinoma of ovary...	1	Carcinoma of ovary...	6
Chronic cervicitis....	5	Chronic cervicitis....	1
Hyperplasia.....	15	Hyperplasia.....	6
Carcinoma of fundus...	5	Carcinoma of fundus...	4
Hydatidiform mole....	1	Sarcoma of fundus....	3
Uterine polyp.....	1	Oöphoritis.....	8
Adenoma destruens...	1	Carcinoma of cervix...	1
Chronic metritis.....	1	Ectopic pregnancy....	1
		Teratoma.....	1
		Brenner's tumor of ovary.....	1

statistics, while in this clinic the Wertheim is performed only for carcinoma of the cervix and these were not included in the survey.

COMMENT

It is hoped that this analysis of vaginal hysterectomies (gathered over a period of two years), and of abdominal panhysterectomies (gathered over a period of four years), none of which have been previously reported will prove to be an acceptable contribution to the literature. That the vaginal route for panhysterectomy should be employed whenever possible has long been maintained by such men as Babcock, Tyrone, Heaney, Kennedy and many others. Chavannaz of France, modern pioneer of vaginal hysterectomy, performs only about 5 per cent of all his panhysterectomies per vaginam while Werner performs about 66 per cent of all his panhysterectomies by that route.

While carcinoma of the cervix or the adnexa, the presence of dense adhesions and a tumor extending up to the umbilicus

and chronic appendicitis remain real contraindications to employing the vaginal route, the marked advantages of this route cannot lightly be ignored. A better appreciation of the shorter operating time, shorter hospitalization, lower mortality and morbidity rates, smoother convales-

TABLE XIV  
FOLLOW-UP STUDIES

	Vaginal Series	Abdominal Series
Asymptomatic at once.....	83	87
Asymptomatic finally.....	11	7
Improved only.....	5	1
Failed to report.....	0	3

cence, fewer operative and postoperative complications and excellent end results achieved would we believe, if generally appreciated, eventually persuade surgeons

TABLE XV  
MORTALITY RATE

	Vaginal Series	Abdominal Series
Witherspoon and Butler.....	2.7	5.3
Faulkner.....	2.9	2.6
Dupertius and Zollinger.....	0.0	4.0
Werner.....	1.0	2.0

to elect the vaginal route in preference to the abdominal wherever possible.

#### TECHNIC

The essential features of a simple vaginal hysterectomy according to Dr. Werner's technic are as follows: circumcision of the cervix at the junction between the smooth part of the mucous membrane immovably adherent to the cervix underneath and the wrinkled movable part; advancing the bladder off the cervix and opening the anterior cul-de-sac; opening the posterior cul-de-sac; tying off the parametria; rolling the fundus forward into the vagina; separation of the uterus from the adnexa; fixation of the peritoneum and the stumps of the adnexa and parametria to the edge of the

vaginal mucosa; and tying together of these last placed lateral sutures, thus closing the cavity. When the adnexa are removed, this last step is unnecessary for a prolapse of the bowel never occurs.

The abdominal panhysterectomy differs but little from the technics commonly employed, although emphasis is placed upon the exact control of hemorrhage by dissecting free all ligaments before opening the vagina and the placing of clamps to both sides of the vagina with adjacent connective tissue. Failure to place these clamps invites oozing from one or both sides of the vaginal walls which can be controlled with difficulty only by placing many ligatures in a field rendered dangerous by the close proximity of the ureter.

The Logothetopoulos tampon differs from the Mikulicz's tampon in that ends of it projecting from the vulva are twisted and under tension fixed to a pessary ring in front of the vulva. This tension is maintained for about six hours. Both the Logothetopoulos and the Mikulicz's tampons are removed gradually, a portion of it being withdrawn day by day until it is finally removed upon the sixth or seventh days. While the tampon is in situ, it is wise to place an indwelling catheter because these patients are rarely able to void spontaneously.

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