

# Influence of a decisional tree on the route of hysterectomy for benign disease in Italy: Personal experience

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## Summary

**Background:** Mainly to report our experience in the route of hysterectomy after introducing specific guidelines according to the Society of Pelvic Reconstructive Surgeons and to record all hysterectomy-related complications after abdominal and vaginal hysterectomies.

**Methods:** The records of 22 patients who underwent abdominal hysterectomy and 59 who underwent vaginal hysterectomy for benign disease were reviewed. Complications related to hysterectomy were recorded during surgery, postoperative hospital stay and a period of six weeks. Statistical methods used were t-tests and chi square analysis.

**Results:** Operation time was shorter with the vaginal route. Patients operated on via the vaginal route had less blood loss and shorter hospital stay.

**Conclusions:** The main standard to select the route for hysterectomy is the severity of the clinical status. Decreasing the ratio between the abdominal and vaginal route is possible, but it is crucial to make the indications clear, based on scientific evidence.

**Key words:** Abdominal hysterectomy; Vaginal hysterectomy; Benign disease; Decisional tree.

## Introduction

Hysterectomy is after appendectomy the most common operation of general surgery in the world and is still the most performed gynecologic intervention [1]. Approximately 600,000 hysterectomies are performed annually in the United States [2] of which 70% are performed by the abdominal route [3]. In Italy there are no population-based studies that are large or that carefully evaluate the frequency of use of this method.

Since the 70s the percentage of women who have undergone hysterectomy has progressively risen due to the improvement in surgical and anesthesiological techniques, with reduction of mortality and morbidity. Moreover since the 80s psychological problems related to this kind of operation began to have importance and they have helped the rise of both medical and surgical alternative therapies [4].

Epidemiological data confirm the increase of hysterectomy: in the United States and Australia research on women over 60 years of age showed that one woman out of three undergoes this type of treatment [5, 6]. In Italy the average incidence is 15% [7]. An Italian study in Lombardy [8] reported data agreeing with European averages – 12.2% of women over 60 have had a hysterectomy.

In 1995 Kovac [9] suggested a selection method for determining the route of hysterectomy. The results of this surgical management report a performable rate of vaginal hysterectomy of 98.2% with a ratio of one abdominal hysterectomy to 68 vaginal hysterectomies. In addition, these guidelines were shown to be useful when applied in a resident clinic population reporting on a performable

rate of VH with a change in the ratio of abdominal to vaginal hysterectomy from 3:1 without the use of guidelines to 11:1 with the guidelines.

The data of the Società Lombarda di Ostetricia e Ginecologia (SLOG) about the years 1996-98 report about 35,000 hysterectomies performed on 210,271 hospitalizations for benign pathology and 3,083 hysterectomies on 5,632 for malign pathology [10].

The SLOG reports that in the years 1996-99 66.3% of the 56,162 hysterectomies performed in women aged 15 or older were abdominal whereas the vaginal route was used in 33.7%; they underline how the transvaginal approach has clearly been conditioned by pathology, which is the indication for the operation [11].

Even if there is not a national register on hysterectomies and only few data about the surgical route chosen in relation to pathology, hysterectomy in the last ten years has been reviewed by the scientific community, mostly because of the change in surgical indications to the operation.

Nonetheless, according to the possibilities considered, there are vast changes in the percentage of hysterectomies performed and the indications for a suitable selection of surgical route for hysterectomy.

In order to explain those differences several factors need to be considered (medical attitude, hospital resources, characteristics and will of patients, etc.) but substantially the difference in incidence of hysterectomy and the kind of hysterectomy could be of minor importance if compared with criteria more subjective than objective in indications for treatment.

At present formal guidelines are rarely used or adopted by physicians in selecting the most adequate route to hysterectomy, thus gynecologic surgeons continue to perform abdominal and vaginal hysterectomy for the same indications. This idea has recently been explained

by Kovac in an editorial [12]; in agreement with the principles of evidence-based medicine, he confirms that appropriate practice guidelines are needed to reduce the inconsistencies in the indications for abdominal and vaginal hysterectomy.

The objective of this prospective study was to report our surgical experience on the route of hysterectomy after introducing in our center specific guidelines [13] according to the Society of Pelvic and Reconstructive Surgeons (SPRS) and to record all hysterectomy-related complications and the subjective outcomes occurring up to one year after abdominal and vaginal hysterectomies performed in our department during that period.

**Material and Methods**

Eighty-one patients undergoing hysterectomy for benign conditions at the Obstetrics and Gynecology Department of Lavagna (GE) between June 2002 and May 30, 2003 took part

in the study. Patients were selected and enrolled in the study in all cases in which hysterectomy was indicated for benign disease. Hysterectomy was performed by the same surgeon in all cases.

All patients who agreed to participate signed an informed consent. The surgical route to hysterectomy was chosen according to the guidelines of the SPRS and after practical training by the surgeon in Atlanta (USA) where those guidelines [14] have been used for a long time.

A decisional tree to establish the correct route to hysterectomy has been introduced for benign disease (Figure 1) [15].

Vaginal hysterectomy (VH) was performed in all cases in which the uterus was accessible transvaginally and had an estimated clinical and ultrasonographic uterine weight less than 280 g or was no larger than the size of 12 weeks of gestation. If serious extrauterine disease was suspected, a laparoscopic exam was performed in order to permit vaginal hysterectomy when possible. Abdominal hysterectomy (AH) was performed when the vagina seemed inaccessible or when there was severe extra-uterine disease.

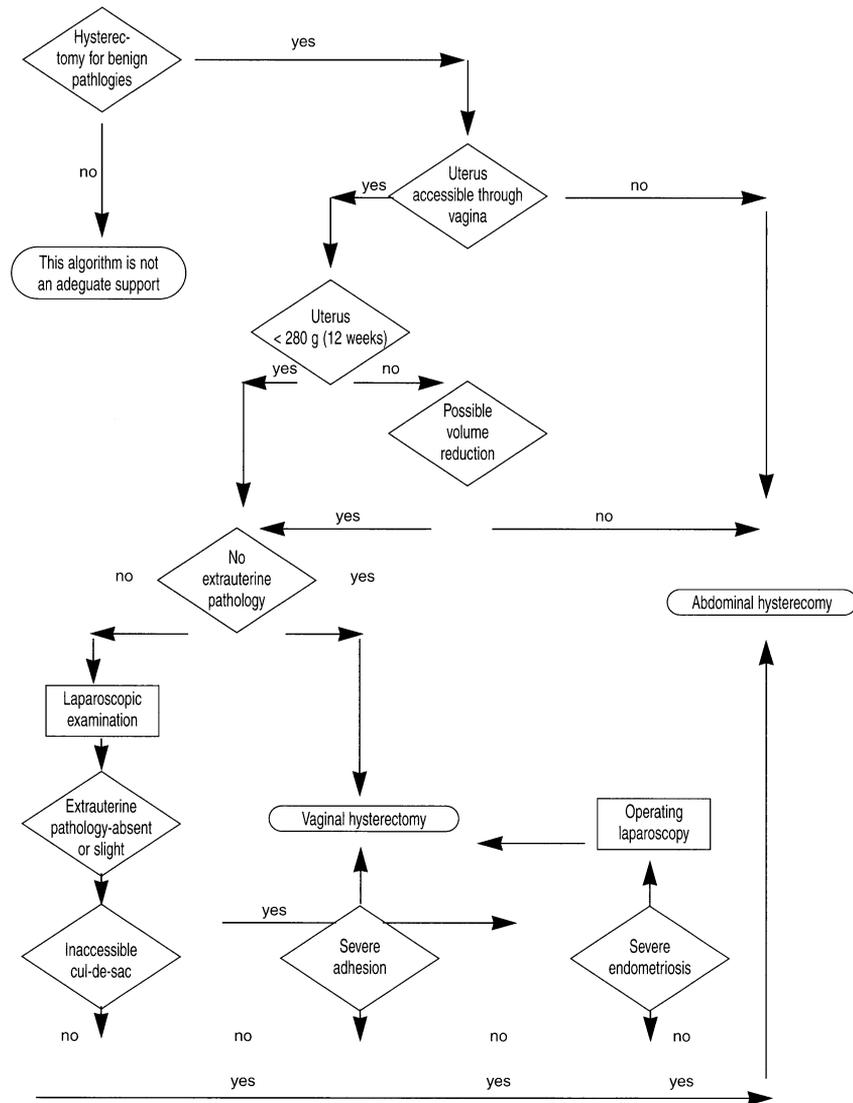


Figure 1. — Decisional tree for the route to hysterectomy (flow chart).

Laparoscopic examination was performed in those patients, generally young, in whom there was suspicion of adhesions, endometriosis, pelvic inflammatory disease or anticipation of other difficulties during surgery or considering the preferences of the patients.

AH and VH were performed under combined anesthesia. All patients received antibiotic prophylaxis routinely and, in selected cases, thrombosis prophylaxis. Demographic, clinical and postsurgical characteristics of women undergoing hysterectomy were recorded for each group (VH and AH group).

Follow-up was six weeks after discharge and then one year later by a questionnaire about the course of convalescence at home or any late problems related to the operation.

Complications related to hysterectomy were recorded during the operation, the postoperative hospital stay, for a period of six weeks at home and is still on-going. Statistical methods used were t-tests and chi square analysis.

## Results

Demographic and other baseline characteristics of the patients are shown in Table 1.

Table 1. — Demographic characteristics of women undergoing hysterectomy.

Characteristics	AH n = 22	VH n = 59	p
Age	47.6 ± 3.7	58.9 ± 3.5	< 0.001
BMI	25.6 ± 2.06	24.3 ± 3.5	0.106
Parity			
0	0	5	NS
≥ 1	22	54	NS
Previous laparotomy	8	2	NS

BMI = Body mass index; NS = Non-significant.

Of the patients, 27.16% underwent AH and 72.84% were submitted to VH.

Patients undergoing AH were significantly younger than patients subjected to VH.

Most patients (64 patients, 79%) had no other medical problems.

The most common associated conditions (totally 17 patients, 21%) were hypertension (7 cases, 41.2%) asthma (5 cases, 29.4%), thromboembolic disease (1 case, 5.9%, recent venous thrombosis with temporary vertebro-basilar ischemia) and diabetes (4 cases, 23.5%).

For the study population, the main indications for operation were prolapse (36 patients, 44.4%), uterine fibroids (32 patients, 39.6%), dysfunctional bleeding (7 patients, 8.6%), and endometriosis (6 patients, 7.4%).

The main indications for VH and AH were fibroids, with or without metrorrhagia.

In four patients who had undergone previous laparotomy, the suspicion of recurrence of endometriosis was strong, laparoscopic evaluation was performed to establish if the vaginal route was possible, and this occurred in two cases.

The remaining operative details relating to the study groups are shown in Table 2.

In the VH group oophorectomy took an average of 21 minutes more than the time required for vaginal hysterectomy with preservation of the adnexa.

Table 2. — Operative features of hysterectomies (with/without salpingo-oophorectomy).

Characteristics	AH n = 22	VH n = 59	p
Operation time (min)	77 ± 3.98	56 ± 2.04	< 0.001
Mean Hgb presurgery (mg/dl)	12.9 ± 1.2	13.1 ± 1.6	> 0.01
Mean Hgb postsurgery (mg/dl)	10.7 ± 1.3	11.2 ± 1.5	> 0.01
Hospital stay (day)	4.8 ± 0.4	3.1 ± 0.2	< 0.001

Of the 59 patients enrolled in the VH group 54 (91.5%) successfully underwent contemporary oophorectomy by the vaginal route.

### Complications during surgery

Intraoperative complications occurred in two patients (2.4% of the total study population). In both cases a small, inadvertent operative bladder lesion occurred – one during AH and one during VH. These were repaired successfully intraoperatively after removal of the uterus. No bowel injuries or ureteral injuries occurred in the two groups.

### Postoperative complications

No major postoperative infections occurred. Minor postoperative infections occurred globally in 18 of 81 patients (22.2%); urinary tract infections were noted in two cases for VH, 0 for AH, and urine retention in five cases (3 cases of VH and 2 cases of AH). Unexplained febrile morbidity occurred in one case of AH and a small hematoma of the vaginal vault in one case of VH.

Infection of the surgical wound site never occurred but there was dehiscence in two obese patients who underwent AH.

Severe bowel dysfunction never occurred in the AH or VH group.

### Convalescence period morbidity

The resumption of ordinary work and social activities for patients who underwent VH was on average 20 days after the operation, while it was 29 days for patients who underwent AH.

Follow-up is still ongoing and up to now no patients who answered the questionnaire have reported serious problems related to the operation, both for the VH and AH group.

## Discussion

The introduction of formal guidelines in our hospital was received with enthusiasm and permitted us to overthrow the previous existing ratio of about 3:1 abdominal vs vaginal hysterectomy. In fact, we have obtained 73% of vaginal hysterectomies and this percentage has had a high impact on costs and length of postoperative stay.

In many hospitals, for example, the need to perform bilateral oophorectomy is still considered a contraindica-

tion to VH, but the use of a decisional tree allowed us to obtain 91% of performable procedures. Our study confirms that in most cases oophorectomy can be performed successfully and easily at the time of VH. The result agrees with Davies *et al's* observations [15] in a perspective study about the timeliness of performing oophorectomy together with VH; it has a 97.5% percentage of success.

Therefore we agree with Kovac [9] about the need to establish specific guidelines regarding uterus dimension, risk factors, uterine and adnexal mobility and accessibility in the selection of the operative approach to hysterectomy so that the number of operations by the abdominal route will be significantly reduced.

The abdominal route in our experience revealed higher postoperative pain, higher morbidity, more complications and longer hospital stay, as widely shown in the literature.

Unfortunately the small number of cases enrolled in the study does not allow us to draw any definitive conclusions but in our experience the use of guidelines has been really useful in selecting the correct route to hysterectomy, thus setting the basis for better clinical management of patients – management founded on concepts of evidence-based medicine.

Further studies are needed to consolidate these observations and we hope that a national and European register will be introduced to definitively establish the right route to hysterectomy.

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