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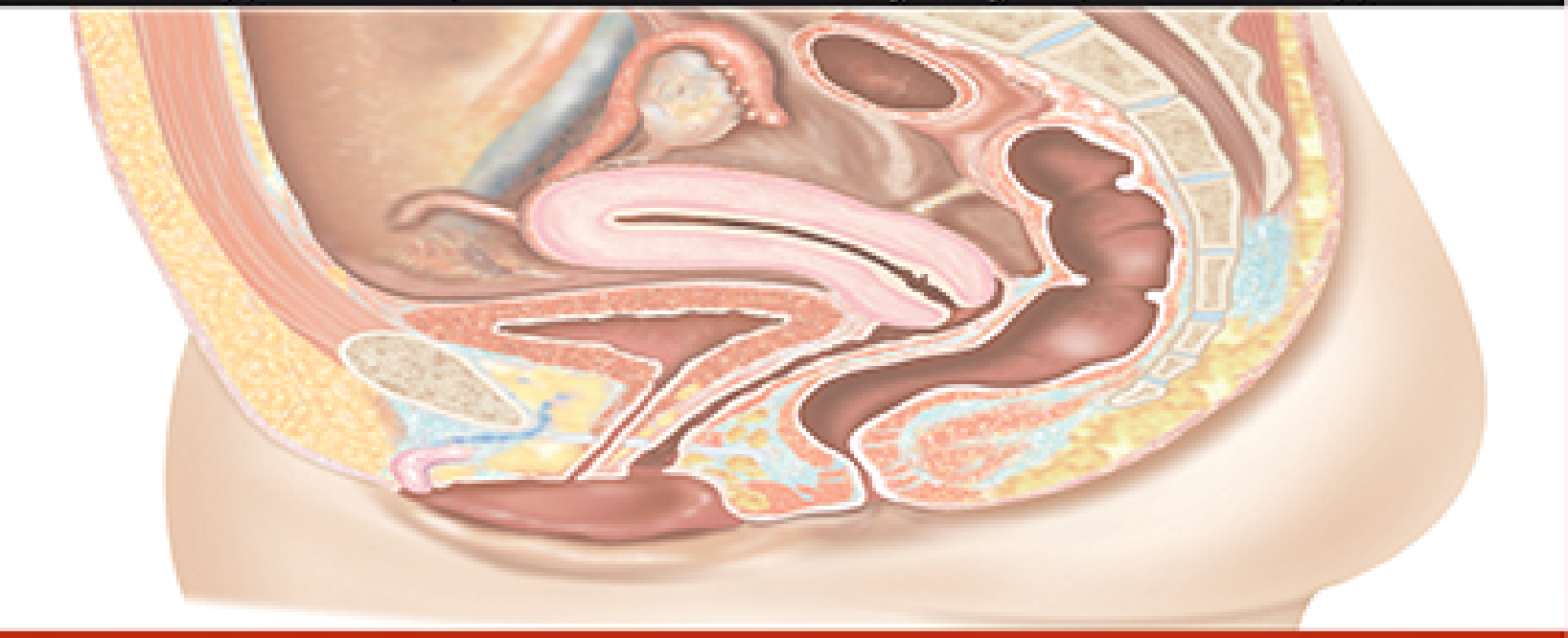

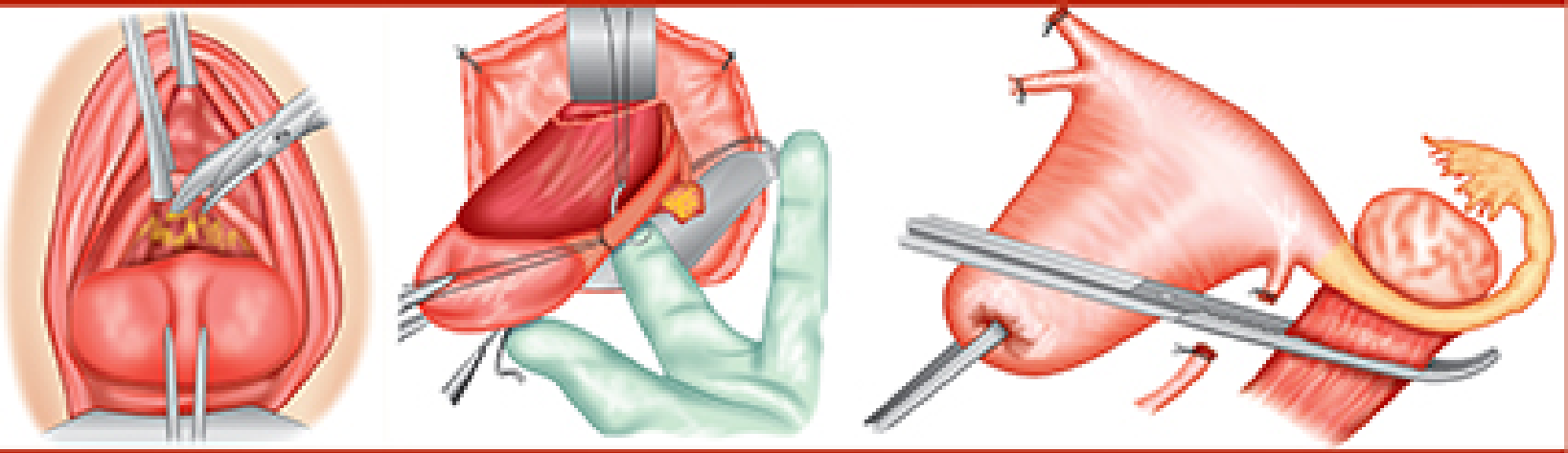

# VAGINAL HYSTERECTOMY

Shirish S Sheth

2nd Edition

JAYPEE

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CHAPTER

# 3 Preoperative Assessment

*Shilpa Shekhar Bhojraj, Shirish S Sheth*

*"We have made surgery safe for our patients, let us make our patients safe for the surgery"*

*—Lord Moynihan*

## BY A GYNECOLOGIST

Every woman who has to undergo a hysterectomy or any other major surgery, whatever the route or technique, needs careful and detailed preoperative assessment (Table 1). This gives the patient and her gynecologist considerable advantages. Complacency and overconfidence have no place in medicine and are very likely to result in a mishap at some time or the other.

Every case for vaginal hysterectomy (VH) needs to be treated on merit—this encompasses the patient's pelvic findings, her gynecologist's operative expertise, facilities at the place of surgery, and current economic situation.

The following few examples illustrate the care the surgeon must take to avoid complications:

- Preoperatively, the patient's blood sugar was not checked, and postoperatively, the patient develops severe sepsis as a result of diabetes
- A blood test for HCV—hepatitis C was not done, and the assisting resident doctor at surgery later develops fulminating hepatic malignancy and succumbs
- A preoperative chest radiograph was not advised, but laparotomy revealed tuberculous tubo-ovarian mass with miliary tuberculosis of the lungs
- The endometrial thickness was not checked in a postmenopausal woman, but at VH the uterus revealed endometrial malignancy on frozen histopathology study
- Ultrasonography shows an ovarian cyst of 5 cm, so the route for hysterectomy was changed from vaginal to abdominal; however, at surgery, the ovaries were found to be normal
- Preoperatively, ultrasonography gave the diagnosis of solid ovarian mass, mostly malignant. Repeat ultrasonography with highly experienced sonologist reported that ovaries are normal with a broad ligament fibroid. Hysterectomy with concomitant broad ligament myomectomy was then performed vaginally without laparoscopic assistance
- The hemoglobin (Hb) level of 19 g/dL in a woman with a uterus that is studded with huge fibroids. The hematologist needed a week to make her safe for the surgery.

### Objectives of the Surgeon Preoperatively

- To confirm the route of hysterectomy
- To assess the fitness for surgery, including anesthesia
- To detect anticipated complications and prepare to tackle them.

### Confirmation of Route of Hysterectomy

Even at teaching hospitals, gynecologists who are not comfortable with the vaginal approach for hysterectomy seek to avoid it under one pretext or another.[1]

- There is no uterine prolapse
- The patient is nulliparous

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**Table 1:** Preoperative investigations: Tests

| |
|---|
| Blood for complete count |
| Blood group and Rh factor |
| Creatinine |
| Urea |
| Sugar—fasting and 2 hours after 75-g glucose /2 hours after lunch |
| HbsAg—Australia antigen |
| Hepatitis 'C' antigen |
| Human immunodeficiency virus (HIV) |
| Bleeding, clotting and prothrombin time, partial prothrombin time, and platelet count |
| Na, K, Cl |
| Urine routine examination |
| Chest radiograph |
| "Pap" smear test |
| *Ultrasonography*: abdomino-pelvic |
| ECG |
| Two-dimensional echocardiography |
| • AST and ALT levels |
| • HPV test |
| • CA125 and allied tumor markers |
| • Glycosylated hemoglobin $HbA_1C$ |
| • CT/MRI |
| • Thalassemia particularly in Mediterranean belt |
| • G6PD in certain geographical areas and communities |
| • Sickle cell testing in Arabs, Afro-Caribbeans, and similarly others |
| • Stress test |
| • Pulmonary function tests |
| • Hysterosonography and saline triage |
| • Intraoperatively: frozen section histopathology |
| • As required |

(ALT: Alanine transaminase; AST: Aspartate transaminase; G6PD: Glucose-6-phosphate dehydrogenase; CT: Computed tomography; ECG: Electrocardiograph; MRI: Magnetic resonance imaging; HPV: Human papillomavirus)

- *There is a fibroid in the uterus*: At surgery and then after one is searching for a fibroid
- *The patient requires oophorectomy*: The ovaries can be removed in >97% of VHs without laparoscopic assistance
- There may be adhesions or endometriosis
- *It is necessary to view the abdominal organs, particularly the appendix*: An examination of the abdominal organs in cases where a definite pathology is suspected would be worthwhile but not as a routine procedure

**Table 2:** Uterine volume in $cm^3$ and vaginal hysterectomy (VH)

| *Uterine volume ($cm^3$)* | *Feasibility of VH* |
|---|---|
| ≤100 | Easy, every gynecologist should do it |
| 101–200 | Gynecologist should be able to do it with patience |
| ≥201–400 | Best performed by a gynecologist with backup experience of above |
| ≥200–300 or more | May need debulking |
| >240–350 | Be scheduled as "TRIAL VH", keep availability of LAVH and/or abdominal hysterectomy |

- *When decision in doubt, final decision can come after patient has been examined under anesthesia*: It is, however, often misused because the surgeon goes on to perform abdominal hysterectomy after often casual examination under anesthesia (EUA) even in the absence of definite contraindication.

In other words, careful abdominal palpation, probing bimanual pelvic examination, and satisfactory speculum examination including if required, in super flexion position are important. Basically, these confirm the vaginal route for hysterectomy and (2) exclude any contraindication to the vaginal route for hysterectomy. The examination is carefully repeated when the woman is under anesthesia to extract more reliable and sharper findings, as the abdominal wall is completely relaxed.

## Role of Ultrasonography

Preoperative ultrasonography provides useful information, which may be difficult to acquire otherwise, especially in obese and/or noncooperative women. This is essential and becomes vital as uterine size increases. The uterine volume is a vital piece of preoperative information (Table 2). The normal uterine volume varies between 30 and 60 $cm^3$. Postmenopausal uterine volume tends to be less around 30 $cm^3$ or even smaller. American College of Obstetricians and Gynecologists Guidelines[2] mentioned 285 $cm^3$ volume for the 12 weeks size of uterus whereas, studies in Mumbai has shown it to be 240 $cm^3$. A uterus with fibroid diagnosed as 12 weeks in size by virtue of its fundal height may have a transverse dimension of 8 weeks an anteroposterior (AP) dimension of 16 weeks. It is important to be guided by the total uterine volume rather than fundal height, which does not give other two dimensions. There is vast difference between slim tall person and obese though not a tall person.

When the volume is >240–350 $cm^3$, hysterectomy should be scheduled as a trial VH, with laparoscopic assistance or laparotomy being available.

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As the art of vaginal surgery is gathering momentum, a significant number of larger uteri will be subjected to morcellation to expedite their removal.[3] Preoperative ultrasonography leads to confidence and gives a clue as to how to access a fibroid site for enucleation and/or morcellation to debulk the uterus. Information about the exact location of a fibroid from the endometrium, internal os, uterine wall, and fundus gives details of the exact site for incision on the uterine wall or endometrium and/or the need for bisection of the cervix upwards to obtain access to the fibroid site.

An experienced sonologist is an essential requirement. Magnetic resonance imaging (MRI) is a superior modality for diagnosing adenomyosis.[4–8] Togashi et al. could differentiate adenomyosis from a fibroid in 92 of 93 women with MRI,[6] although MRI may not differentiate fibroids <2–3 cm from adenomyosis.[5] MRI is more specific in detecting adnexal mass or endometriosis than ultrasonography or computed tomography.[9–12] However, one needs to advise MRI only when its findings can change the management and cost is affordable.

Ultrasonography can help detect fibroids, and differentiate fibroid from adenomyosis and uterine swelling from the adnexal mass, in addition to helping in the search for malignancy. Transvaginal ultrasonography is particularly helpful in looking at endometrial thickness to diagnose endometrial pathology. In a postmenopausal woman, thickness of ≤4 mm means the absence of hyperplasia or cancer.[13] This is of great importance and relevance in decision making and for planning surgery. It can guide the experienced vaginal surgeon in difficult situations either to avoid or to attempt the vaginal route for hysterectomy, besides adequate counseling. Fallacious findings will lead to misguidance about the approach.[14] Machine and man behind the machine are important.

## Previous Abdominal and/or Pelvic Surgery

This is a special group and needs attention (see Chapter 30). For those who do not want to take vaginal route, it is a readymade excuse.

Negative "Pap" test and when required human papillomavirus test with endometrial thickness ≤4 mm will rule out serious cervical and endometrial pathology in postmenopausals.[15]

## Examination under Anesthesia

The gold standard or bottom line for every gynecologist should be: "Give me reliable findings of EUA and I will give you an unambiguous decision on the route for hysterectomy". This singularly important examination should form an integral part of the management of a patient needing a hysterectomy. However, decision comes only after anesthesia is administered, although patient and relatives need it much earlier.

Every VH should be preceded by an EUA, and abdominal hysterectomy should not be considered unless there is a contraindication to VH, which is confirmed under anesthesia.[1] Vaginal surgery, particularly VH, can only be learned and mastered if the findings of clinical, sonographic, and EUA are combined with judgment gained from increasing experience.

The following are the important points that need to be confirmed during assessment for the route of hysterectomy:

- Exclude a contraindication to VH
- Assess uterine mobility, size, and descent. The mobility, physiological descent in all directions needs to be tested in an AP direction, side to side, and upward as well as downward
- Determine the descent of the cervix when traction is applied using a vulsellum on both lips. As a rule, there is always physiological descent, even in a nullipara, and that is sufficient to permit a VH[1]
- In patients with a history of previous surgery (see chapter on Vaginal or Abdominal Hysterectomy) or adnexal pathology, further evaluation by traction test is necessary as follow: If traction on the cervix with a vulsellum applied to the anterior and the posterior lips separately, and later to both the lips, leads to a finding of an external os or cervical lips above the ischial spines that remain firmly positioned without visible descent, the case is not suitable for VH. The essence of this contraindication is a high-stationed cervix without physiological descent, i.e. nondescent even on applying traction
- An inability to visualize the cervix on introducing a full-length large Sim's speculum and visualization only after an anterior vaginal wall retractor is used, together with pulled up posterior vaginal wall signify uterocervical adhesions to the lower abdominal wall—Sheth's cervicofundal sign; this is a definite contraindication for VH.[16,17]

## Descent, Prolapse, and Mobility

Descent and prolapse are relative terms, because excess descent is prolapse as mentioned above. Free mobility is physiological, whereas restricted mobility is pathological. Prolapse is pathological with greater descent even when the patient has not been anesthetized.

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## Findings that Favor VH

- Absence of any contraindication
- Mobility of the uterus in all planes
- Physiological uterine descent (in the absence of prolapse)
- Adequate uterus-free pelvic space around the uterus
- Free vaginal mucosa around both pouches
- Normal cervical length of portio vaginalis with deep fornices; distantly placed short cervix is unfavorable.

## Contraindications

It is important, while assessing the vaginal route for hysterectomy, to exclude the presence of any contraindications that would necessitate a change over to LAVH/TLH or laparotomy. Experienced gynecologist will always maintain that some contraindications to VH are relative[18] and never absolute—they vary only with the skill of the surgeon.[19] Contraindications and excuses are to be differentiated.

Contraindications are as follows:

- Uterus > 12–14 weeks' size
- Uterine volume > 240–350 $cm^3$
- Restricted uterine mobility
- Adnexal pathology
- Cervix, flush with the vagina
- Inaccessible cervix—positive cervicofundal sign (uterocervical adhesions with abdominal wall)
- Vesicovaginal or rectovaginal fistula repair
- Invasive cancer of the cervix.

Although the first four are vital and most commonly sought, the last four are uncommon in day-to-day practice.

For experienced vaginal surgeons, uterine size even up to 16–20 weeks or volume up to 700 $cm^3$ and/or adnexal pathology can be taken as trial VH and/or trial vaginal route cases, respectively.

## Trial VH/ Trial Vaginal Route

A trial is given to vaginal route for performing hysterectomy without any abdominal assistance in women with a contraindication for it or gynecologist has doubt or anxiety. As in obstetrics, alternative modes, in this instance, laparoscopic assistance or laparotomy are made available (see Chapter 10). Furthermore, removal of adnexal pathology via vaginal route is considered as trial vaginal route as hysterectomy may not be difficult or under trial.

## Frozen Histopathology Study

This is mandatory, if VH is performed and if abdominal route is to be spared as well as to be kept available for the laparotomy, if required. Classic example is VH in a woman with endometrial cancer wherein myometrial invasion is to be found on frozen histopathology study OR VH with adnexectomy for a benign adnexal pathology wherein benignness is to be confirmed.

# BY AN ANESTHESIOLOGIST

Preoperative evaluation by an anesthesiologist plays a vital role in reducing perioperative morbidity and helps improve patient outcomes. This essentially encompasses detailed history taking, physical examination and ordering the necessary tests. It is always preferred that the anesthesiologist who is going to administer the anesthesia sees the patient preoperatively. This practice helps establish a rapport with the patient and alleviates her anxiety. Besides, the anesthesiologist can screen the investigations and order the premedication. Postoperative pain and its management should also be discussed with the patient. The anesthesiologist must specifically ask about any known allergies, outcome of previous anesthetic, any pulmonary disease or backache, which would preclude a general/regional anesthesia, respectively. Uncommonly, the family history might suggest malignant hyperpyrexia or pseudocholinesterase deficiency.[20]

Symptoms and signs such as cough, dyspnoea, oedema feet and creps on chest auscultation should be noted. Exercise tolerance gives valuable information about the functional ability in non arthritic women. The anesthesiologist must assess the airway and the venous access. At a minimum, the preanesthetic examination should include vital signs (heart rate, blood pressure, Spo2, respiratory rate, temperature) height, and weight/body mass index (BMI).[20]

The following systems, which need to be evaluated during the preanesthetic check up, are described in brief.

## Cardiovascular System

Cardiovascular complications are the most common perioperative adverse event. Perioperative interventions can modify cardiovascular morbidity and mortality.[21]

### *Hypertension*

A well-controlled hypertensive patient poses no additional risk during any form of anesthesia and can be taken up.

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The antihypertensive medication should be continued on the morning of surgery, except angiotensin converting enzyme inhibitors and angiotensin receptor blockers, which need to be withheld preoperatively.[22] Elective surgery should be deferred if the blood pressure is > 200/115 mm Hg till it is 180/110 mm Hg.[23]

### *Ischemic Heart Disease*

One in 100 patients between 50–59 years has 5–7% risk of perioperative cardiac complications. Revised cardiac index for predicting perioperative cardiac events include previous history of ischemic heart disease (IHD), heart failure, diabetes, cerebrovascular disease, renal insufficiency, and advanced age.[24] Patients with recent (8–30 days previous) Myocardial infarction (MI) should be stabilized with statins, beta-blockers, aspirin, and antifailure medication before proceeding for elective hysterectomy. Aspirin and beta-blockers should be continued perioperatively. Patient with 1–2 clinical predictors for cardiac risk can proceed for surgery with heart rate control.

### *Valvular Heart Disease*

Aortic stenosis (AS) affects 2–4% population > 65 years. Severe AS is a contraindication for elective noncardiac surgery until the valve is replaced.[25] Patients with mitral valve prolapse (MVP) should continue the beta-blocker preoperatively. Prophylaxis for infective endocarditis in patients with valvular heart disease is no longer recommended.[26] Patients with mechanical prosthetic valves on anticoagulants need to withhold therapy 3 days prior to surgery; the same should be restarted on the first postoperative day.[27] It is essential to coordinate with a treating physician.

### *Rhythm Disturbances*

Rhythm disturbances like new onset atrial fibrillation, symptomatic bradycardia, frequent ventricular ectopics usually indicate coronary artery disease/left ventricular dysfunction and would warrant an expert opinion. Elective surgery should be postponed till the patient is stabilized[21] and opined fit for it.

### *Coronary Stents*

Latest guidelines suggest continuing aspirin therapy in all patients with coronary stents and discontinuing clopidrogrel for as short an interval as possible for women with bare metal stents in place for < 30 days or drug eluting stents for < 1 year.[28,29]

## Respiratory System

Following signs and symptoms should be assessed-dyspnoea, cough, sputum production, wheeze, and smoking history. Preoperative preparation includes:[30–32]

- Cessation of smoking at least 4 weeks and preferably 8 weeks before surgery[33]
- Eradicate infection with appropriate antibiotics
- Improve sputum clearance by postural drainage
- Relieve bronchospasm by inhaled corticosteroids and bronchodilators
- Initiate incentive spirometry
- Treat suspected or diagnosed sleep apnea with continuous positive airway pressure/bilevel positive airway pressure (BiPAP)
- Treat uncompensated right heart failure with digoxin, diuretics and oxygen
- Strategy for adequate postoperative analgesia.[34]

Woman with mild uncomplicated upper respiratory chest infection can undergo surgery under an antibiotic cover.[35] If she is febrile with productive cough, surgery should be postponed for 1–2 weeks. Regional anesthesia is preferred with respiratory system disease.

## Diseases of Endocrine System

Diabetes mellitus and thyroid disorders are by far the commonest encountered diseases preoperatively.

Diabetes is diagnosed when the fasting blood glucose is >110 mg/dL. Impaired glucose tolerance is when the fasting blood glucose is <110 mg/dL but >100 mg/dL.[36] Type I (insulin dependent) diabetics are usually young, nonobese, and susceptible to ketoacidosis. Type II (noninsulin dependent) are usually obese and susceptible to developing hyperglycemic, hyperosmolar, nonketotic state. Type I diabetics definitely need insulin and are considered candidates for tight glucose control (79–120 mg/dL). Current data suggests that Type II diabetics do not benefit from tight glucose control[37] and maintaining glucose levels in the vicinity of 150 mg/dL seems adequate to maintain phagocytic activity of granulocytes.[38] The glycosylated hemoglobin ($HbA_1C$) should be <7%. The concern with diabetics is due to multiple organ affection—silent myocardial ischemia,[39] renal insufficiency, peripheral neuropathy, stroke,

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autonomic dysfunction,[40] and poor wound healing. Gastroparesis is common in diabetics making them prone to aspiration. Preoperative administrating of a gastrokinetic agent (Metoclopramide) is recommended in this cohort. Airway should be properly assessed preoperatively as diabetics are candidates for difficult intubation due to limited neck extension. If planning regional anesthesia, the patient should be explained the risk of exacerbation of peripheral neuropathy and consent for the same taken. It is a good practice to consider postoperative intensive care unit management in diabetics with multiorgan affection.

Hypothyroidism may be subclinical with normal T3, T4 but elevated serum TSH levels. A rising TSH level is the most sensitive indicator of failure of thyroid function. Free T3, T4, and TSH levels if not done within 6 months, should be ordered preoperatively, more so if the patient is on amiodarone, which can induce hypothyroidism/hyperthyroidism.[41] Hypothyroid patients should receive their thyroid supplement (levothyroxine) on the morning of surgery. Addison's disease being more common in the hypothyroid patient, some endocrinologists recommend stress doses of steroids preoperatively. Anesthetic requirements and awakening (coming out of anesthesia) may be delayed in hypothyroid women, and hence, the elective surgery should be deferred until euthyroid status is reached. Airway assessment,[42] serum electrolytes, temperature, heart rate are some vital parameters in the preoperative evaluation.

## Diseases of Renal System

The main concern in women with renal disease is making it worse and thereby increasing the chances for renal failure, coma, and death. Risk for perioperative renal dysfunction includes advanced age (>70 years.), diabetes (serum glucose > 16.6 mmol/L), congestive heart failure, anemia,[43] and elevated baseline creatinine (124–177 μmol/L). Preoperatively, fluid volume, electrolytes, diabetic control should be optimized. If dialysis is needed it should be scheduled within 24 hours of surgery. Drugs such as nonsteroidal anti-inflammatory drugs, and aminoglycosides should be immediately discontinued.

## Diseases of Hepatic System

Note should be made of previous history of hepatitis, obstructive jaundice. This would caution the anesthesiologist toward judiciously administering drugs dependent largely on hepatic metabolism.[44] Abnormal liver function tests, if present warrant an opinion from expert gastroenterologist or hepatologist. Corrective measures like administration of vitamin K preoperatively may help in certain coagulopathies. Statins which are commonly administered for hyperlipidemia may occasionally cause liver dysfunction.

## Hematologic Disorders

Anemia is commonly encountered preoperatively either because of menorrhagia or socioeconomic condition in developing nations. Hematocrit of 36% is ideal preoperatively, 30% is acceptable.[45,46] This can be achieved by arresting bleeding with progesterone supplements and building up the hematocrit with iron supplements or recombinant human erythropoietin. If hematocrit is more than 33% autologous transfusion may be considered. Other common hematologic conditions include thalassemia (Mediterranean belt), $G_6PD$ deficiency (Zoroastrians), and thrombocytopenia. Interestingly, von Willebrand's disease (vWD) has the prevalence of 5–15% in women with menorrhagia, particularly in Caucasians.[47] von Willebrand's disease can lead to reduction of factor VIII. vWD responds to treatment with intravenous desmopressin.

Surgery can be safely performed with platelet counts higher than 50,000/$mm^3$. However, if planning for a central neuraxial blockade, minimum platelet count of 100,000/$mm^3$ is desirable.[48] Opinion of a hematologist should always be sought in rare factor deficiency cases.

## Diseases of Central Nervous System

Patient with history of stroke or transient ischemic attack should be evaluated in detail preoperatively. Patient's current status, medications should be charted. Atrial fibrillation with or without left atrial thrombus is a common cause of perioperative stroke and should be ruled out, with two-dimensional (2D) echo. Presence of a left atrial or ventricular thrombus requires minimum of 1 month and preferably 3 months of anticoagulant and possible bridging with shorter acting anticoagulants before elective surgery can be performed.[48]

Patients with Parkinson's disease should be optimized preoperatively and the medication continued till morning of surgery, to avoid perioperative risk of aspiration and autonomic dysfunction.[49]

## Musculoskeletal and Connective Tissue Diseases

Rheumatoid arthritis (RA) and systemic lupus erythematosus need to be mentioned. Patients with RA need

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to be counseled preoperatively regarding regional anesthetic options and need for awake fiberoptic intubation. Multiorgan involvement in both conditions demands a diligent preoperative evaluation.

## Special Anesthetic Challenges

Certain specific factors and/or socioeconomic constraints pose challenges for the safe conduct of anesthesia. A few of these are listed below.

1. *Obesity*: Incidence of obesity has increased globally. A BMI > 40 is predictive of airway difficulties and is often associated with comorbidities including diabetes and cardiovascular disease. These women have higher incidence of hypoxia, increased gastric volume, decreased gastric pH, wound infection, pulmonary aspiration, and sudden death.[20] Premedication is best avoided except an antisialagogue. Prophylaxis for deep vein thrombosis should be considered. Peripheral venous access may be difficult in which case ultrasound-guided central venous cannulation may be needed. Securing the airway may be difficult, so also regional anesthesia. Thus, the anesthetic options should be discussed in detail during the preoperative evaluation. If general anesthesia is administered, postoperative BiPAP may be needed.[50]
2. *Geriatric patients*: Old age may be associated with multiple comorbidities. This subset needs judicious administration of anesthesia. Regional is a better choice for the aged if there is no contraindication for the same. Postoperative ICCU backup is recommended. In elderly patients with complaints of radiating pain in lower limbs, it is good practice to advise an MRI to rule out lumbar canal stenosis before administering a regional anesthetic.
3. *Previous cardiac arrest*: Find out the possible causes from available notes (anaphylaxis, IHD). Discuss the risks involved with the patient, (including high-risk consent). Surgery should be done in an institution with full fledged ICCU facilities. Women who have a cardiac arrest after noncardiac surgery have a hospital mortality of 65% and a nonfatal perioperative cardiac arrest is a risk factor for cardiac death.[51]
4. *Previous failed anesthesia*: Again determine the cause. Was it due to failure to intubate or an unsuccessful regional? With proper attention to details, this problem can be solved.
5. *Previous Takotsubo cardiomyopathy*: Also labeled as broken-heart syndrome or idiopathic or transient left ventricular apical ballooning syndrome is a reversible condition precipitated by a stressful trigger that clinically mimics an acute S-T elevation myocardial infarction and creates a disturbing emergency. However, angiographically, there is no evidence of blockages in the coronary arteries. 90% of reported cases are in women aged 58–75 years old with 3%–5% chance of recurrence.[52] Anesthetist will have to alert himself or herself just as with a woman with history of cardiac arrest in past and gynecologists will have to pick-n-choose anesthesiologist for such a woman.
6. *Anesthesia in rural areas/noninstitutional backup*: There is a constraint on the facilities available, and thus case selection for surgery should be conservative with well-informed consent for the surgery.
7. *Jehovah's witness*: Regional would be better choice due to decreased bleeding as compared with general anesthesia.
8. *Anaphylactic and anaphylactoid reaction*: The most common agents likely to cause the above are muscle relaxants, antibiotics, latex, narcotics, intravenous contrast agents, volume expanders, and blood products.[20,53] Susceptible women should be treated with $H_1$ and $H_2$ receptor antagonists and steroids preoperatively to avert a perioperative crisis. Anesthesia records must mention the same.
9. *Substance abuse*: Common substance abuse is with alcohol, amphetamine, and cocaine. Patients should be drug free well before elective surgery. Acute preoperative abstinence in alcoholics has been associated with poorer postoperative outcome.[54] Benzodiazepines are useful in preventing or treating alcohol withdrawal symptoms. Alcoholics are at risk of alcoholic hepatitis, cirrhosis, cardiomyopathy, hyperpyrexia, vitamin B12 and vitamin K deficiency, and macrocytic anemia.

## Blood Transfusion: Boon/Bane?

Women receiving blood transfusion have more complications (infections, mortality, and morbidity) than those in whom transfusion is avoided. For women at risk for IHD, data indicate that transfusion to a hematocrit level of 29–34% may be appropriate.[55] Otherwise, there are no specific preoperative routines for normovolemic anemia. In elective cases, the Hb level can be built up by controlling the menorrhagia at one end and administering hormones orally such as norethisterone or lynestrenol at other end and prescribing hematinics along with calcium, vitamins, and proteins. In less respondents, additional

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injections of testosterone at 3–5-day interval may help. Vaginal approach reduces the need for blood transfusion – 2.3% compared to 8.6% with abdominal hysterectomy. When the Hb > 11 g/dL, autologous blood transfusion can be considered. Autotransfusion can also be done in the operation theater by practising acute normovolemic hemodilution and perioperative blood salvage using a cell saver. Autologous blood donation predeposit may be limited by the delay in the natural erythropoetic response to allow recovery of hematocrit. Adequate iron support, epoetin alfa accelerates recovery of hematocrit.

It is desirable to keep one unit of blood ready when the woman is Rh negative, Hb < 10 g/dL, thalassemia minor, or difficult surgery with anticipated extra blood loss. It is not uncommon to have women with Hb% as low as 5–7 g needing surgery. Ideal is to build them with hematinics and not by blood transfusion.

## Antibiotic Timing and Prophylaxis for Infective Endocarditis

As per WHO guidelines, ideal time for administration of antibiotics is 30 minutes to 1 hour before surgery. Antibiotic prophylaxis has limited beneficial effect if given before induction of anesthesia.[56,57]

Preoperative single-dose first-generation cephalosporin and metronidazole 500 mg bd for 2–7 days[58] and preferably chlorhexidine or providone iodine vaginally are recommended.[59]

To reduce the incidence of anaphylaxis, GLORIA (Global resources in allergy) recommends that antibiotics be administered intravenously in the preoperative room, and the patient should be monitored for 20–30 minutes before induction of anesthesia to recognize and prevent any anaphylaxis.[53] Patients with prosthetic heart valves or unrepaired cyanotic heart disease only if known to have an established infection or urinary tract colonization with enterococci need to have infective endocarditis prophylaxis.[60,61] Patients with valvular heart disease, atrial and ventricular septal defects, MVP, hypertrophic cardiomyopathy do not routinely need a preoperative antibiotic prophylaxis.[60]

## Preoperative Screening

It is a common practice to carry out a number of tests preoperatively to detect any unsuspected abnormality.

These include complete blood count, liver and renal function tests, coagulation parameters, blood group and Rh factor, chest X-ray, electrocardiograph (ECG), 2D echocardiography, and urine analysis. Blood check for hepatitis C antigen, HBsAg, and HIV have become mandatory. Checking for thalassemia particularly in the Mediterranean belt, sickle cell testing in Arabs, and Afro-Caribbean, $G_6PD$ in certain communities (Zoroastrians) should not be overlooked (Table 1).

Despite this, the concept of standardized testing in all presurgical patients regardless of age is being questioned. Kalpan et al.[62] found that if preoperative biochemical tests were carried out only on those women with specific indications to do so, only 40% of the 2000 preoperative patients that they studied would undergo any tests at all. Roizen and Fleisher[36] observed that there was no justification for routine chest radiographs in patients < 40 years. This may not apply in countries in which tuberculosis is rampant. So also ECG is a class IIb/IIIa recommendation and should be advised only if risk factors for coronary artery disease exist[63] (like diabetes, age > 55 years). ECG taken can be useful as baseline ECG to compare with in future. Special note should be taken of young women diagnosed with breast cancer, who have had left breast irradiation, and now scheduled for vaginal surgery. Left breast irradiation can cause pericarditis, conduction abnormalities, and coronary artery disease, and therefore, preoperative evaluation of cardiac disease and ECG testing is mandatory in them.

Pharmacologic stress tests and myocardial perfusion scan may be indicated only in the elderly who are nonwalkers with a history of IHD. The benefit/risk reduction of these tests is however debatable.

Similarly, pulmonary function tests and arterial blood gases have no perioperative predictive value in patients with pulmonary pathology and thus should be ordered discreetly.[64] In rare instances they may be useful to gauge the severity of the disease. Pulse oximetry can serve as an adequate baseline in most cases.

Women with mild liver disease are usually compensated and tolerate anesthesia well. Bilirubin often appears in the urine before jaundice is apparent and may offer an economic alternative test.

In conclusion, it is not easy to define clear guidelines for screening healthy patients preoperatively. Complete blood count, serum creatinine, urine analysis for the presence of glucose, ketones and bilirubin offer valuable insight and can be done even in remote areas. Thus, a complete preoperative evaluation, which includes both clinical evaluation and correlation with laboratory data, can assist the anesthesiologist in deciding the route of anesthesia.

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Socioeconomic constraints especially in developing nations can also impact the type of anesthesia. In places where full-fledged anesthesia services are lacking, one would prefer a regional anesthesia. However, the availability of emergency drugs, monitors, anesthesia machine, and crash cart cannot be overemphasized.

The risks relevant to anesthesia have decreased over the past several years. Disease and its type have a greater effect on overall outcome. In complicated cases, seeking expert advice is prudent and recommended in the interest of the patient. In high-risk patients, the preoperative evaluation may precede the elective surgery by days or weeks to optimize the patient.

## Counseling and Declining Anesthesia—Role of the Anesthesiologist

Summarizing a large number of studies, the following preoperative findings correlate with perioperative morbidity. These are recent M1, severe congestive heart failure, unstable angina, >5 premature ventricular contractions per minute, blood urea nitrogen > 50 mg/dL, potassium levels < 3 mEq/L, recent unresolved stroke, severe mitral or AS, and significant arrhythmias.[65] In such situations, unless an emergency, the anesthesiologist in his/her capacity as a physician is needed to counsel the patient and her family and either postpone or cancel the surgery as the case demands or may wriggle out as her anesthesiologist.

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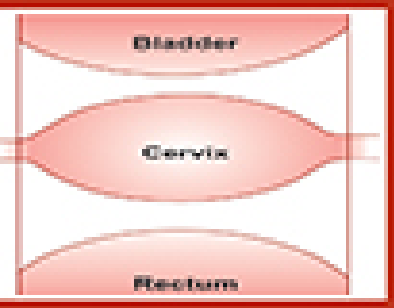
# Vaginal Hysterectomy

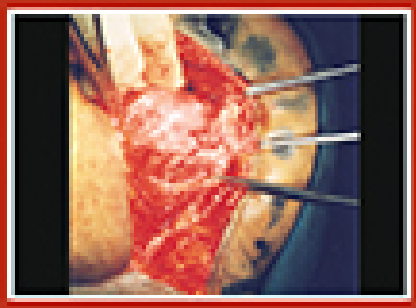
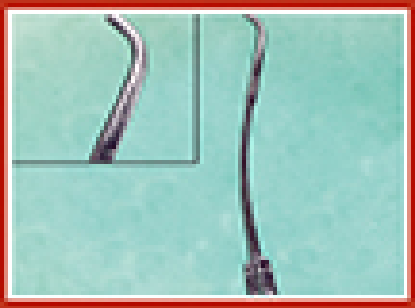
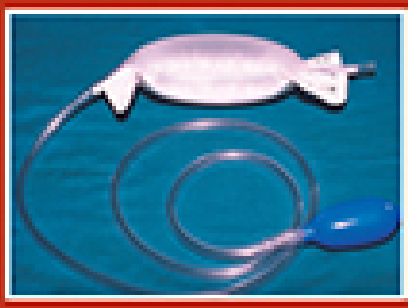
In recent years, advances in technologies, laparoscopic and robotic, have led to renewed interest in the approach per vias naturales to hysterectomy, which has many proven benefits for patients. This volume, dedicated to explaining and promoting the vaginal route of hysterectomy, is written and edited by experienced and dedicated Gynecologist and provides a much-needed source of up-do-date information and guidance.

Importantly, the author cautions that laparoscopic technology can provide a valuable source of assistance for the gynecological surgeon in certain circumstances, though only in 'select' cases. This book, beautifully illustrated with line drawings and full-color photographs, contains step-by-step surgical techniques, enabling the surgeon to gain confidence and experience so that gradually more challenging operations can be managed successfully via the vaginal route or natural orifice. Acknowledged select authorities from India and around the world take the readers through several clinical situations for the vaginal approach, including endometrial cancer and offer an evidence-based elucidation of the 'why', 'when' and 'how' of vaginal hysterectomy.

Specific topics considered here include: Crucial preoperative assessment, the nulliparous patient, uterine fibroids, debulking, prophylactic salpingo-oophorectomy, adnexectomy for adnexal pathology, prolapse repair with or without bolsters, the place of sacrospinous colpopexy, urethral sphincter incompetence, and the hysterectomy and sexuality. Howard Jones brings finale with choice of hysterectomy. The book gives full review of the potential complications, morbidity and mortality associated with the vaginal approach. Contributions from noted expert colleagues beyond India DeCherney, Jones, Kovac, Magos, Magrina, Peloni, Rane and Zimmerman provide to this book and the readers with unbias, well balanced with zero conflict of or vested interest crystallized material through appraisal of hysterectomy via vaginal route. In addition, the author set forth the arguments for and against vaginal hysterectomy, abdominal hysterectomy, laparoscopic assistance, and transcervical resection of the endometrium.

As the incidence of hysterectomy worldwide continues to rise, scientifically the choicest hysterectomy for the sufferer, if all routes and techniques are available as well as possible, will be vaginal hysterectomy and the book ***Vaginal Hysterectomy*** will be an indispensable reference for practicing gynecologists, surgeons, consultants and postgraduates.



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