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GYNECOLOGIC SURGERY PERIOPERATIVE CONSIDERATIONS

PART 1

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A number of considerations concerning patient care apply to all patients and procedures, but some considerations exist that are of unique importance in the gynecologic setting. Since reproduction is essential to the species, there are personal, familial, and social implications in obstetric and gynecologic surgery. This article will begin with a consideration of more universal concerns. Part two of this article will discuss problems and complications of gynecologic surgery.

Outcomes in pelvic surgery

The outcome of pelvic surgery depends on several factors. The following are worth noting:

- The physiologic vigor of the patient
- The surgical skill and knowledge of the surgeon
- The surgeon's knowledge of the disease process
- The resectability of the specific disease
- The status of the disease in terms of severity and reversibility

Notice that three of the factors are biological and may be beyond any control of the surgeon. While the physician will attempt to help the patient enter surgery in as good a physiologic condition as possible, the normal condition of the patient and/or the disease process itself may present conditions that increase the likelihood of negative outcomes.

Preoperative care

The CST or CFA is seldom directly involved with preoperative care outside the final operating room preparation; however, the only way to understand and predict the patient's and surgeon's needs is to understand the big picture.

Many women will use their gynecologist as both their specialist and primary care provider. Without regard to this, the initial examination should be thorough. Preoperative assessments, especially laboratory assessment, are intended to discover any medical problem or disease that might adversely affect the surgical outcome. At a minimum, the following laboratory test should be completed on every surgical patient: hemoglobin level, hematocrit, white blood count, differential blood count, and complete urinalysis.¹

The importance of a good preoperative work-up is demonstrated in a study by Boyd and Groome.⁶ The study focused on morbidity related to abdominal hysterectomy. The study included results from 102 hospitals and 3,322 patients. Hysterectomies related to invasive cancer or complications of pregnancy were excluded from the study. In the study, the strongest predictor

of postoperative morbidity was a preexisting medical disorder. The conclusion drawn by the researchers was that the major causes of morbidity in patients who undergo abdominal hysterectomy are medical, not surgical.⁶

We will now look at preexisting conditions that are of the most critical concern.

Pulmonary evaluation

Pulmonary complications remain a major concern in abdominal surgery. Normal blood gas values are presented in Table 1.

Preexisting pulmonary disease, especially chronic obstructive pulmonary disease, is a significant factor in operative and postoperative complications. In various studies, pulmonary complications have been reported as low as 5% and as high as 56% with lower abdominal surgery.¹ Sten et al found that chronic bronchitis and emphysema led to postoperative atelectasis and pneumonia at a 70% rate in comparison to a 3% rate for patients without these conditions.¹ Gold and Helvich found that patients with preexisting asthma had various operative and postoperative complications at the 24% level in comparison to 14% for the control group.¹ The most frequent conditions are those associated with chronic obstructive pulmonary disease (COPD, Table 2). COPD is caused by emphysema or chronic bronchitis and is highly correlated to smoking.¹ A high blood pressure may develop in the lungs and lead to a cardiac condition called cor pulmonale. Treatment is oriented to relief of symptoms.

While chronic obstructive pulmonary disease is the preexistent factor implicated for most operative and postoperative complications, other factors also contributed to pulmonary complications. These factors are age, smoking, chronic alcoholism, and operative site. The preoperative evaluation should be as complete as necessary according to preexistence symptoms or the physician's level of suspicion. An attempt to control as many of the negative conditions prior to surgery should be instituted. Routine chest X-rays are required prior to all surgical procedures.

TABLE 1 Normal arterial and mixed venous blood gases¹

Measurement	Arterial	Mixed venous	Note
Acid-base (pH)	7.35–7.45	7.33–7.43	Most important acid-base measurement
Partial pressure CO ₂ (PCO ₂)	35–45 mmHg	41–57 mmHg	Adequacy of ventilation and respiratory contribution to acid-base abnormality
Bicarbonate (HCO ₃)	22–28 mEqL	42–28 mEqL	Metabolic contribution to acid-base abnormality
Base excess (BE)	-2–+2	0–+4	Indicates bicarbonate deviation from normal
Partial pressure of O ₂ (PO ₂)	80–100 mmHg	35–40 mmHg	Indicates pressure that is driving the bonding of hemoglobin and oxygen
Hemoglobin saturation (SO ₂)	96–98%	70–75%	Identifies abnormalities in oxyhemoglobin association and disassociation
Hemoglobin concentration	15 g/100 ml	15 g/100 ml	Identifies gas transport abnormalities secondary to anemia
Oxygen concentration	19–20 ml/100 ml	14–15 ml/100 ml	Detects hypoxia

TABLE 2 Characteristics of COPD types¹

Characteristic	Bronchitic type	Emphysematous
Body build	Stocky, obese	Thin, wasted
Age	40–60	Typically >50
Dyspnea	Sustained, progressive	Variable
Cough	Major symptom	Minor problem
Sputum	Generally profuse	Scanty
Wheezing	Episodic	Uncommon
Cyanosis	Common	Uncommon
PaO ₂	Often low	Normal to slightly low
PaCO ₂	Often elevated	Typically normal
Heart failure	Common	None
Respiratory failure	Frequent	Infrequent
Response to therapy	Good	Poor

Cardiovascular evaluation

Cardiovascular disease has received a tremendous amount of public attention in the United States. Success breeds success and new problems. No where is this more evident than in the treatment of cardiovascular disease. Tremendous advances have been made in both the medical and surgical approach to various diseases and conditions of the cardiovascular system. One of the products of this success, however, is that more and more patients live to an old age. These patients bring with them all of the factors attendant with age itself and the ongoing cardio-

vascular disease. Cadanelli et al reviewed 1664 gynecologic cases. They reported a 13.5% incidence of heart disease. The overall mortality rate was less than 1%.¹ These figures demonstrated the need for an adequate preoperative evaluation, early diagnosis, and medical intervention.

Coronary artery disease

Coronary artery disease is a major contributor to mortality rates in the US. The existence of coronary artery disease significantly increases the chance for operative and postoperative complications, and unstable coronary disease creates

major concern. For many years, the data suggested that coronary artery disease was a disease of males and postmenopausal women. Recent data suggest that this is no longer a safe assumption, with the incidence of coronary artery disease growing in premenopausal women. Risk is increased in women over the age of 40 who take an anovulatory drug. Other risk factors are hypertension, hyperlipidemia, diabetes mellitus, and smoking.¹

Diagnosis is made by a history of angina pectoris, documented infarction or ECG evidence of infarction. Two conditions of particular concern are congestive heart failure and the presence of premature ventricular contractions (PVC). Congestive heart failure refers to a condition in which the heart is unable to pump enough blood to meet the needs of other organs. Congestive heart failure may result from several conditions: coronary artery disease, previous myocardial infarction, hypertension, valvular disease, cardiomyopathy, congenital defects, and endocarditis.

PVCs are produced by an irritable area in the ventricles. They cause an irregular heart beat with a characteristic look on an ECG. PVCs have a tendency to come in clusters. They can lead to more severe rhythmic disturbances.

All unstable coronary disease, including infarction within six months, requires a team approach to treatment and the delay of all elective pelvic surgery until the condition is stabilized.¹

Valvular disease

Valvular disease presents another set of problems. Mitral valve prolapse is the most common valvular condition seen these days, and it occurs more often in women than men. In mitral valve prolapse, one or both valve flaps are enlarged. Flap support structures may also be elongated. As a result, the valves do not close smoothly or evenly, but are collapsed backward into the left atrium. This may allow small amounts of blood to leak back into the atrium.¹

All valvular conditions require antibiotic treatment. Surgical repair is usually required. Since warfarin sodium is part of the typical regi-

men of treatment, it should be discontinued several days prior to surgery. Increased awareness and management of the anticoagulated patient is required both in the operative and postoperative period.¹

Hypertension

Mild to moderate hypertension, uncomplicated by cardiac or renal disease, presents only low risk of complication. The medications used to lower blood pressure may present a problem for anesthesia. In the mild to moderate category, medications may be discontinued a few days prior to surgery. If diastolic pressure is in the severe range (>115 mmHg), medications should be continued through surgery.¹

Thromboembolism

Three factors contribute to the development of thromboembolism: (1) hyper coagulability, (2) stasis, and (3) injury to a vessel wall. High risk factors should be evaluated preoperatively. Risk is increased under the following conditions: (1) malignant disease, (2) previous radiation therapy, (3) obesity, (4) severe venous varicosities, (5) leg edema, (6) acute and chronic pelvic infection and (7) use of oral contraceptives.¹

Thromboembolism may manifest as calf vein thrombosis, proximal vein thrombosis or pulmonary embolism. A prophylactic approach may include elastic stockings, use of pneumatic sleeve devices, intraoperative dextran and early postoperative ambulation. Heparin may be used in cases of severe risk. Subcutaneous heparin and/or placement of a Greenfield filter may be used to protect against pulmonary or cerebral embolism.¹

Gastrointestinal system

The gastrointestinal system should be routinely evaluated prior to pelvic surgery. Severe symptoms may require barium enemas or an upper GI series. Barium enemas or endoscopic studies may be required in instances of a positive stool guaiac. The close relationship between the bowel and gynecologic structures requires a special awareness of bowel preparation.

Thorough mechanical cleansing of the bowel is essential prior to elective surgery. If entry into the bowel or resection is anticipated, a complete bowel preparation should be performed. This includes mechanical cleansing using an oral gut lavage solution administered until the diarrheal effluent is clear. Prophylactic antibiotics may be administered.

Urinary system

All patients having major surgery should be assessed for renal function with a serum creatinine and blood urea nitrogen studies. Any demonstrated or suspected dysfunction should be further evaluated and treated. Abnormal renal function changes drug metabolism and increases the odds of adverse drug reactions.¹

Because of their close anatomic relationship, the urinary structures themselves may be affected by gynecologic disease, typically producing a partial or complete ureteral obstruction and secondary hydronephrosis. Lab studies and radiographic images should be part of the preoperative routine. Following a review of 493 cases, Piscitelli et al found that excretory urograms were appropriate in cases where clinical evidence of certain abnormalities existed.¹ The following represent those conditions: pelvic inflammatory disease, endometriosis, pelvic relaxation, uterine prolapse, and prior abdominal surgery.

Musculoskeletal and neurologic systems

Routine evaluations should be performed. Attention should be paid to any defects that increase the risk of complications secondary to the operative position that will be used.¹

Anesthesiologist's classification of operative patients

It falls on anesthesia provider's shoulders, sometimes assisted by other medical specialists, to manage the medical aspects of the surgical patient care. The American Society of Anesthesiologists developed a classification system that allows quick evaluation of the patient's global condition without regard to the medical complexity of some cases (Table 3).²

Preoperative routine

The preoperative routine in the operating room is familiar to all personnel and is included as a reminder that it is a period of stress for the patient (Table 4). These few minutes should be approached with professional awareness and seriousness. The personal, familial, and social implications of surgery on the reproductive system elevate the need for team awareness. One of the most overlooked areas is the use of language. It occurs because the O.R. team is comfortable in the environment and it's their fourth hysterectomy of the day. Ms Jones, however, is not comfortable, and this will be her one and only hysterectomy in a lifetime. For example, saying "Slide down until you feel the hole in the table," may frighten Ms Jones because she wonders if she will fall. Taking the time to explain the table and why you are asking her to move will calm many potential fears.³

Incisions for gynecologic surgery

An abdominal surgical approach requires at least one incision that involves the skin and appropriate musculature. Three general types of incision exist: vertical, transverse, and oblique.

TABLE 3 ASA classification of physical status²

Class #	Patient Characteristics
P1	Normal healthy patient
P2	Patient with mild systemic disease
P3	Patient with severe systemic disease
P4	Patient with severe systemic disease that is a constant threat to life
P5	Moribund patient—not expected survive without the operation
P6	Declared brain dead patient—surgery for purpose of removing donated organs

TABLE 4 Basic preoperative routine³

Action/intervention	Comments/notes
Transport	If hospital policy allows, the patient's family, or at least the most significant other, should be allowed to stay with the patient as long as possible.
Transfer	The patient is gently transferred to the operating table in the operating room or the anesthesia induction room. The team should remain relatively quiet during this time. When speaking, be careful not to use terms that might be misunderstood and could frighten the patient.
Anesthesia induction	If possible, induction of anesthesia should precede shaving and bladder catheterization. Generally, shaving is not required. When required, the lower abdomen, vulva, or both can be shaved after the induction of anesthesia. Time will not be wasted since it takes several minutes to reach a surgical level of anesthesia. A competent team can perform the tasks required within this time. The patient is spared some potential embarrassment and mild pain.
Shaving	Bladder catheterization is often required. This should be performed using the best of sterile technique.
Bladder catheterization	This is the appropriate time for a bimanual examination of the pelvic structures to be performed. Since the patient is completely relaxed, the pelvic organs may be manipulated and appreciated to a degree not possible in the awake patient.
Bimanual examination	Approved techniques should be carefully followed for this part of the preoperative preparation. For safety's sake, it is probably the best practice to prepare the vagina for all major abdominal procedures.
Prepped the perineum and vagina	

In the early days of abdominal surgery, the vertical midline incision, down the linea alba, was overwhelmingly preferred because it provided rapid access. With anesthesia in its developing stage, speed was a major concern for many surgical decisions.⁴

At the turn of the century, four transverse incisions were developed to allow better access to the pelvic area. These are known by the name of their developer: Küstner, Pfannenstiel, Maylard, and Cherney. Oblique incisions are rarely used in gynecologic surgery, and, when used, are usually to provide retroperitoneal access to non-genital structures. The incisions discussed here are for traditional pelvic surgery.⁴

Langer's lines

Langer mapped out cleavage lines in the skin. When skin is cut across these lines, the skin is pulled apart. In the abdominal region these lines are horizontal. As a result, transverse incisions run parallel to the Langer's lines and are under less tension. Generally speaking, transverse incisions in the abdomen produce

finer scars. This advantage must be weighed against the fact that transverse incisions often produce a numb area immediately below the scar.⁴

Pfannenstiel incision

The Pfannenstiel incision is a transverse incision with a slight concavity that looks cephalad. The incision is usually 10-15 cm long and is extended to the level of the fascia of the rectus muscle. The incision can be made at any level the surgeon requires. Of all gynecologic incisions, it provides the most secure wound closure. The Pfannenstiel incision provides somewhat limited exposure. It should not be selected if any of the following exist:

- Known gynecologic malignancy
- Severe endometriosis
- Large leiomyomas that distort the lower ureter
- Reoperation for hemorrhage.⁴

The following steps are used for the Pfannenstiel:

- Make a transverse skin incision, 10-15 cm, with a slight concavity that looks cephalad.
- Extend incision to level of rectus fascia.
- Incise the rectus fascia on each side of the linea alba (beware of large lateral vessels and/or iliohypogastric nerve).
- Cut linea alba (connects to lateral incisions but leaves rectus fascia intact at the midline).
- The rectus sheath on each side is bluntly dissected from the underlying muscle in both cephalad and caudal directions (frees sheath as far as needed between symphysis pubis and umbilicus).
- Rectus muscles are separated in the midline.
- The peritoneum is opened vertically.^{4, 5}
- The fascia is incised transversely, and the incision is carried laterally to the borders of the rectus muscle.
- Inferior epigastric vessels are identified.
- Vessels are bluntly dissected and ligated.
- The muscle is transected.
- The rectus muscle is bluntly dissected from the peritoneum.
- The muscle is transected using electrocautery.^{4, 5}

Küstner incision

Sometimes incorrectly called a modified Pfannenstiel, this slightly curved incision begins below the level of the superior anterior iliac spine and extends to slightly below the pubic hair line. It is extended through the subcutaneous to the aponeurosis of the external oblique muscle and the anterior rectus sheath. This course may bring branches of the inferior epigastric artery into play. If encountered, they should be ligated. The need to secure certain hemostasis makes this a slow incision to develop. It has no particular advantage over the Pfannenstiel or low midline.⁴

Maylard incision

The Maylard incision is a true transverse, muscle cutting incision. All the layers of the lower abdominal wall are incised transversely. It provides excellent exposure and is often used for radical pelvic surgery. If a malignancy is discovered, the cosmetic value of the incision can be sacrificed by curving the incision into a J-shape, or by creating a separate upper abdominal incision.⁴

The Maylard incision is created through the following steps:

- A transverse skin incision is made 3-8 cm above the symphysis pubis (varies with age, weight, and surgical indication).

Cherney incision

The Cherney incision differs from the Maylard in that the rectus muscles are freed at their tendinous insertion into the symphysis pubis. The length of the Cherney incision is equivalent to a midline incision from the umbilicus to the symphysis pubis, plus 25%. The Cherney provides excellent exposure to the pelvic side walls. Like the Maylard, special care must be taken to avoid nerve damage.⁴

Midline incision

The midline incision has several features to recommend its use. It is the least hemorrhagic, provides speedy entry into the abdomen, can be extended easily, and risks minimal nerve damage. The midline incision is easier to develop in the parous woman, because the midline is easier to visualize. A midline incision may be more susceptible to dehiscence and hernia formation. When opening the abdomen of a woman who has a previous midline incision, it is a good practice to open the peritoneum cephalad to the prior incision. This reduces the chances of accidental incision into adherent bowel. The incision allows for inferior development of the Retzius space by extension through the pyramidal muscles.⁴

Paramedian incision

Paramedian incisions which may be further characterized as medial or lateral, appear to have greater strength. Study conclusions conflict on whether or not the paramedian or the midline incision has more complications. It seems that the paramedian may be liable to more postoperative hernias. The paramedian incision is easily

extended. Some problems associated with paramedian incision are increased infection rates, increased blood loss, increased operating time, and the possibility of nerve damage. If the paramedian incision is lengthy, postoperative pain may be increased by respiratory effort.⁴

Closure of vertical incisions

The vertical incisions present more problems for closure than transverse incisions, which are inherently strong. Paramedian incisions may require a layered closure. The midline incision should be closed by suturing the rectus muscles together. Many surgeons still prefer a layered closure for the midline incision. This approach is probably not necessary for most patients with gynecologic disorders. If a layered closure is used, however, sutures should be tied relatively loosely. The major cause of wound evisceration is too many sutures placed too close together and tied too tightly for closure of the fascial edge.⁴

In an effort to avoid this problem, some had advocated a Smead-Jones technique. This technique places sutures so that they alternate in a “far-far,” then a “near-near” approach. Only the anterior fascia is included in the near-near stitch. A large-gauge suture such as a # 1 nylon or polypropylene is typically used. Success of this technique is dependent on the placement of the far-far stitches at 1.5 to 2 cm apart. While this is a strong closure, it is a time-consuming one and may not be appropriate for many cases. Others have advocated using a strong, nonabsorbable suture, taking wide bites through fascia, muscle, and peritoneum. It is not clear that any one approach is superior to the others.⁴

Oblique incisions

While not as common as the transverse or midline incisions, oblique incisions are of value in particular situations. Two incisions that may provide a good exposure for the gynecologic surgeon are the “gridiron” incision described by McBurney; and the Rocky-Davis incision. The gridiron incision is typically used for an uncomplicated appendectomy, the procedure for which it was designed. However, it may pro-

vide excellent exposure for drainage of abscesses that are not accessible through the cul-de-sac. The Rocky-Davis incision is an alternative to the gridiron incision, and essentially has the same uses.⁴ Both techniques are described below.

The steps for the gridiron incision are as follows:

- The skin incision is made obliquely and moved downward and inward, passing over McBurney’s point.
- This incision is carried to the level of the external oblique muscle, which is separated in the direction of its fibers.
- The internal oblique muscle is identified and also separated in the direction of its fibers, as is the transverse abdominis.
- The peritoneum is identified and incised.

The steps for the Rocky-Davis incision are as follows:

- The skin incision is made in the transverse plane, intersecting an imaginary line, extending from the anterior iliac spine to the umbilicus, at a point approximately one-third of the way up the lower end.
- The medial point of the incision extends to the rectus muscle.
- The external oblique muscle is identified and split in the direction of its fibers.
- The internal oblique and transverse abdominis muscles are likewise identified and separated by blunt dissection in the direction of their fibers.
- The peritoneum is identified and incised.

Incisions—extraperitoneal approach

Patients with cervical cancer at advanced stages (IIB-IV) are often evaluated via a staging laparotomy to assess the paraaortic nodes. This operation has been proven to be of value in the past 20 years. Serious bowel problems have been shown to occur more often in a transperitoneal approach than in the extraperitoneal approach, when either is followed by radiation therapy. The advantage of the extraperitoneal approach

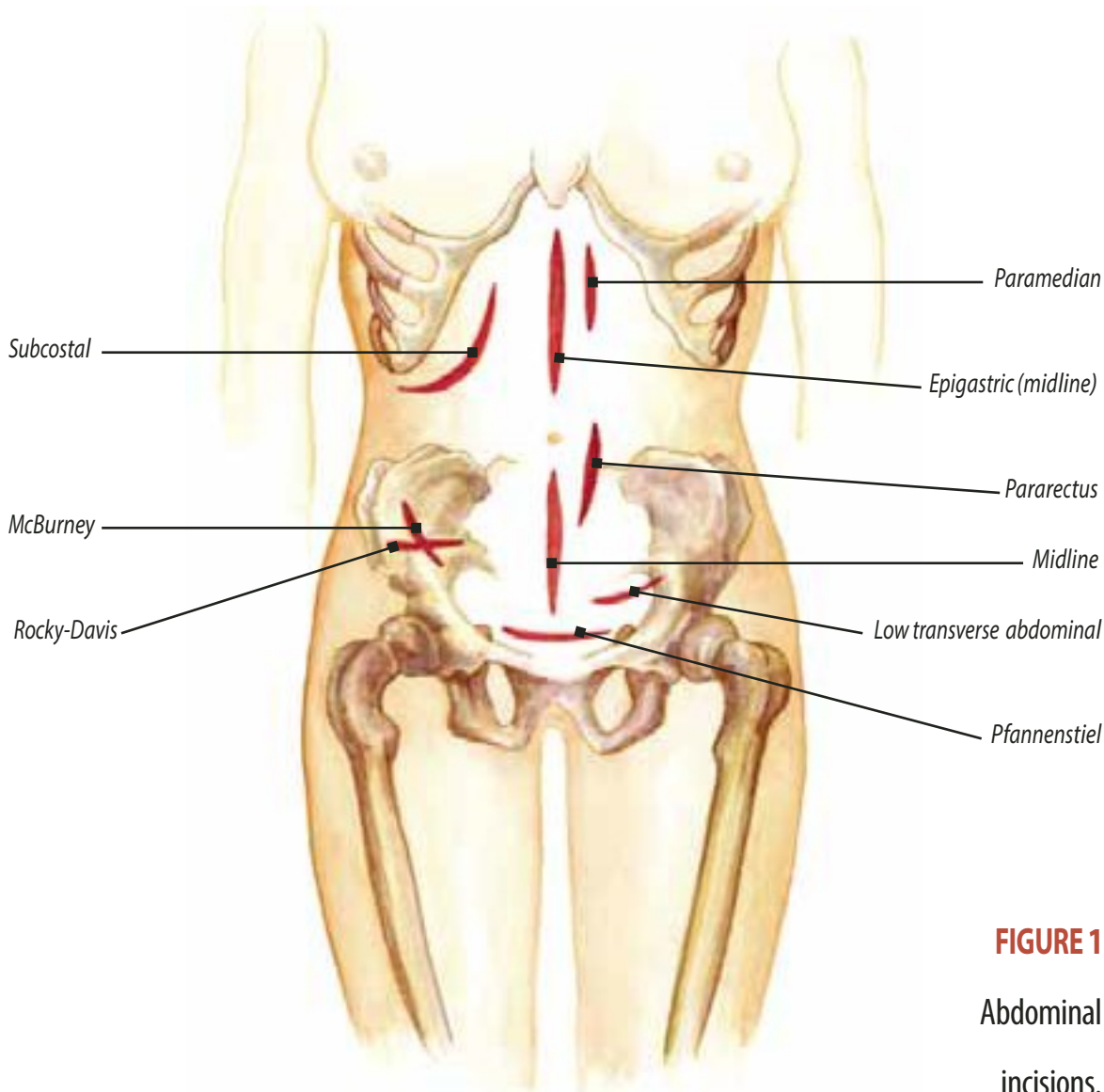


FIGURE 1
Abdominal
incisions.

is that if bulky pelvic nodes are evident or para-aortic nodes contain metastases, they can be removed without entering the peritoneum. Radiation therapy can then be provided with a reduced risk of bowel complication. The removal of the involved nodes also has been shown to increase survival rates. Two types of incisions to accomplish the extraperitoneal approach are explored.⁴

J-shaped incision

The J-shaped incision can be made on either right or the left. It is a modification of the extraperitoneal inguinal incision. The technique used for a right-sided J-shaped incision is as follows:

1. The skin incision is made vertically.
2. Begin just cephalad of the umbilicus and 3 cm medial to the iliac crest.
3. Upon reaching the iliac crest, this incision is continued medially approximately 3 cm and parallel to the inguinal ligament.
4. Fascia layers are then incised separately.
5. The extraperitoneal space is exposed by rolling the peritoneum medially and caudad.
6. The round ligament and inferior epigastric vessels can be ligated and transected to improve exposure.
7. The paraaortic area is then exposed by blunt dissection.⁴

Sunrise incision (right side)

A supraumbilical approach has been developed to allow for evaluation of the paraaortic nodes and earlier initiation of radiation therapy in instances where midline incisions threaten to delay the start of radiation therapy. This incision is called the sunrise incision. The sunrise incision may be initiated only on one side, typically the right. If a bulky mass or the need for more exposure is encountered, the incision is quickly modified into its full sunrise.⁴ The following steps are used:

1. A transverse skin incision is made approximately 4 cm to 6 cm above the umbilicus.
2. The incision is carried laterally in a downward fashion to the level of the iliac crest.
3. The fascia is incised transversely.
4. The rectus muscles are dissected from their attachments to the anterior fascia and transected with a Bovie.
5. The deep epigastric vessels are found posterior to and in the center of the rectus muscle, and should not be exposed or ligated.
6. Bleeding should be controlled by electrocautery.
7. The transversus is identified, and its transaction initiated.
8. The peritoneum is retracted medially and cephalad.
9. The incision in the transversus is then carried more caudally and laterally, completing the transaction of muscle.
10. The retroperitoneal space can now be developed and the procedure continued.⁴

Obese patients—special considerations

The obese patient presents several problems for the surgeon and the anesthesiologist. This is particularly true if the patient is morbidly obese. There may be problems with both placement of the incision and wound closure. Obesity is a high risk factor for postoperative wound infection. One must be aware that transverse incisions involving muscle splitting may be slowed in their development.⁴

Midline approach in the obese patient

The protocol and technique recommended by Gallup is reviewed here:

- Patients must undergo preoperative showering and careful cleansing of the umbilicus.
- A mini-dose of subcutaneous heparin, 5,000 to 8,000 units, is given two hours before surgery. (This is continued every 12 hours postoperatively, until the patients are fully ambulating.)
- Prophylactic antibiotics are not routinely given.
- Abdominal hair is removed with clippers only.
- The panniculus is retracted caudally.
- The initial incision is made below the inferior margins of the symphysis.
- The incision is usually carried around, becoming a periumbilical incision.
- A wound protector is used to provide better exposure and to protect the skin edges.
- The fascial incision is extended to the symphysis.

The closure technique used includes the following:

- The vaginal cuff is closed.
- A closed drain is normally placed.
- The pelvic peritoneum is not closed.
- The fascia is closed.
- The subcutaneous tissues are irrigated with normal saline.
- A Jackson-Pratt drain is placed in the subcutaneous tissue.
- The subcutaneous tissue is not closed.
- The skin is closed with a suture stapler.

Panniculectomy and abdominoplasty

Another approach is to perform a panniculectomy and abdominoplasty. This removes the large panniculus prior to surgery and greatly improves exposure. This technique increases some risk factors, since two additional procedures are added to the gynecologic procedure. A plastic surgeon may be required for best cosmet-

ic results. There are several surgical techniques that may be used to accomplish the objectives of this procedure. While research results have varied somewhat over the years, it appears that this approach is safe and effective, if the patients are carefully selected.^{4,5} Patients should meet the following criteria:

- The panniculus must be large.
- Removal of the panniculus would greatly increase surgical exposure.
- The patient must receive counseling and be motivated to lose weight.
- If the primary procedure is not urgent, it should be delayed until a weight-loss of 40% to 50% of that required has been accomplished.
- During closure of the wound, meticulous detail must be paid to hemostasis.
- Excessive use of the electrocautery must be avoided.
- A firm Elastoplast®, crisscrossed bandage is usually applied over these incisions.^{4,5}

Part two, in the November issue, will cover some of the problems and complications of gynecologic surgery.

About the author

Bob Caruthers, *cst*, *phd*, served as former AST deputy director and director of professional development. He received his BA from the University of Texas, Austin, in 1972 and his PhD in 1995. He started his medical career as an emergency room orderly and was subsequently employed as a certified operating room technician. He later specialized in neurosurgery and developed a consuming interest in the human brain and its study.

He joined the faculty at Austin Community College and later moved to Colorado to work for AST. He was responsible for leading many significant efforts and was executive editor of the first edition of *Surgical Technology for the Surgical Technologist: A Positive Care Approach*, launched a program of educational CD-ROMs, was instrumental in the success of the AST

National Conference and initiated the development of advance practice forums.

In January 2000, Bob was diagnosed with glioblastoma multiforme and faced his illness with strength and determination. In 2002, he lost the battle—and is still missed. This article was excerpted from his manuscript that was related to an OB/GYN advanced practice manual.

References

1. Markham SM, Rock JA. Preoperative Care. In: *Te Linde's Operative Gynecology*, 8th ed. Rock JA, Thompson JD, eds. Philadelphia: Lippincott-Raven Publishers;1997: 95-113.
2. ASA Classification of Physical Status. Association of Anesthesiologists. www.asahq.org/clinical/physicalstatus.htm [accessed 9/10/04]
3. *Surgical Technology for the Surgical Technologist: A Positive Care Approach*. Caruthers BL, et al, eds. Albany, NY: Delmar Thomson Learning; 2001.
4. Gallup DG. Incisions for Gynecologic Surgery. In: *Te Linde's Operative Gynecology*, 8th ed. Rock JA, Thompson JD, eds. Philadelphia: Lippincott-Raven Publishers;1997: 285-310.
5. Wheelers Jr CR. *Atlas of Pelvic Surgery*, 3rd ed. Baltimore: Williams and Wilkins; 1997: 362-367.
6. Boyd ME, Groome PA. The Morbidity of Abdominal Hysterectomy. *Can J Surg*. 1993 Apr;36(2):155-9.