
Surgical Emergencies in Obstetrics & Gynecology

The Surgical Care of Women in Operational Settings

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This syllabus is designed to provide good advice to surgeons who treat women with gynecologic problems in isolated settings where gynecologic consultation is not readily available.

It is not all-inclusive and is not intended to replace good clinical judgment nor in-depth textbooks which should be consulted whenever appropriate.

As in most areas of medicine, there may be more than one way to deal with any particular gynecologic problems. For simplicity, one basic approach is usually given here. There are often other approaches which will give very good or superior results.

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The need for gynecologic surgery may arise in isolated settings, or during military operations when consultation is restricted and medical support limited. At such times, surgeons of varying experience and training may be required to perform gynecologic surgery.

Principles of Gynecologic Surgery

The basic principles of surgery apply to gynecologic surgery with a few special considerations:

Preservation of Childbearing Potential. Preserve as much of the reproductive organs as is reasonable. The loss of a single ovary or fallopian tube is preferable to loss of both. However, leaving the patient's life in jeopardy to preserve childbearing potential is ill-advised.

Conservation of Ovarian Function. Conserving even a small amount of ovarian tissue will result in normal hormonal function. Removing just the ovarian cyst and not the entire ovary will allow continued ovarian function, even if only 10% of the ovary remains.

Avoid Damage to Other Important Structures. The bowel, bladder and ureters are very close to the uterus, cervix, tubes and ovaries. Damage to adjacent structures is not uncommon even when surgery is performed competently, by experienced gynecologic surgeons, in well-equipped settings.

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Surgical Procedures

Repair of Vaginal or Vulvar Lacerations

These lacerations may result from childbirth, sexual assault, accidents or hostile fire.

Because this area is quite vascular, primary closure is preferred in an acute setting. In cases involving delayed treatment (>24 hours after the injury), it may be preferable because of tissue inflammation and infection to allow secondary healing followed, if necessary, by a later repair.

Bladder Lacerations

Lacerations of the bladder can be diagnosed with retrograde injection of dye through a Foley catheter. Repair should be in multiple layers, using absorbable sutures, without tension. A very acceptable alternative is simple drainage with a Foley or suprapubic catheter. Many cases of small lacerations will close spontaneously over time with this type of urinary diversion and those that don't may be closed electively weeks to months later.

Rectal Lacerations

Lacerations of the rectum may be closed primarily with multiple layers of absorbable suture. The need for fecal diversion should be determined by the mechanism and magnitude of the injury. If treatment has been delayed or there is evidence of significant inflammation of the edges of the laceration, surgical closure should be delayed weeks or

months until the inflammation has subsided. During this time, fecal incontinence will need to be tolerated.

If the rectal sphincter has been torn, it will retract back into the surrounding tissue, creating a 1-2 cm. "crater." Identify this crater with your finger, then grasp the retracted muscle with an instrument and bring it back to the midline. Suture the edges of the sphincter together, making sure to include the fibrous capsule of the muscle. This will allow proper healing and promote subsequent fecal continence. Failure to close the sphincter is not disastrous, but will usually result in fecal incontinence to some degree and a later corrective procedure.

Other Lacerations

Other soft tissue lacerations are usually easily repaired with such absorbable sutures as 2-0 Vicryl or 0-Chromic. A simple running or running locking stitch works well for most of these.

When the laceration involves the anterior vaginal wall, avoid deep placement of sutures since the bladder and urethra are usually within a few millimeters of the vaginal mucosa. Placing a Foley catheter in the bladder prior to suturing will help to outline the important anterior structures to be avoided.

If the laceration involves the posterior vaginal wall, remember that the rectum can be within a few millimeters of the vaginal mucosa. Many gynecologic surgeons find it advantageous to place the index finger of the non-dominant hand in the rectum while suturing the posterior vaginal wall.

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Lacerations involving the lateral vaginal walls are best sutured with good assistance (retraction) and good lighting. When these lacerations are high in the vagina, they are both more difficult (because of exposure and lighting problems) and more dangerous. The ureter courses next to the cervix in the parametrial tissues but becomes accessible to accidental vaginal suturing if the sutures are placed deep and high in the vagina.

Vulvar Hematoma

Vulvar hematoma is common following a "straddle injury." These hematomas are unilateral, painful and can be large (6-8 cm.). Place a Foley catheter in the bladder and treat the hematoma with ice packs. Smaller hematomas will resolve without surgery (the larger portion of the mass is inflammatory tissue and not blood clot), but may require several days for the swelling to reduce. Larger hematomas or expanding hematomas will require surgical evacuation of the hematoma and primary reclosure. In about half of these cases, the specific bleeding point is never identified, but simple evacuation of the clot and closure with sutures solves the problem. Hemovac drains may be placed if the hematoma bed is still oozing.

Bartholin's Abscess

These painful, unilateral vulvar masses may be treated conservatively with antibiotics if small, but will require incision and drainage if large or persistent. For drainage, pick a site on the medial aspect of the mass close to the introitus. If the mass is pointing, go through that area straight into the

abscess cavity. Local anesthetic may be used but is often unnecessary if the skin is thin and attenuated.

After drainage of pus from the cavity, loosely pack the cavity with narrow gauze (iodoform tape works well for this), primarily to keep the incision open, allowing continued drainage over the next few days. The cut edges of the drainage incision may need to be sutured for hemostasis but this is usually unnecessary.

Rest, TID sitz baths, and antibiotics to cover gram negatives, anaerobes, and gonococcus are all advisable in the operational setting.

These draining abscesses usually resolve over the next few days but may return at a later time. Repeat I&D can be done multiple times, although a marsupialization procedure may ultimately be required. It is inadvisable to try to surgically remove an entire abscess on an emergent basis. It is better to simply drain it.

D&C

In the operational setting, D&C (dilatation and curettage) is often required to resolve complications of early pregnancy loss, such as an incomplete abortion. Rarely would it be necessary in a non-pregnant woman with intractable uterine bleeding.

Under anesthesia, the bladder is catheterized and a pelvic exam performed so the surgeon can feel the orientation of the uterus. Of particular importance is noting whether the cervix leads directly into the uterus or whether there is any angulation anterior or

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posterior. Equally important is determining the size of the uterus as this will guide the surgeon in inserting the instruments.

The cervix is grasped with a tenaculum or a ring forceps on its anterior lip. (This works the best for most patients, but the posterior lip works better in a women whose uterus is tilted posteriorly.)

The cervix is then dilated by inserting "dilators" of gradually increasing diameter until the cervix is open about 1-2 cm. Fortunately, in the case of incomplete abortion, the cervix will already be dilated and no additional dilation will be necessary.

Polyp forceps or Ring forceps are then inserted through the cervix into the uterus to grasp and remove any large pieces of pregnancy tissue. This is a time when gentleness is required because it is relatively easy to perforate the soft walls of the uterus and cause damage to the surrounding structures (bladder, bowel, ureters). Then a curette is gently inserted and used to scrape any remaining tissue off the uterine walls. Excessive scraping at this time can result in too much tissue being removed and later infertility.

After an uncomplicated D&C, patients are advised to rest in bed with bathroom privileges for a day or two and then may return to their normal activities.

Prophylactic antibiotics may be given (particularly in an incomplete abortion situation) as well as ergotamine 0.2 mg PO TID for 2 days to stimulate uterine contractions and reduce blood loss.

Salpingectomy

Ectopic pregnancy, ruptured or unruptured, will usually require surgical intervention. Salpingectomy (removal of the fallopian tube) is uniformly effective, safe, simple, fast, and well within the capabilities of an abdominal surgeon. its only important disadvantages are that it results in the loss of the tube and may be more surgery than is needed.

After opening the abdomen (lower midline incision is fast and gives excellent exposure), identify the fallopian tube containing the ectopic. Grasp the tube with Babcock clamps and elevate the tube. This spreads out the mesosalpinx (the blood supply of the tube). Using hemostats, clamp across the mesosalpinx, starting at the fimbriated end and working toward the uterus. Clamp across the tube where it enters the uterus. Then remove your specimen and suture the clamped tissue with 0 or 2-0 Vicryl, Chromic or other such material. Evacuate from the abdomen any large clots (removal of all free blood from the abdomen is both unnecessary and laborious), and close the abdomen. Surgical drains are usually not necessary.

In the face of a large ectopic pregnancy and significant bleeding, this approach of salpingectomy is probably the wisest course. With smaller ectopics, you may conserve some or all of the tube performing a "segmental resection" in which only the middle portion of the tube is removed. This offers the advantage of conserving some of the tube for tubal reconstruction at a later date if necessary.

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Another technique which works well for small ectopic pregnancies (2-3 cm. in diameter) is the "linear salpingostomy." A scalpel makes a linear incision along the anti-mesenteric border of the tube, directly over the ectopic pregnancy. The pregnancy is extruded through the incision and the tube observed for further bleeding. Often, the bleeding will simply stop. The tube may be reclosed with very fine absorbable suture or simply left open (the defect will close spontaneously.)

While a linear salpingostomy may be preferable in some fully-equipped and fully-staffed medical facilities, there are important drawbacks to its use in isolated settings, primarily the limitations of diagnostic techniques to follow these patients over time. Surgeons in these isolated settings might be better advised to perform the definitive therapy (salpingectomy, partial or complete) which will assure hemostasis and avoid the possible need for reoperation.

Oophorectomy

Ovarian torsion is the most common reason for emergency removal of an ovary. After opening an acute surgical abdomen, you find the strangulation of one ovary (usually involves the fallopian tube as well) due to a twisting of the blood supply to these structures.

Place a clamp of any appropriate size or type across the twisted pedicle, and excise the effected ovary and tube. Suture the pedicle to secure the blood supply and then close the abdomen. The only important structure close to where you will be clamping and suturing is the ureter. This may be avoided by keeping

the clamp and suture within the twisted pedicle itself and not going too deep below the twisted portion.

Don't try to untwist the ovary or tube since you may release clot or cellular toxins into the general circulation. In operational settings, when ovarian torsion is encountered, the ovary and all effected tissue should be simply removed.

Drains are not necessary. Watch for signs of metabolic acidosis during the recovery as the necrotic tissue may have released enough tissue toxins to cause this problem.

Ovarian Cystectomy

Emergency removal of an ovarian cyst is usually necessitated because of either severe pain or hemorrhage. In either case, the cyst can often be "shelled out" from the ovary allowing ovarian conservation. With most cysts, there is a very nice dissection plane between the cyst and the ovary that will allow you to quickly and easily separate the cyst from the ovary.

After removal of the cyst, close the ovary in two layers...a deeper layer to assure hemostasis, and a second superficial layer to approximate the edges of the ovarian capsule.

In the case of endometriosis (with "chocolate cysts" and "powder burns" in the pelvis), surgical dissection planes are less clear and removal of just the cyst is more difficult. Usually, the chocolate cyst ruptures while you are trying to remove it. Just do the best you can and remember:

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1. You will probably not cure the endometriosis surgically, no matter how much you remove.

2. Take care of the problem you came to fix (hemorrhage, torsion, etc.) and leave the rest to medical therapy.

Hysterectomy

It would be a very unusual situation that would require an emergency hysterectomy. Most bleeding can be controlled with lesser procedures (D&C or hormonal management), and most infections respond to antibiotics.

Hysterectomy consists of clamping across the supporting structures of the uterus and its blood supply followed by removal of the uterus. The most difficult part (and the part which leads to the most complications) is removal of the lowest portion of the uterus and cervix. The reason for this difficulty is the close proximity of bladder, ureters and bowel. In an emergency setting, it is very acceptable to avoid those problems by performing a "supracervical hysterectomy."

Clamps are placed across the fallopian tubes close to the body of the uterus. Then working stepwise, the parametrial tissues are clamped (again, very close to the body of the uterus.) When the uterus narrows, (above the level of the bladder and ureters), a scalpel cuts across the lower uterine segment, resulting in the removal of the upper portion of the uterus and the leaving in place of the lower portion of the uterus (primarily the cervix). The raw, cut edge of the cervix and lower uterine segment is sutured for hemostasis. This part of the uterus can, if

necessary, be removed electively at a later time.

The advantages of this supracervical hysterectomy are:

1. It can be performed more easily, particularly by surgeons with lesser amounts of gynecologic surgical training.

2. It is safer in the short run because it greatly reduces the chance of inadvertent injury to the bladder, bowel or ureters.

3. It is faster than a complete hysterectomy.

4. Because the cervix remains in place, there is less chance of long-term vaginal support problems since the supporting structures (cardinal and uterosacral ligaments) remain intact.

The disadvantages to the supracervical hysterectomy are several, but relate more to the elective or semi-elective hysterectomy setting than the emergency hysterectomy performed in an operational setting. Because the cervix remains and may develop cervical malignancy at some time in the future, the patient has not derived maximum benefit from her surgery. If malignancy is present in the uterus, an incomplete procedure has been performed. Further, if infection is present, some infected tissue may be left behind.

In the operational arena, none of these disadvantages seem persuasive, and the advantages in speed, safety and

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simplicity suggest supracervical hysterectomy is preferable when needed.

Post-operatively, bedrest with bathroom privileges for a day or two followed by steadily increasing ambulation gives good results. Prophylactic antibiotics covering gram negative and anaerobic bacteria is an excellent idea in the operational environment.

Obstetric Illness with Surgical Significance

Threatened Abortion

Any pregnancy complicated by any form of bleeding from the uterus during the first 20 weeks of pregnancy is considered a "threatened abortion." The bleeding may be heavy or light, spotting or just brown discharge. It may or may not be accompanied by uterine cramping. If pregnancy tissue is passed, it is reclassified as either an incomplete or complete abortion. Inevitable abortion means the cervix has begun to dilate and bleeding is so heavy that spontaneous abortion must occur.

About 1 in every 3 or 4 pregnancies demonstrates some evidence of bleeding. The majority of these women will continue the pregnancy uneventfully and the remainder will ultimately abort. Bedrest will usually slow the bleeding temporarily, but will not change the final outcome of the pregnancy.

Incomplete Abortion

When some pregnancy tissue has been passed, but more remains inside the uterus, this is an "incomplete abortion."

These patients have moderate to heavy bleeding, uterine cramping, uterine tenderness and sometimes low-grade fever.

If tissue is seen protruding through the cervix, you may grasp it gently with sponge forceps and ease it the rest of the way out of the cervix. The goal of treatment is to convert the "Incomplete Abortion" to a "Complete Abortion".

Definitive treatment is D&C (dilatation and curettage). If D&C is not available, bedrest and oxytocin, 20 units (1 amp) in 1 Liter of any crystalloid IV fluid at 125 cc/hour may help the uterus contract and expel the remainder of the pregnancy tissue, converting the incomplete abortion to a complete abortion.

Alternatively, ergonovine 0.2 mg P.O. or IM three times daily for a few days may be effective.

If fever is present, broad-spectrum antibiotics are wise, particularly if D&C is not imminent. Rh negative women should ideally receive Rhogam (Rh immune globulin) within 3 days of a completed miscarriage to prevent Rh sensitization, but it may still be effective even 7-10 days later.

If hemorrhage is present, bedrest, IV fluids, oxygen, and blood transfusion may all be necessary.

Complete Abortion

A complete abortion is the passage of all pregnancy tissue from inside the uterus. Typically, these patients complain of vaginal bleeding and cramping which leads to passage of tissue. Then, the bleeding and pain subside.

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It is sometimes difficult to know whether the abortion is "complete" or "incomplete." To resolve this issue, some gynecologists recommend D&C for all patients who miscarry, while others recommend D&C only for those who obviously have an incomplete abortion, and those who continue to bleed and cramp.

Bedrest for a day or two may be all that is necessary to treat a complete abortion. Ergonovine 0.2 mg PO TID may be given for two days to stimulate the uterus to contract and reduce bleeding. Some physicians give a broad-spectrum oral antibiotic for a few days to protect against infection. If fever is present, IV broad-spectrum antibiotics are wise, to cover the possibility that the complication of sepsis has developed. If the fever is high and the uterus tender, septic abortion is probably present and you should make preparations for D&C. Save in formalin any tissue which the patient has passed for pathology examination.

Continuing hemorrhage suggests an "incomplete abortion" rather than a "complete abortion" and your treatment should be reconsidered

Inevitable Abortion

An early pregnancy which is destined to miscarry or abort is known as an inevitable abortion.

These pregnancies are complicated by bleeding and cramping and dilation (opening) of the cervix at the internal os. Such a pregnancy will not survive and can be considered in the same category as an incomplete abortion. Unless hemorrhage is present, patients can

safely wait up to six weeks for definitive treatment (D&C).

Septic Abortion

Infection may complicate any abortion. Such infections are characterized by fever, chills, uterine tenderness and occasionally, peritonitis. The responsible bacteria are usually a mixed group of strep, coliforms and anaerobic organisms.

Usual treatment consists of bedrest, IV antibiotics, utero-tonic agents (such as ergotamine or pitocin), and complete evacuation of the uterus. If the patient does not respond to these simple measures and is deteriorating, surgical removal of the uterus, fallopian tubes and ovaries may be life-saving. If your patient responds well and quickly to IV antibiotics and bedrest, you may safely continue your treatment. Remember, though, that she has the potential for becoming extremely ill very quickly and transfer to a definitive care facility should be considered.

Evacuation of the uterus can be initiated with oxytocin, 20 units (1 amp) in 1 Liter of any crystalloid IV fluid at 125 cc/hour or ergonovine 0.2 mg P.O. or IM three times daily. If the patient response is not favorable, D&C is the next step. IV antibiotics should be started immediately. Reasonable antibiotic choices include (American College of OB-GYN Tech. Bull. #153, 1991):

Clindamycin 900 mg IV every 8 hours, plus

Gentamicin 2.0 mg/kg IV, followed by 1.5 mg/kg every 8 hours,

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or

Metronidazole 500 mg IV every 6-8 hours, plus

Gentamicin 2.0 mg/kg IV, followed by 1.5 mg/kg every 8 hours,

or

Cefoxitin 2.0 gm IV every 6 hours

Second Trimester Abortion

Middle trimester abortions are uncommon and usually uncomplicated. They typically involve a labor-type experience for the patient, with delivery of a non-viable fetus.

After delivery of the fetus, be prepared to wait as long as several hours for the placenta (afterbirth) to separate and be delivered. While waiting, clamp and cut the umbilical cord and remove the fetus so as not to distress further the mother. After delivery of the placenta, cramping and bleeding usually stop or reduce to a minimal amount. Pitocin, 10 units IM or 20 units in 1 L of crystalloid at 125 cc/hr are helpful in reducing postpartum blood loss.

Pitocin at reduced dosage (same IV mixture, but at 2-10 drops/minute) can be useful in stimulating the uterus to contract in the case of a retained placenta, but has the potential of overstimulating the uterus.

If the placenta remains inside longer than 6 hours, D&C is indicated to remove it. This surgery is among the

more dangerous types of procedures because of the relatively large amounts of placental tissue left inside and the extreme softness of the uterus which lends itself to perforation and injury. In the presence of vaginal hemorrhage, D&C is indicated immediately, although you might attempt a manual removal of the placenta. If you can grab a portion of the placenta (assuming a part of it is extruded through the cervix), you sometimes can tease the rest of the placenta out through the cervix without resorting to D&C.

If D&C fails and hemorrhage continues, hysterectomy may be life-saving.

Third Trimester Delivery Complications

Cesarean Section

In the face of intractable hemorrhage in an undelivered patient or totally obstructed labor, emergency cesarean section will probably be life-saving. For those abdominal surgeons with lesser amounts of training in cesarean section, a midline lower abdominal incision and midline uterine incision are the wisest. Continue in a midline fashion through the wall of the uterus until the uterine cavity is entered. ("low cervical vertical Incision) You may extend the uterine midline incision as high as necessary to gain the needed exposure for delivery of the infant and the placenta. Avoid going too low and risking entering the bladder. Close the uterus in two or three layers.

Manual Removal of the Placenta

After delivery of the infant, the placenta normally separates within a few minutes.

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At this time, if hemorrhage occurs, you may need to manually remove the placenta. Insert your hand through the vagina into the uterus and grasp the placenta. Gently tease it out.

Immediate Post Partum Hemorrhage

This is generally caused by the uterus failing to contract. After manually exploring the uterus to make sure no placenta was left inside, manually massage the uterus to encourage it to contract. Give Oxytocin (10-20 units in 1 L crystalloid...run briskly) or ergotamine 0.2 mg IM.

Post Partum Hysterectomy

This is performed for uncontrollable hemorrhage. Typically, this is a supracervical hysterectomy (subtotal hysterectomy) even in experienced hands because of the difficulty in easily identifying the soft, attenuated cervix. By staying well away from the bladder, these hysterectomies usually go quite well.

Unruptured Ectopic Pregnancy

A woman with an unruptured ectopic pregnancy may have the typical unilateral pain, vaginal bleeding, and adnexal mass described in textbooks. Alternatively, she may have minimal symptoms. The pregnancy test is positive. For all practical purposes, a negative sensitive pregnancy test rules out ectopic pregnancy. Patients with a positive pregnancy test and unilateral pelvic pain or tenderness may have an unruptured ectopic pregnancy and should have an ultrasound scan to confirm the placement of the pregnancy. If

ultrasound is not available, then it is best to arrange for MEDEVAC.

Alternative diagnoses which can cause similar symptoms include a corpus luteum ovarian cyst commonly seen in early pregnancy, or occasionally appendicitis. PID is characterized by bilateral rather than unilateral pain. With a threatened abortion, the pain is central or suprapubic and the uterus itself may be tender.

While awaiting MEDEVAC, the following are wise precautions:

1. Keep the patient on strict bedrest. She is less likely to rupture while lying still.
2. Keep a large-bore (#16) IV in place. If she should suddenly rupture and go into shock, you can respond more quickly.
3. Know her blood type and have a plan for possible transfusion.

The vibration during a helicopter ride or the jostling over rough roads in an ambulance or truck may provoke the actual rupture. Try to minimize this risk and be prepared with IV fluids, oxygen, MAST equipment, etc.

If she develops peritoneal symptoms (right shoulder pain, rigidity, or rebound tenderness), she may be starting to rupture and you should react appropriately.

Ruptured Ectopic Pregnancy

Women with a ruptured ectopic pregnancy will nearly always have pain, sometimes unilateral and sometimes diffuse. Right shoulder pain suggests substantial blood loss. Within a few hours (usually), the abdomen becomes rigid, and the patient goes into shock. Serum pregnancy tests are positive. Treatment is immediate surgery to stop the bleeding. If surgery is not an available option, stabilization and

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medical evacuation should be promptly arranged. While awaiting MEDEVAC:

1. Give oxygen, IV fluids and blood according to ATLS guidelines.
2. Keep the patient at absolute rest.
3. Monitor urine output hourly with a Foley catheter and take frequent vital signs to detect shock.
4. Consider MAST trousers.

If abdominal surgery is not an available option, the outlook for a patient with a ruptured ectopic pregnancy is not totally bleak. Aggressive fluid and blood replacement, oxygen and complete bedrest will result in about a 50/50 chance of survival. If this approach is necessary:

1. Maintain the urine output between 30 and 60 ml. /hour.
2. If the pulse is >100 or urine output <30, she needs more fluid.
3. If she becomes short of breath and the lung sounds become "crackly," slow down the fluids as she probably is becoming fluid overloaded. (Central monitoring is helpful if available.)
4. If she becomes short of breath and the lungs sound dry, increase the fluids and give blood as she is probably anemic and in need of more oxygen carrying capacity.

5. As she loses blood into the abdomen, she will become distended. If she becomes so distended she can't breathe, put a chest tube into the abdomen through a small, midline incision just below the umbilicus to drain off fluid or blood so she can breathe.

6. A MAST suit can be very helpful in tamponading the internal bleeding.

7. She may require as many as 15 or 20 units of blood.

Ovarian Cyst

These cysts are common and generally cause no trouble. Each time a woman ovulates, she forms a small ovarian cyst (3.0 cm. in diameter or less). Depending on where she is in her menstrual cycle, you may find a small ovarian cyst. Large cysts (>7.0 cm.) are less common and should be followed clinically or with ultrasound.

Occasionally, ovarian cysts may cause a problem by:

- Delaying menstruation
- Rupturing
- Twisting
- Causing pain
- Bleeding

95% of ovarian cysts disappear spontaneously, usually after the next menstrual flow. Those that remain and those causing problems are often removed surgically.

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Ruptured Ovarian Cyst

This cyst has ruptured and spilled its contents into the abdominal cavity. If the cyst is small, its rupture usually occurs unnoticed. If large, or if there is associated bleeding from the torn edges of the cyst, then cyst rupture can be accompanied by pain. The pain is initially one-sided and then spreads to the entire pelvis. If there is a large enough spill of fluid or blood, the patient will complain of right shoulder pain. Symptoms should resolve with rest alone. Rarely, surgery is necessary to stop continuing bleeding.

Unruptured Ovarian Cyst

While most of these cysts are without symptoms, they can cause pain, particularly with strenuous physical activity or intercourse. Treatment is symptomatic with rest for those with significant pain. The cyst is expected to rupture, usually within one month. Once it ruptures, symptoms will gradually subside and no further treatment is necessary.

If it doesn't rupture spontaneously, surgery is sometimes performed to remove it. This will relieve the symptoms and prevent torsion. This surgery is done electively.

Torsioned Ovarian Cyst

A torsioned or twisted ovarian cyst occurs when the cyst twists on its vascular stalk, disrupting its blood supply. The cyst and ovary (and often a portion of the fallopian tube) die and necrose.

Patients with this problem complain of severe unilateral pain with signs of peritonitis (rebound tenderness, rigidity). This problem is often indistinguishable clinically from a pelvic abscess or appendicitis, although an ultrasound scan can be helpful.

Treatment is surgery to remove the necrotic adnexa. If surgery is unavailable, then bedrest, IV fluids and pain medication may result in a satisfactory, though prolonged, recovery. In this suboptimal, non-surgical setting, metabolic acidosis resulting from the tissue necrosis may be the most serious threat to the patient.

Other surgical conditions which may resemble a twisted ovarian cyst (such as bowel obstruction, appendicitis, ectopic pregnancy) may not have a good outcome if surgery is delayed. For this reason, patients thought to have a torsioned ovarian cyst should be moved to a definitive care setting where surgery is available.

PID

Pelvic Inflammatory Disease (PID) is a bacterial inflammation of the fallopian tubes, ovaries, uterus and cervix. Initial infections are caused by single-agent STDs, such as gonorrhea or chlamydia. Subsequent infections are often caused by multiple non-STD organisms (E. Coli, Bacteroides, etc.).

Mild PID

Gradual onset of mild bilateral pelvic pain with purulent vaginal discharge is the typical complaint. Fever <100.4 and deep dyspareunia are common.

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Moderate pain on motion of the cervix and uterus with purulent or mucopurulent cervical discharge is found on examination. Gram-negative diplococci or positive chlamydia culture may or may not be present. WBC may be minimally elevated or normal.

Treatment consists of:

Doxycycline 100 mg PO BID x 10-14 days, plus one of these:

Cefoxitin 2.0 gm IM with probenecid 1.0 gm PO,

or

Ceftriaxone 250 mg IM

or

Equivalent cephalosporin

Moderate to Severe PID

With moderate to severe PID, there is a gradual onset of moderate to severe bilateral pelvic pain with purulent vaginal discharge, fever >100.4 (38.0), lassitude, and headache. Symptoms more often occur shortly after the onset or completion of menses.

Excruciating pain on movement of the cervix and uterus is characteristic of this condition. Hypoactive bowel sounds, purulent cervical discharge, and abdominal distension are often present. Pelvic and abdominal tenderness is always bilateral except in the presence of an IUD.

Gram-negative diplococci in cervical discharge or positive chlamydia culture may or may not be present. WBC and ESR are elevated.

Treatment consists of bedrest, IV fluids, IV antibiotics, and NG suction if ileus is present. Since surgery may be required, transfer to a definitive surgical facility should be considered.

ANTIBIOTIC REGIMEN: (Center for Disease Control, 1989)

Doxycycline 100 mg PO or IV every 12 hours, plus either:
Cefoxitin, 2.0 gm IV every 6 hours,

Or

Cefotetan, 2.0 gm IV every 12 hours.

This is continued for at least 48 hours after clinical improvement. The doxycycline is continued orally for 10-14 days.

ALTERNATIVE ANTIBIOTIC REGIMEN: (Center for Disease Control, 1989)

Clindamycin 900 mg IV every 8 hours,

Plus

Gentamicin, 2.0 mg/kg IV followed by 1.5 mg/kg IV every 8 hours

This is continued for at least 48 hours after clinical improvement. After IV therapy is completed, doxycycline 100

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mg PO BID is given orally for 10-14 days.

Tubo-Ovarian Abscess

These patients are very ill, with severe PID. In addition, they have palpable pelvic masses from dilated, abscessed fallopian tubes.

An initial course of IV antibiotic therapy is warranted even if surgery ultimately is necessary. With the antibiotics, the patient will either improve and stabilize, allowing definitive surgery at a later, more elective time, or they will not stabilize and instead follow a downward clinical course. These failing patients require laparotomy.

At surgery, removal of the abscessed fallopian tubes is necessary, along with all affected tissue. This typically includes the ovaries and the uterus. This surgery may be difficult because the considerable inflammation will obscure anatomic landmarks and the edematous tissues will be friable and difficult to manipulate. In such a setting, supracervical hysterectomy may be a wise course even considering the leaving behind of a possibly infected cervix. After removal of the affected tissues, locally irrigate with crystalloid and place multiple surgical drains.

Once the infected tissues are removed, recovery is usually brisk, although return of GI function may be prolonged.

Abnormal Vaginal Bleeding

Overview

Occasionally, abnormal bleeding will be due to a laceration of the vagina, a

bleeding lesion, or bleeding from the surface of the cervix due to cervicitis. Much more commonly, abnormal bleeding arises from inside the uterus. There are really only three reasons for abnormal uterine bleeding:

- Pregnancy-related problems
- Mechanical Problems
- Hormonal Problems

The limited number of possibilities makes caring for these patients very simple. First, obtain a pregnancy test. Next, obtain a blood count and assess the rate of blood loss to determine how much margin of safety you have. Someone with a good blood count (hematocrit) and minimal rate of blood loss (less than a heavy period), can tolerate this rate of loss for many days to weeks before the bleeding itself becomes a threat.

Mechanical Causes of Abnormal Bleeding

Uterine fibroids or endometrial polyps are examples of mechanical problems inside the uterus which may cause abnormal bleeding. Since mechanical problems have mechanical solutions, these patients will need surgery of some sort (D&C, Hysterectomy,

Myomectomy) to resolve their problem. In the meantime, have them lie still and the bleeding will improve or temporarily go away. Giving hormones (BCPs) to try to stop the bleeding will not help this condition, but neither will it be harmful.

Hormonal Causes of Abnormal Bleeding

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Hormonal causes include anovulation leading to an unstable uterine lining, breakthrough bleeding associated with birth control pills, and spotting at midcycle associated with ovulation. The solution to all of these problems is to take control of the patient hormonally and insist (through the use of BCPs) that she have normal, regular periods.

If the bleeding is light and her blood count good, simply start BCPs (low-dose, monophasic, such as LoOvral or OrthoNovum 1+35 or Ovcon 35, etc.) at the next convenient time. After a month or two, her bleeding should be well under control.

If the bleeding is heavy or her blood count low, then it is best to have her lie still while you treat with birth control pills. Some gynecologists have used 4 OCPs per day initially to stop the bleeding, and then taper down after several days to three a day, then two a day, and then one a day. If you abruptly drop the dosage, you may provoke a menstrual flow, the very thing you didn't want. Giving iron supplements is a good idea (FeSO₄ 325 mg TID PO or its equivalent) for anyone who is bleeding heavily.

What to do First

Since most (90%) of the non-pregnancy bleeding is caused by hormonal factors, your best bet is to:

1. Obtain a pregnancy test.
2. Obtain a blood count.
3. Examine the patient.
4. Put the patient to bed if the bleeding is heavy.
5. Begin BCPs and iron.

With bedrest and hormonal treatment, bleeding should be substantially improved within 24 hours. It should continue to improve with additional days of treatment. If hormonal control is not succeeding, then a D&C will be necessary. Pregnant women should not receive BCPs, and pregnant women of more than 20 weeks gestation should be examined vaginally only in a setting in which you are prepared to do an immediate cesarean section should you discover an unsuspected placenta previa.

Malignancy as a Cause of Abnormal Bleeding

Abnormal bleeding can be a symptom of malignancy, from the vagina, cervix or uterus.

Cancer of the vagina is extraordinarily rare and will demonstrate a palpable, bleeding lesion. Cancer of the cervix is more common but a normal Pap smear and normal exam will effectively rule that out. Should you find a bleeding lesion in either the vagina or on the cervix, these should be biopsied. Cancer of the uterus (endometrial carcinoma) occurs most often in the older population (post-menopausal) and is virtually unknown in patients under age 35. For those women with abnormal bleeding over age 40, an endometrial biopsy is a wise precaution during the evaluation and treatment of abnormal bleeding.

Consultation

Before embarking on a course of surgical treatment of gynecologic disease, it is wise to consult, whenever possible and by whatever means are possible, with a fully-qualified

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gynecologic surgeon. Even if such consultation is by phone or radiotelephone, it will be helpful to you. Such a consultation will help confirm your clinical opinions, give you confidence, and serve to guide you in your clinical approach to the patient.

Your Command is able to contact the appropriate Force Medical Officers should you desire to consult with them. In addition, the phone numbers for those Navy Hospitals having OB-GYN physicians available are provided here.

For each hospital, the main (24-hour) DSN and commercial phone numbers are listed. Some overseas (OUTCONUS) hospital numbers require a Navy Switch prefix and these are indicated. With or without such a consultation, re-reading the appropriate portion of the standard textbooks should give you detailed understanding of the clinical task you are soon to undertake. Last, there may be other physicians or support personnel in your command with experience in gynecologic issues from whose experience you can benefit.

Important Phone Numbers

These phone numbers may prove helpful to you in dealing with various women's health issues. Consultation with an OB-GYN physician can be obtained at any time, day or night.

US Naval Hospitals with OB-GYN Physicians Available for Consultation

Symbol Meaning

- (C) Commercial telephone number
- (DSN) DSN telephone number
- (NS) Navy Switch Required. First dial (C) 703-695-0441, then give the operator the DSN number you wish to reach.
- (*) Physician on-board 24-hours a day

(may be OB-GYN or Family Practice MO or Resident)
 (**) Ask DSN operator to ring hospital's commercial number.

Beaufort, South Carolina	Naval Hospital		
Hospital -24 hour number	(C) 803-525-5600	(DSN) 832-5600	
Labor Deck	(C) 803-525-5571	(DSN) 832-5571	
Bethesda, Maryland	National Naval Medical Center		
Hospital -24 hour number	(C) 301-295-4611	(DSN) 295-4611	
Labor Deck*	(C) 301-295-4170	(DSN) 295-4170	
Bremerton, Washington	Naval Hospital		
Hospital -24 hour number	(C) 360-475-4232	(DSN) 494-4232	
Labor Deck*	(C) 360-475-4227	(DSN) 439-4227	
Camp Lejeune, North Carolina	Naval Hospital		
Hospital -24 hour number	(C) 910-451-4300	(DSN) 484-4300	
Labor Deck	(C) 910-451-4280	(DSN) 484-4280	
Camp Pendleton, California	Naval Hospital		
Hospital -24 hour number	(C) 760-725-1288	(DSN) 365-1288	
Labor Deck	(C) 760-725-1509	(DSN) 365-1509	
Cherry Point	Naval Hospital		
Hospital -24 hour number	(C) 919-466-0266	(DSN) 582-0266	
Labor Deck	(C) 919-466-0460/0459	(DSN) 582-0460/0459	
Jacksonville, Florida	Naval Hospital		
Hospital -24 hour number	(C) 904-777-7301	(DSN) 942-7301	
Labor Deck*	(C) 904-777-7704	(DSN) 942-7704	
Pensacola, Florida	Naval Hospital		

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Hospital -24 hour number	(C) 904-505-6601	(DSN) 534-6601		081-811-6404	629-6404
Labor Deck*	(C) 904-505-6298	(DSN) 534-6782	Okinawa, Japan	Naval Hospital	
Portsmouth, Virginia	Naval Medical Center		Hospital -24 hour number	(C) 011-81-611-743-7555	(DSN) (NS)643-7555
Hospital -24 hour number	(C) 757-953-5009	(DSN) 564-5009**	Labor Deck*	(C) 011-81-611-743-7597	(DSN) (NS) 643-7597
Labor Deck*	(C) 757-953-5284	(DSN) 564-5284**	Roosevelt Roads, Puerto Rico	Naval Hospital	
San Diego, California	Naval Medical Center		Hospital -24 hour number (ER)	(C) 787-865-5767/5997	(DSN) (NS) 831-5767/5997
Hospital -24 hour number	(C) 619-532-6400	(DSN) 522-6400	ISPU	(C) 787-865-5911/5912	(DSN) (NS) 831-5948
Labor Deck*	(C) 619-532-8865	(DSN) 522-8865	Rota, Spain	Naval Hospital	
Twentynine Palms, California	Naval Hospital		Hospital -24 hour number	(C) 011-3456-82-3305	(DSN) (NS) 727-3305
Hospital -24 hour number	(C) 760-830-2190	(DSN) 957-2190	Labor Deck	(C) 011-3456-82-3655	(DSN) (NS) 727-3655
Labor Deck*	(C) 760-830-2533/2534/2535	(DSN) 957-2533/2534/2535	Sigonella, Sicily	Naval Hospital	
OUTCONUS			Hospital -24 hour number	(C) 011-39-95-56-4842	(DSN) (NS) 624-4842
Guam, Mariana Islands	Naval Hospital		Labor Deck	(C) 011-39-95-56-4765	(DSN) (NS) 624-4765
Hospital -24 hour number	(C) 011-671-344-9340	(DSN) (NS) 344-9340	Yokosuka, Japan	Naval Hospital	
Labor Deck	(C) 011-850-505-6782/6789	(DSN) (NS) 534-6782/6789	Hospital -24 hour number	(C) 011-81-311-734-7144	(DSN) (NS) 243-7144
Guantanamo Bay, Cuba	Naval Hospital		Labor Deck	(C) 011-81-311-734-5311	(DSN) (NS) 234-5311/7315
Hospital -24 hour number (ER)	(C) 011-539-97-2690	(DSN) 464-2690			
Labor Deck	(C) 011-539-97-2063	(DSN) 464-2063			
Keflavic, Iceland	Naval Hospital				
Hospital -24 hour number	(C) 011-354-25-3300/3310	(DSN) (NS) 450-3201			
24-hour OB watch					
Naples, Italy	Naval Hospital				
Hospital -24 hour number	(C) 011-39-81-724-4872	(DSN) (NS) 625-4872			
Labor Deck	(C) 011-39-	(DSN) (NS)			