Incompetent cervix

Definition

A cervix (the structure at the bottom of the uterus) that is incompetent is abnormally weak, and therefore it can gradually widen during pregnancy. Left untreated, this can result in repeated pregnancy losses or premature delivery.

Description

Incompetent cervix is the result of an anatomical abnormality. Normally, the cervix remains closed throughout pregnancy until labor begins. An incompetent cervix gradually opens due to the pressure from the developing fetus after about the 13th week of pregnancy. The cervix begins to thin out and widen without any contractions or labor. The membranes surrounding the fetus bulge down into the opening of the cervix until they break, resulting in the loss of the baby or a very premature delivery.

Causes and symptoms

Some factors that can contribute to the chance of a woman having an incompetent cervix include trauma to the cervix, physical abnormality of the cervix, or having been exposed to the drug diethylstilbestrol (DES) in the mother's womb. Some women have cervical incompetence for no obvious reason.

Diagnosis

Incompetent cervix is suspected when a woman has three consecutive spontaneous pregnancy losses during the second trimester (the fourth, fifth and sixth months of the pregnancy). The likelihood of this happening by random chance is less than 1%. Spontaneous losses due to incompetent cervix account for 20-25% of all second trimester losses. A spontaneous second trimester pregnancy loss is different from a miscarriage, which usually happens during the first three months of pregnancy.
The physician can check for abnormalities in the cervix by performing a manual examination or by an ultrasound test. The physician can also check to see if the cervix is prematurely widened (dilated). Because incompetent cervix is only one of several potential causes for this, the patient's past history of pregnancy losses must also be considered when making the diagnosis.

**Treatment**

Treatment for incompetent cervix is a surgical procedure called cervical cerclage. A stitch (suture) is used to tie the cervix shut to give it more support. It is most effective if it is performed somewhere between 14-16 weeks into the pregnancy. The stitch is removed near the end of pregnancy to allow for a normal birth.

Cervical cerclage can be performed under spinal, epidural, or general anesthesia. The patient will need to stay in the hospital for one or more days. The procedure to remove the suture is done without the need for anesthesia. The vagina is held open with an instrument called a speculum and the stitch is cut and removed. This may be slightly uncomfortable, but should not be painful.

Some possible risks of cerclage are premature rupture of the amniotic membranes, infection of the amniotic sac, and preterm labor. The risk of infection of the amniotic sac increases as the pregnancy progresses. For a cervix that is dilated 3 centimeters (cm), the risk is 30%.

After cerclage, a woman will be monitored for any preterm labor. The woman needs to consult her obstetrician immediately if there are any signs of contractions.

Cervical cerclage can not be performed if a woman is more than 4 cm dilated, if the fetus has already died in her uterus, or if her amniotic membranes are torn and her water has broken.

**Prognosis**

The success rate for cerclage correction of incompetent cervix is good. About 80-90% of the time women deliver healthy infants. The success rate is higher for cerclage done early in pregnancy.
Cystitis

Definition

Cystitis is the medical term for inflammation of the bladder. Most of the time, the inflammation is caused by a bacterial infection, in which case it may be referred to as a urinary tract infection (UTI). A bladder infection can be painful and annoying, and can become a serious health problem if the infection spreads to your kidneys.

Less commonly, cystitis may occur as a reaction to certain drugs, radiation therapy or potential irritants, such as feminine hygiene spray, spermicidal jellies or long-term use of a catheter. Cystitis may also occur as a complication of another illness.

The usual treatment for bacterial cystitis is antibiotics. Other treatments are used for other types of cystitis.

Symptoms

Cystitis symptoms often include:

- A strong, persistent urge to urinate
- A burning sensation when urinating
- Passing frequent, small amounts of urine
  - Blood in the urine (hematuria)
- Passing cloudy or strong-smelling urine
  - Discomfort in the pelvic area
- A feeling of pressure in the lower abdomen
  - Low-grade fever

Causes

Your urinary system is composed of the kidneys, ureters, bladder and urethra. All play a role in removing waste from your body. Your kidneys — a pair of bean-shaped organs located toward the back of your upper abdomen — filter waste from your blood and adjust the body
composition of many substances. Tubes called ureters carry urine from your kidneys to the bladder, where it's stored until it exits your body through the urethra.

Risk factors
Some people are more likely than are others to develop bladder infections or recurrent urinary tract infections. Women are one such group. A key reason is anatomy. Women have a shorter urethra than men have, which cuts down on the distance bacteria must travel to reach the bladder.

Women who are sexually active tend to have more UTIs, because sexual intercourse can result in bacteria being pushed into the urethra. Women who use diaphragms for birth control also may be at higher risk. Hormonal changes during pregnancy may increase the risk of a bladder infection as well.

Other risk factors in both men and women include:

- **Interference with the flow of urine.** This can occur in conditions such as an enlarged prostate or a stone in the bladder.

- **Changes in the immune system.** This can occur with conditions such as diabetes, HIV infection and cancer treatment. A lowered immune system increases the risk of bacterial and, in some cases, viral bladder infections.

- **Prolonged use of bladder catheters.** These tubes may be needed in people with chronic illnesses or in older adults. Prolonged use can result in increased vulnerability to bacterial infections as well as bladder tissue damage.

Tests and diagnosis
If you have symptoms of cystitis, talk to your doctor as soon as possible. In addition to discussing your signs and symptoms and your medical history, your doctor may order these tests, as well:

- **Urine analysis.** If your doctor suspects you have a bladder infection, he or she may ask for a urine sample to determine whether bacteria, blood or pus is in your urine.

- **Cystoscopy.** Inspection of your bladder with a cystoscope — a thin tube with a light and camera attached that can be inserted through the urethra into your bladder — may help with the diagnosis. Your
doctor can also use the cystoscope to remove a small sample of tissue (biopsy) for analysis in the laboratory.

- **Imaging tests.** Imaging tests usually aren't necessary but in some instances — especially when no evidence of infection is found — they may be helpful. Tests, such as X-ray or ultrasound, may help rule out other potential causes of bladder inflammation, such as a tumor or structural abnormality.

**Complications**

When treated promptly and properly, bladder infections rarely lead to complications. But left untreated, they can become something more serious. Complications may include:

- **Kidney infection.** An untreated bladder infection can lead to kidney infection (pyelonephritis), which could be associated with a bacterial bloodstream infection (bacteremia). Kidney infections may permanently damage your kidneys. Young children and older adults are at the greatest risk of kidney damage due to bladder infections because their symptoms are often overlooked or mistaken for other conditions.

- **Blood in the urine.** Blood found in the urine (hematuria) is not uncommon with chemotherapy- or radiation-induced cystitis. This is sometimes referred to as hemorrhagic cystitis. Increasing fluid intake is usually the first step in treatment. If bleeding becomes severe, the treatment that initiated the bleeding is usually postponed until the bleeding improves. Severe bleeding is treated with medication or blood transfusion, if necessary.

**Treatments and drugs**

Cystitis caused by bacterial infection is generally treated with antibiotics. Treatment for noninfectious cystitis depends on the underlying cause.

**Treating bacterial cystitis**

Antibiotics are the first line of treatment for cystitis caused by bacteria. Which drugs are used and for how long depend on your overall health and the bacteria found in your urine. Make sure your doctor is aware of any other medications you're taking or any allergies you might have.
Usually symptoms clear up within a few days of treatment. However, you'll likely need to take antibiotics for three days to a week, depending on the severity of your infection. No matter what the length of treatment, take the entire course of antibiotics recommended by your doctor to ensure that the infection is completely eradicated.

If you have recurrent UTIs, your doctor may recommend longer antibiotic treatment or refer you to a doctor who specializes in urinary tract disorders (urologist or nephrologist) for an evaluation, to see if urologic abnormalities may be causing the infections. For some women, taking a single dose of an antibiotic after sexual intercourse may be helpful.

Hospital-acquired bladder infections can be a challenge to treat because bacteria found in hospitals are often resistant to the common types of antibiotics used to treat community-acquired bladder infections. For that reason, different types of antibiotics and different treatment approaches may be needed. Currently, researchers are testing whether using catheters pre-treated with antimicrobial products may help reduce the incidence of this type of bladder infection. Research is under way to investigate the development of vaccines that might prevent cystitis and decrease the need for frequent antibiotic use.

**Treating interstitial cystitis**

With interstitial cystitis, the cause of inflammation is uncertain, so there's no single treatment that works best for every case. Therapies used to ease the signs and symptoms of interstitial cystitis include:

- Medications that are taken orally or instilled directly into your bladder
- Procedures that manipulate your bladder to improve symptoms, such as bladder distention or, sometimes, surgery
- Nerve stimulation, which uses mild electrical pulses to relieve pelvic pain and, in some cases, reduce urinary frequency

**Treating other forms of noninfectious cystitis**

If you're hypersensitive to certain chemicals in personal products, such as bubble bath or spermicides, avoiding these products may help ease symptoms and help prevent further episodes of cystitis.

Treatment of cystitis that develops as a complication of chemotherapy or radiation therapy focuses on pain management, usually with medications, and hydration, to flush out bladder irritants. Most cases of chemotherapy-induced cystitis tend to resolve after the chemotherapy is
finished. Cystitis caused by radiation therapy, however, may recur months or even years after treatment is over, sometimes triggered by a UTI.

**Prevention**
You can take steps to reduce the risk of bladder infections. Women, in particular, may benefit from the following:

- **Drink plenty of liquids, especially water.** Cranberry juice may have infection-fighting properties. However, don't drink cranberry juice if you're taking the blood-thinning medication warfarin (Coumadin). Possible interactions between cranberry juice and warfarin can lead to bleeding. Drinking lots of fluids is especially important if you're undergoing chemotherapy or radiation therapy, particularly on treatment days.

- **Urinate frequently.** If you feel the urge to void, don't delay going to the bathroom.

- **Wipe from front to back after a bowel movement.** This prevents bacteria in the anal region from spreading to the vagina and urethra.

- **Take showers rather than tub baths.** If you're susceptible to infections, doing so can help prevent infections.

- **Gently wash the skin around the vagina and anus.** Do this daily, but don't use harsh soaps or wash too vigorously. The delicate skin around these areas can become irritated.

- **Empty your bladder as soon as possible after intercourse.** Drink a full glass of water to help flush bacteria.

- **Avoid using deodorant sprays or feminine products in the genital area.** These products can irritate the urethra and bladder.

**Pyelonephritis**

**Definition**
Pyelonephritis is an inflammation of the kidney and upper urinary tract that usually results from noncontagious bacterial infection of the bladder (cystitis).
Description

Acute pyelonephritis is most common in adult females but can affect people of either sex and any age. Its onset is usually sudden, with symptoms that often are mistaken as the results of straining the lower back. Pyelonephritis often is complicated by systemic infection. Left untreated or unresolved, it can progress to a chronic condition that lasts for months or years, leading to scarring and possible loss of kidney function.

Causes and symptoms

The most common cause of pyelonephritis is the backward flow (reflux) of infected urine from the bladder to the upper urinary tract. Bacterial infections also may be carried to one or both kidneys through the bloodstream or lymph glands from infection that began in the bladder. Kidney infection sometimes results from urine that becomes stagnant due to obstruction of free urinary flow. A blockage or abnormality of the urinary system, such as those caused by stones, tumors, congenital deformities, or loss of bladder function from nerve disease, increases a person's risk of pyelonephritis. Other risk factors include diabetes mellitus, pregnancy, chronic bladder infections, a history of analgesic abuse, paralysis from spinal cord injury, or tumors. Catheters, tubes, or surgical procedures may also trigger a kidney infection.

The bacteria most likely to cause pyelonephritis are those that normally occur in the feces. *Escherichia coli* causes about 85% of acute bladder and kidney infections in patients with no obstruction or history of surgical procedures. *Klebsiella, Enterobacter, Proteus, or Pseudomonas* are other common causes of infection. Once these organisms enter the urinary tract, they cling to the tissues that line the tract and multiply in them.

Symptoms of acute pyelonephritis typically include fever and chills, burning or frequent urination, aching pain on one or both sides of the lower back or abdomen, cloudy or bloody urine, and fatigue. The patient also may have nausea, vomiting, and diarrhea. The flank pain may be extreme. The symptoms of chronic pyelonephritis include weakness, loss of appetite, hypertension, anemia, and protein and blood in the urine.

Diagnosis
The diagnosis of pyelonephritis is based on the patient's history, a physical examination, and the results of laboratory and imaging tests. During the physical examination, the doctor will touch (palpate) the patient's abdomen carefully in order to rule out appendicitis or other causes of severe abdominal pain.

**Laboratory tests**

In addition to collecting urine samples for urinalysis and urine culture and sensitivity tests, the doctor will take a sample of the patient's blood for a blood cell count. If the patient has pyelonephritis, the urine tests will show the presence of white blood cells, and bacteria in the urine. Bacterial counts of 100,000 organisms or higher per milliliter of urine point to a urinary tract infection. The presence of antibody-coated bacteria (ACB) in the urine sample distinguishes kidney infection from bladder infection, because bacteria in the kidney trigger an antibody response that coats the bacteria. The blood cell count usually indicates a sharp increase in the number of white blood cells.

**Treatment**

Treatment of acute pyelonephritis may require hospitalization if the patient is severely ill or has complications. Therapy most often involves a two- to three-week course of antibiotics, with the first few days of treatment given intravenously. The choice of antibiotic is based on laboratory sensitivity studies. The antibiotics used most often include ciprofloxacin (Cipro), ampicillin (Omnipen), or trimethoprim-sulfamethoxazole (Bactrim, Septra). Several advances in antibiotic therapy have been made in recent years. In 2003, the U.S. Food and Drug Administration (FDA) approved Cipro extended release tablets (Cipro XR) that could be taken once daily for acute uncomplicated pyelonephritis. A study in Europe also showed that a shorter course than that normally used in the United States could eradicate the bacteria that cause the disease. The primary objective of antimicrobial therapy is the permanent eradication of bacteria from the urinary tract. The early symptoms of pyelonephritis usually disappear within 48 to 72 hours of the start of antibacterial treatment. Repeat urine cultures are done in order to evaluate the effectiveness of the medication.

Chronic pyelonephritis may require high doses of antibiotics for as long as six months to clear the infection. Other medications may be given to control fever, nausea, and pain. Patients are encouraged to drink extra fluid to prevent dehydration and increase urine output. Surgery
sometimes is necessary if the patient has complications caused by kidney stones or other obstructions, or to eradicate infection. Urine cultures are repeated as part of the follow-up of patients with chronic pyelonephritis. These repeat tests are necessary to evaluate the possibility that the patient's urinary tract is infected with a second organism as well as to assess the patient's response to the antibiotic. Some persons are highly susceptible to reinfection, and a second antibiotic may be necessary to treat the organism.

**Prognosis**

The prognosis for most patients with acute pyelonephritis is quite good if the infection is caught early and treated promptly. The patient is considered cured if the urine remains sterile for a year. Untreated or recurrent kidney infection can lead to bacterial invasion of the bloodstream (bacteremia), hypertension, chronic pyelonephritis with scarring of the kidneys, and permanent kidney damage. In 2003, a report on long-term follow-up of adults with acute pyelonephritis looked at kidney scarring and resulting complications. Kidney damage that causes complications is rare after 10 to 20 years, even though many women showed renal scarring.

**Prevention**

Persons with a history of urinary tract infections should urinate frequently, and drink plenty of fluids at the first sign of infection. Women should void after intercourse which may help flush bacteria from the bladder. Girls should be taught to wipe their genital area from front to back after urinating to avoid getting fecal matter into the opening of the urinary tract.