

# Ectopic Pregnancy

A fertilized egg plants itself and starts growing outside the uterus, usually in the narrow fallopian tube.

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## THE STORY IN ONE SENTENCE

A fertilized egg plants itself and starts growing outside the uterus, usually in the narrow fallopian tube.

“An embryo grows in the wrong place—usually the tube—and can burst it, causing hidden bleeding that kills if we do not catch it in time.”

## Normal anatomy — the body's job

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Normally, after fertilization happens in the fallopian tube, tiny hair-like sweepers called cilia push the fertilized egg down the tube and into the uterus over about five days, where it burrows into the thick, blood-rich lining and grows safely for nine months.

## BODY'S JOB

The fallopian tube's job is to be a safe highway: cilia (tiny hairs lining the inside) beat in waves to move the fertilized egg toward the uterus, and smooth muscle in the tube wall squeezes gently to help. The uterus is built to stretch—thick muscle, rich blood supply, room to grow—so the embryo can dig in, form a placenta, and feed. If the tube does its sweeping job on time, the embryo lands in the right spot and pregnancy is safe.

1. An egg pops out of the ovary (ovulation) and is caught by the fringed end of the fallopian tube.
2. Sperm swim up through the uterus and into the tube; one fertilizes the egg in the outer third of the tube.
3. Over the next five days, cilia (tiny hairs) inside the tube sweep the fertilized egg toward the uterus, while the egg divides into a ball of cells.
4. The ball of cells (now called a blastocyst) reaches the uterus and burrows into the thick, spongy lining (the endometrium).
5. The embryo sends out finger-like roots (chorionic villi) that tap into the mother's blood vessels, forming the placenta to feed and grow the baby for nine months.

## What breaks

Something damages or slows the cilia in the fallopian tube—usually old infection, surgery scars, or endometriosis—so the fertilized egg cannot finish the trip to the uterus and instead plants itself in the narrow tube, where it has no room to grow safely.

### CLINICAL TERM

The most common cause is tubal damage: prior pelvic inflammatory disease (PID, usually from chlamydia or gonorrhea) scars the cilia and narrows the tube; previous tubal surgery (including tubal ligation or reversal) leaves scar tissue; endometriosis deposits inflame and distort the tube. Other risks include in-vitro fertilization (IVF transfers sometimes place embryos near the tubal opening), smoking (nicotine paralyzes cilia), and having an intrauterine device (IUD, which prevents uterine implantation but not tubal). Once the embryo implants in the tube, trophoblast cells (the outer layer that will become placenta) invade the tube wall and erode blood vessels, causing bleeding. Because the tube cannot stretch like the uterus, rising pressure eventually tears the tube (rupture), spilling blood into the peritoneal cavity and causing hypovolemic shock if untreated.

## How the body compensates

At first, the body keeps blood pressure steady by squeezing blood vessels and speeding the heart, so vital signs look okay even as blood slowly leaks into the belly—but once the tube ruptures and bleeding floods the abdomen, compensatory mechanisms max out and blood pressure crashes into shock within minutes.

1. {'step': 'Early: Heart rate rises slightly and blood vessels constrict', 'why': "The sympathetic nervous system (the body's fight-or-flight control) senses falling blood volume from slow bleeding and releases norepinephrine (a hormone that tightens blood vessels and speeds the heart) to keep blood pressure up and protect the brain and heart."}
2. {'step': 'Skin turns pale and cool', 'why': 'Blood is shunted away from the skin to protect vital organs, so less blood reaches the surface and skin looks pale and feels cold.'}
3. {'step': 'Patient feels dizzy or lightheaded', 'why': 'Even though blood pressure is still normal on the cuff, less blood reaches the brain, causing dizziness—this is an early warning that compensation is working hard.'}
4. {'step': 'Vital signs stay normal for a while—dangerous window', 'why': 'The body can keep blood pressure and oxygen levels normal for minutes to hours while bleeding is slow, so the team may miss how sick the patient really is—this is the window to catch it before rupture.'}

5. {'step': 'Rupture: Tube tears open and blood floods the belly', 'why': 'Once the tube cannot hold the pressure, it ruptures; blood pours into the peritoneal cavity fast (sometimes over a liter in minutes), and the heart suddenly cannot fill or pump enough.'}
6. {'step': 'Crash: Blood pressure drops, heart races, shock begins', 'why': 'Compensatory mechanisms max out—blood vessels are already squeezed tight, heart is already racing—so blood pressure falls, organs do not get oxygen, and the patient goes into hypovolemic shock (shock from blood loss).'}}
7. {'step': 'Without emergency surgery, death follows quickly', 'why': 'Ongoing bleeding (hemorrhage) and shock starve the brain, heart, and kidneys of oxygen; if bleeding is not stopped within minutes to an hour, organs fail and the patient dies.'}

## Domino effect

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1. Dark vaginal bleeding starts (often lighter than a normal period) — The embryo makes human chorionic gonadotropin (hCG, the pregnancy hormone), but levels are lower and rise more slowly than in a normal pregnancy, so the uterine lining (endometrium) is not supported well and starts to shed, causing irregular, dark bleeding.
2. Sharp pain on one side of the lower belly or pelvis — The embryo digs into the tube wall and stretches it; trophoblast cells invade and open blood vessels, so blood leaks out and irritates the peritoneum (the thin lining covering organs), which has pain nerves—causing sharp, one-sided pain where the ectopic sits.
3. Pain spreads across the lower belly as more blood leaks — Blood pools in the pelvis and spreads under gravity, irritating more of the peritoneum, so pain becomes diffuse and constant instead of just one-sided.
4. Shoulder-tip pain appears (especially when lying flat) — Blood climbs up beside the liver and pools under the diaphragm (the breathing muscle at the top of the belly); it irritates the phrenic nerve (which runs through the diaphragm and shares nerve roots with the shoulder), tricking the brain into feeling referred pain at the shoulder tip—this is a red-flag sign of internal bleeding.
5. Cervix becomes tender when the doctor moves it (cervical motion tenderness) — Blood pooling in the pelvis irritates the tissue around the cervix and uterus, so when the examiner pushes the cervix side to side, it rocks the uterus and stirs the blood, causing sharp pain—mimicking pelvic inflammatory disease but without infection.
6. If the tube ruptures: sudden, severe pain and feeling faint — The tube tears open and blood floods into the belly fast—sometimes a liter or more in minutes; the sudden irritation of the entire peritoneum causes extreme pain, and rapid blood loss drops blood pressure, making the patient feel faint, dizzy, or about to pass out.

7. Shock sets in: pale skin, racing heart, low blood pressure, confusion — Massive blood loss means the heart cannot fill or pump enough oxygenated blood; the brain and organs are starved of oxygen, so the sympathetic nervous system maxes out—heart races over 120, blood pressure drops below 90 systolic, skin is cold and clammy, and the patient becomes confused or loses consciousness.
8. Without emergency surgery, death follows within minutes to hours — Ongoing bleeding (hemorrhage) and shock shut down the kidneys, liver, and brain; lactic acid builds up (lactic too much acid in the blood (acidosis)) as cells switch to survival mode without oxygen, the heart cannot pump against falling volume, and multi-organ failure leads to cardiac arrest and death.

## Symptoms · what the patient feels, and why

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- Missed period with a positive pregnancy test: The fertilized egg attached somewhere outside the uterus (usually in one of the tubes that carry eggs), but it still makes the pregnancy hormone (hCG) that shows up on a test.
- Sharp or cramping pain on one side of the belly or pelvis: The growing embryo stretches or tears the narrow tube (or wherever it landed), irritating nerves and tissue that were never meant to hold a pregnancy.
- Vaginal bleeding or spotting (often lighter or darker than a normal period): The lining of the uterus started to thicken for a pregnancy, but when the embryo is elsewhere the lining sheds unevenly, and bleeding can also come from the damaged tube or tissue at the ectopic site.
- Shoulder or neck pain that seems unrelated: If the tube ruptures, blood spills into the belly and irritates the diaphragm (the breathing muscle under the lungs); nerves from the diaphragm share a pathway with nerves to the shoulder, so the brain feels pain there instead.
- Dizziness, fainting, or feeling like you might pass out
- Severe, sudden belly pain that gets worse quickly: The tube (or other site) tears open (ruptures), spilling blood and tissue into the belly cavity all at once, which causes intense pain and triggers the body's alarm signals.
- An empty uterus on ultrasound even though the pregnancy test is positive: The embryo implanted outside the uterus, so the ultrasound probe looking inside the uterus sees no gestational sac (the fluid-filled bubble that should hold a very early pregnancy).
- Pregnancy hormone (hCG) level rises more slowly than expected: A healthy early pregnancy in the uterus usually doubles its hCG every 48–72 hours; an ectopic embryo often grows more slowly or abnormally, so the hormone climbs at a slower, plateauing, or erratic pace.

## Focused exam

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- Positive serum beta-hCG (pregnancy hormone in the blood): Proves a pregnancy is growing somewhere in the body, but does NOT show where. In ectopic pregnancy, the embryo is stuck in the wrong spot — usually the fallopian tube (the narrow pipe that carries eggs from the ovary to the uterus) — but the pregnancy test is still positive.
- Empty uterus on transvaginal ultrasound: When beta-hCG is above 1,500–2,000 mIU/mL (the discriminatory zone) and no pregnancy sac shows up in the uterus, the embryo must be growing somewhere else — usually in the tube. An empty uterus paired with a positive pregnancy test is the hallmark clue that screams ectopic pregnancy.
- One-sided lower belly or pelvic pain (often the side of the affected tube): The fallopian tube is as narrow as a straw and cannot stretch to hold a growing embryo. As the embryo gets bigger, it presses against the tube wall and causes sharp pain on that side. The location of the pain tells you which tube has the problem.
- Vaginal bleeding — usually light and dark red or brown: The embryo growing in the tube damages the lining and breaks tiny blood vessels. That blood leaks out into the belly and trickles down through the cervix into the vagina. The bleeding is typically lighter than a normal period and looks old (dark), because it has been sitting inside before coming out.
- Low blood pressure (Hypotension) (systolic blood pressure <90 mmHg) and a fast heart rate (tachycardia) (heart rate >110 bpm) if the tube has ruptured: When the tube finally bursts, blood pours into the belly fast. The body tries to keep oxygen flowing to the brain by racing the heart and clamping down blood vessels. This is bleeding-driven (hemorrhagic) shock — a life-threatening emergency that needs surgery within minutes.
- Shoulder pain, especially on the right side when lying flat: Blood from a ruptured ectopic pregnancy pools under the diaphragm (the big muscle under the lungs that you use to breathe). The phrenic nerve (the nerve that tells the diaphragm to move) also connects to the shoulder area, so blood irritating the diaphragm tricks the brain into feeling pain in the shoulder. This strange pattern — called referred pain — is a red flag that internal bleeding has started.

## Diagnostics · every test answers a question

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- Serum quantitative beta-hCG (pregnancy hormone blood test) → Is a pregnancy present, and is the hCG level rising normally or stalling?
- Transvaginal ultrasound → Is there a pregnancy sac inside the uterus, or is the uterus empty?
- Serum progesterone → Is the pregnancy healthy and making normal amounts of progesterone (a hormone that keeps the uterine lining ready)?
- Complete blood count (CBC) → Has the patient lost blood? Is the body compensating?

- Type and screen (blood type and antibody check) → What is the patient's blood type, and does she have antibodies that will react against transfused blood?
- Culdocentesis (needle aspiration through the vaginal wall into the space behind the uterus) → Is there free blood in the pelvis (a sign of rupture)?

## Treatment logic

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- Emergency laparoscopy or laparotomy (surgery to open the belly) with salpingectomy (removing the whole tube) or salpingostomy (cutting open the tube and removing the embryo) if the patient is unstable (shock, dropping blood pressure) or the tube has ruptured → Stops the bleeding by removing the burst tube or the mass inside it, so blood pressure stabilizes and shock reverses. Surgery is the only way to fix active bleeding — nothing else will stop a ruptured tube.
- Methotrexate — either single-dose intramuscular (50 mg/m<sup>2</sup> body surface area) or multi-dose protocol (1 mg/kg on days 1, 3, 5, 7) — if the patient is stable, beta-hCG is below 5,000 mIU/mL, the ectopic mass is smaller than 3.5 cm, there is no fetal heartbeat, and no signs of rupture → Stops the pregnancy cells from dividing (methotrexate blocks folic acid, which cells need to copy their DNA). The embryo stops growing, dies, and the body slowly absorbs the tissue over 1–2 weeks, avoiding surgery.
- IV fluid resuscitation (normal saline or lactated Ringer's bolus 500–1,000 mL wide open) and packed red blood cell transfusion if systolic BP is below 90 mmHg, heart rate is above 110 bpm, or hemoglobin drops below 7 g/dL → Replaces lost blood volume so the heart can pump oxygen to the brain and kidneys. Reverses bleeding-driven (hemorrhagic) shock and buys time until surgery can stop the bleeding.
- RhoGAM (anti-D immune globulin) 50–120 mcg intramuscular within 72 hours if the patient is Rh-negative → Blocks the mother's immune system from making antibodies against Rh-positive blood. If fetal blood (which may be Rh-positive) mixes with maternal blood during the ectopic pregnancy or treatment, the mother's body could attack Rh-positive babies in future pregnancies. RhoGAM prevents that reaction.
- Serial beta-hCG monitoring every 48–72 hours after methotrexate (expect at least a 15% drop between days 4 and 7) and weekly ultrasound to confirm the mass is shrinking and no rupture has happened → Shows whether methotrexate is working or whether the ectopic pregnancy is still growing (meaning methotrexate failed and surgery is needed). Catches rupture early before the patient collapses at home.

- Patient education on rupture warning signs: sudden severe belly pain, shoulder pain, heavy vaginal bleeding, dizziness, fainting, nausea, or feeling like passing out. Instruct patient to go to the emergency department immediately if any of these happen. → Catches rupture early so emergency surgery can be done before the patient bleeds into irreversible shock. Many ectopic ruptures happen at home days after diagnosis, so the patient must know what to watch for.
- Expectant management (watch and wait without medication or surgery) if beta-hCG is very low (usually below 200 mIU/mL), dropping on its own, and the patient is stable with no pain or bleeding → Avoids surgery and medication when the ectopic pregnancy is already dying on its own. The body reabsorbs the tissue naturally over a few weeks.

## Medications

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### **Methotrexate · Folate antagonist (a drug that blocks a vitamin the body needs to build new cells)**

Methotrexate stops rapidly dividing cells from making DNA, so they cannot grow or multiply. In an ectopic pregnancy, it targets the fast-growing cells of the pregnancy tissue (the trophoblast), causing the tissue to break down and be absorbed by the body over time. This avoids surgery when the pregnancy is caught early and the tube has not burst.

1. Methotrexate enters cells that are dividing quickly, like the cells of the pregnancy tissue growing in the wrong place.
2. It blocks dihydrofolate reductase, an enzyme that recycles folate inside the cell.
3. Without recycled folate, the cell cannot make the building blocks (nucleotides) for new DNA.
4. The pregnancy cells stop dividing and start to die.
5. Over days to weeks, the body absorbs the dead tissue, and the beta-hCG level (the pregnancy hormone measured in blood) falls.
6. The tube is preserved and may heal without surgery.

**SAFETY WATCH**

Check complete blood count, liver enzymes, and kidney function before giving it—methotrexate can harm the liver, kidneys, and bone marrow. · Do NOT use in women with anemia (low red blood cells), liver disease, kidney disease, or immune problems—these raise the risk of serious side effects. · Do NOT use if the woman is breastfeeding—methotrexate passes into milk and can harm the baby. · The woman must avoid folic acid supplements, alcohol, and NSAIDs (like ibuprofen) during treatment—these can interfere with the drug or worsen side effects. · She must avoid getting pregnant for at least three months after methotrexate, because it can cause severe birth defects. · Watch for signs of rupture: sudden sharp belly pain, fainting, shoulder pain (from blood irritating the diaphragm), racing heart, or low blood pressure—these mean the tube has burst and surgery is needed immediately. · Follow beta-hCG levels on days 4 and 7, then weekly until they reach zero—a rise or plateau means the treatment failed and surgery or a second dose may be needed. · Tell the woman to expect cramping, spotting, and feeling tired for one to two weeks—this is normal as the tissue dissolves. · Rare but serious: methotrexate can suppress the bone marrow (making infection, bleeding, or severe anemia more likely), damage the liver, or cause mouth sores and diarrhea.

**Anti-D immune globulin (RhoGAM) · Rh immunoglobulin (antibodies that prevent an immune reaction)**

If the mother is Rh-negative and the pregnancy tissue might be Rh-positive, tiny amounts of fetal blood can mix with hers during the ectopic pregnancy or its treatment. Her immune system could see the Rh-positive cells as foreign and make antibodies against them. Those antibodies can attack the red blood cells of future Rh-positive babies, causing severe anemia or even death. Anti-D immune globulin coats any Rh-positive fetal cells in the mother's blood so her immune system does NOT recognize them and does NOT make lasting antibodies.

1. A small amount of fetal blood (which may be Rh-positive) leaks into the mother's circulation during the ectopic pregnancy, surgical treatment, or methotrexate-induced breakdown.
2. Anti-D immune globulin is injected into the mother's muscle or vein.
3. The antibodies in RhoGAM immediately coat the surface of the Rh-positive red cells.
4. The mother's immune system sees the coated cells as already tagged for removal and destroys them quietly without making a memory of them.
5. Because her immune system never mounts a full response, it does NOT create long-lasting antibodies.
6. Future Rh-positive babies are protected from attack.

**SAFETY WATCH**

Give within 72 hours of diagnosis, treatment, or any bleeding episode to be most effective.

- Check the mother's blood type and Rh status before giving—only Rh-negative mothers need it.
- If her antibody screen is already positive (she is already sensitized), RhoGAM will NOT help, but it will not harm her either.
- Standard dose is 50 mcg (microdose) for ectopic pregnancy in the first trimester; some centers use 300 mcg if gestational age is uncertain or if there is significant bleeding.
- Side effects are rare and mild: soreness at the injection site, low-grade fever, or feeling achy.
- Severe allergic reactions are extremely rare.

**Intravenous crystalloid fluids (normal saline or lactated Ringer's) · Volume expander (fluid given through a vein to restore blood volume)**

When an ectopic pregnancy ruptures, blood pours into the belly. The circulating blood volume drops, blood pressure falls, and organs do not get enough oxygen. IV crystalloid floods the bloodstream with salt water that matches the body's natural fluid, pushing blood pressure back up and keeping the heart, brain, and kidneys supplied until the bleeding is stopped (usually with surgery) or until blood transfusion arrives.

1. The patient loses blood rapidly into the abdomen from the ruptured tube.
2. Blood pressure drops; the heart races to try to pump what little blood remains.
3. Two large-bore IV lines are placed, and crystalloid is infused quickly (often one to two liters in the first 15–30 minutes).
4. The salt water spreads throughout the blood vessels, temporarily boosting the volume of circulating fluid.
5. Blood pressure rises enough to keep vital organs perfused while the team prepares for surgery or blood transfusion.
6. Crystalloid does NOT replace red blood cells or clotting factors, so packed red blood cells are given if bleeding is severe or ongoing.

**SAFETY WATCH**

Infuse through large-bore IV lines (18-gauge or bigger) to allow rapid flow.

- Warm the fluid if possible—cold IV fluid can drop body temperature and worsen clotting problems.
- Watch for signs of fluid overload if massive volumes are given, especially in patients with heart or kidney problems: listen for crackles in the lungs, check for swelling, and monitor oxygen levels.
- If blood pressure does NOT respond after one to two liters, transfuse packed red blood cells immediately—crystalloid alone is not enough for major bleeding (hemorrhage).
- Monitor urine output, heart rate, and blood pressure every few minutes during resuscitation to guide how much fluid to give.

## **Packed red blood cells (PRBCs) · Blood product transfusion (donated red blood cells from a blood bank)**

When a ruptured ectopic pregnancy causes heavy bleeding, the body loses red blood cells—the oxygen carriers. Without enough red cells, organs suffocate. Transfusing packed red blood cells delivers a concentrate of healthy red cells directly into the bloodstream, restoring the blood's ability to carry oxygen and preventing shock and organ failure.

1. The patient loses a large volume of blood into the abdomen, and hemoglobin (the oxygen-carrying protein inside red cells) drops.
2. Tissues do not get enough oxygen; the patient may feel dizzy, confused, short of breath, or lose consciousness.
3. Blood is typed and crossmatched (or O-negative universal donor blood is given in an emergency).
4. Packed red blood cells are transfused through a large IV line, usually one or more units over 30 minutes to a few hours, depending on urgency.
5. The new red cells flow through the lungs, pick up oxygen, and deliver it to starved organs.
6. Hemoglobin and oxygen levels rise, blood pressure stabilizes, and the risk of organ damage falls.

### **SAFETY WATCH**

Type and crossmatch blood as soon as ectopic rupture is suspected, so matched units are ready if needed. · In life-threatening bleeding (hemorrhage), give O-negative blood (universal donor) immediately without waiting for crossmatch. · Watch for transfusion reactions: fever, chills, back pain, dark urine, trouble breathing, or a sudden drop in blood pressure during or right after transfusion—stop the transfusion and alert the team immediately. · Monitor hemoglobin and vital signs frequently during resuscitation to guide how many units to give. · Transfuse through a blood warmer if giving multiple units quickly—cold blood can cause hypothermia and worsen clotting. · After stabilization, check a complete blood count to confirm hemoglobin has risen and is staying stable.

## **Red flags**

- Sudden severe belly pain with dizziness or fainting (suggests rupture and internal bleeding)
- Shoulder or neck pain along with belly pain and a positive pregnancy test (blood irritating the diaphragm)
- Low blood pressure, fast heart rate, or pale/clammy skin (signs of shock from blood loss)
- Severe pain that keeps getting worse despite rest (the ectopic site may be tearing)

- Positive pregnancy test but no visible pregnancy in the uterus on ultrasound and hCG above the level where you should see something (discriminatory zone ~1500–2000 mIU/mL)

## Nursing priorities

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1. Establish large-bore IV access with two 18-gauge or larger catheters and start normal saline wide open if systolic BP is below 90 or heart rate is above 110 — Ruptured ectopic pregnancy causes hemoperitoneum (blood filling the abdomen) and bleeding-driven (hemorrhagic) shock (dangerous drop in blood volume); large IVs let us push fluids and blood fast to maintain blood flow (perfusion) (blood flow) to the brain, heart, and kidneys before the patient arrests
2. Type and crossmatch blood for at least 2 units of packed red blood cells and notify the blood bank that this is a potential emergency release — Ruptured ectopic can cause life-threatening blood loss of 1 to 2 liters or more into the abdomen; having crossmatched blood ready prevents delays when hemoglobin drops and tissue oxygen delivery falls dangerously low
3. Measure vital signs every 5 to 15 minutes and watch for systolic BP dropping below 90, heart rate climbing above 110, or new confusion and pale cool skin — Vital sign trends reveal progressive bleeding (hemorrhage) (ongoing bleeding) before the patient crashes; a fast heart rate (tachycardia) (fast heart rate) and low blood pressure (hypotension) (low blood pressure) are late shock signs meaning she has already lost 30% or more of her blood volume and needs immediate surgery
4. Keep the patient NPO (nothing by mouth) and call the OR and surgeon immediately if rupture is suspected based on pain plus unstable vitals plus positive pregnancy test — An empty stomach reduces aspiration (breathing in vomit) risk during emergency intubation (placing a breathing tube) for surgery; ruptured ectopic needs surgical control of bleeding within 30 to 60 minutes to prevent cardiac arrest from exsanguination (bleeding to death)
5. Draw blood for serial quantitative bHCG (beta human chorionic gonadotropin hormone), hemoglobin, hematocrit, and check the patient's blood type and Rh status — The bHCG level confirms pregnancy and helps decide between methotrexate (medicine) versus surgery; falling hemoglobin proves active bleeding; Rh-negative women need RhoGAM (anti-D immune globulin) within 72 hours to prevent antibodies that attack future babies
6. Position the patient flat or in Trendelenburg (head down, feet up 15 to 30 degrees) if BP drops, and give high-flow oxygen by non-rebreather mask at 15 liters per minute — Trendelenburg position uses gravity to shift blood from the legs back to the heart and brain during shock; high-flow oxygen maximizes oxygen saturation in the remaining red blood cells to prevent organ starved blood flow (ischemia) (tissue damage from low oxygen)

7. Prepare methotrexate (single intramuscular injection at 50 mg per square meter of body surface area) if the patient is stable, ectopic mass is smaller than 3.5 centimeters, bHCG is below 5000, and ultrasound shows no rupture or fetal heartbeat — Methotrexate stops rapidly dividing cells like the pregnancy tissue and lets the body reabsorb the ectopic without surgery; it only works when the mass is small and bHCG is low because higher levels mean too much tissue for the medicine to kill effectively
8. Administer RhoGAM 300 micrograms intramuscularly within 72 hours if the patient is Rh-negative and the father is Rh-positive or unknown — Ectopic pregnancy causes fetal blood cells to mix with maternal blood and trigger antibody formation in Rh-negative mothers; these antibodies cross the placenta in future pregnancies and destroy the baby's red blood cells causing destroying red blood cells (hemolytic) disease of the newborn (severe anemia and brain damage)

## Sources

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- ACOG Practice Bulletin No. 193: Tubal Ectopic Pregnancy, 2018
- American College of Emergency Physicians (ACEP) Clinical Policy on Early Pregnancy
- Cochrane Review: Medical treatment for ectopic pregnancy
- CDC: Ectopic Pregnancy Surveillance

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