

Epididymitis and Orchitis

Epididymitis is almost always a bacterial infection climbing up from the urethra. Age tells you the bug: under 35 think chlamydia or gonorrhea (sex bugs), over 35 think *E. coli* (bladder bugs). Treat with antibiotics matched to the likely germ, plus ice and scrotal support.

THE ONE-LINE TRUTH

Bacteria climb backward from the urethra or bladder into the epididymis (the tightly coiled tube behind each testicle that stores and matures sperm), causing infection and swelling.

The chain — how it unfolds

1. Bacteria enter the urethra from sex (*Chlamydia trachomatis*, *Neisseria gonorrhoeae*) or bladder (*Escherichia coli*). — why: Unprotected sex lets *Chlamydia trachomatis* or *Neisseria gonorrhoeae* colonize the urethral mucosa. In older men or those with catheters, benign prostatic hyperplasia (enlarged prostate), or neurogenic bladder, *Escherichia coli* and other enteric bacteria multiply in stagnant urine and invade the urethra or prostate.
2. Bacteria climb backward up the vas deferens into the epididymis. — why: During urination, ejaculation, or straining (Valsalva), pressure forces bacteria retrogradely—backward—up the vas deferens, the muscular tube that normally carries sperm out. The bacteria reach the epididymis, a warm, nutrient-rich, low-flow environment where they can multiply unchecked.
3. The epididymis swells with infection; you feel one-sided scrotal pain and a tender lump at the back of the scrotum. — why: Bacteria multiply in the epididymal tubules, triggering the immune system to flood the area with neutrophils (white blood cells that eat bacteria) and plasma. The epididymis becomes thick, boggy, and exquisitely tender. Pain builds over hours to days—gradual onset, not the sudden twist-and-scream of torsion.
4. Fever develops. — why: Infected epididymal tissue and activated neutrophils release cytokines—interleukin-1 (IL-1), interleukin-6 (IL-6), and tumor tissue death (necrosis) factor-alpha (TNF- α)—that travel through the blood to the hypothalamus (the brain's thermostat at the base of the brain) and reset it higher, causing fever to slow bacterial growth and accelerate immune responses.

5. Lifting the scrotum eases the pain (Prehn sign positive). — why: Elevation drains trapped fluid by gravity and takes weight off the inflamed spermatic cord (the bundle of vas deferens, blood vessels, and nerves hanging the testicle), reducing pressure and pain. This sign helps you distinguish epididymitis (pain improves with lift) from testicular torsion (pain stays severe or worsens because the testicle is twisted and its blood supply is cut off).
6. Inflammation may spread to the testicle itself (epididymo-orchitis). — why: The epididymis sits right against the testicle, separated only by a thin layer of tissue. Infection and inflammation spill over the border, causing the whole hemiscrotum to swell and the testicle to become tender, enlarged, and firm. Now both structures are infected.
7. Untreated infection risks abscess, testicular tissue death from blocked blood flow (infarction), chronic pain, or infertility. — why: Pus can wall off into an abscess (a pocket of dead white blood cells, bacteria, and liquefied tissue) that antibiotics cannot penetrate, requiring surgical incision and drainage. Severe swelling can compress the testicular artery and veins, choking off blood supply and causing testicular tissue death from blocked blood flow (infarction) (tissue death)—the testicle turns dark and must be removed. Chronic inflammation scars the delicate epididymal tubules, blocking sperm flow and causing obstructive azoospermia (zero sperm in the ejaculate) and infertility. Early antibiotics stop this cascade.
8. Antibiotics matched to the likely germ kill the bacteria and stop the dominoes. — why: Men under 35 with STI risk get ceftriaxone 500 mg intramuscular once (to kill *Neisseria gonorrhoeae*, which is increasingly resistant to oral antibiotics) plus doxycycline 100 mg twice daily for 10 days (to kill *Chlamydia trachomatis*). Men over 35, or those with catheter or prostate issues, get a fluoroquinolone—levofloxacin 500 mg once daily for 10 days—or trimethoprim-sulfamethoxazole (if local *E. coli* resistance is low) to cover enteric gram-negatives. Killing the bacteria stops inflammation; the immune system clears debris and the swelling resolves over 1 to 2 weeks. Scrotal support (snug underwear or athletic supporter), ice packs, and NSAIDs (ibuprofen or naproxen) ease pain and swelling while antibiotics work.

Spot it — what you see, and why

- Pain and swelling in one testicle or the back part of the testicle: Infection causes the epididymis (the coiled tube behind the testicle that stores and carries sperm) to swell up with fluid and fill with immune cells fighting the germs, which stretches the tissue and presses on nearby nerves.
- The scrotum feels warm and looks red: Blood vessels widen and extra blood rushes to the area to bring in immune cells, making the skin warmer and redder — just like your cheek gets warm and red when it's irritated.

- Pain when you pee or a frequent urge to pee: The same bacteria that infected the epididymis often start in the urethra (the tube that carries pee out), so the lining there is inflamed and raw, which stings when urine flows over it.
- Discharge (fluid dripping) from the penis: Bacteria in the urethra trigger the lining to leak extra mucus and pus (dead immune cells and germs), which drips out — a clear sign of infection in the tube.
- Fever and chills: When infection is more severe, bacteria or their toxins spill into the bloodstream and the hypothalamus (the brain's thermostat) cranks up body temperature to help immune cells work faster, causing fever and shaking chills.
- Tenderness in the lower belly or pelvis: Infection can spread backward up the vas deferens (the tube that carries sperm from the testicle toward the bladder) and irritate nearby structures in the pelvis, making that whole area sore.

Red flags — act now

- Sudden, severe testicle pain that comes on in minutes — may be testicular torsion (the testicle twisted on its cord and is losing blood supply), a surgical emergency.
- Fever above 101°F (38.3°C) with shaking chills — suggests infection is spreading into the bloodstream or forming an abscess (a pocket of pus).
- Unable to pee or very little urine comes out — may mean severe swelling is blocking the urethra or infection has spread to the bladder and kidneys.
- Testicle feels extremely hard, does not get better with antibiotics after 48 hours, or you see pus draining from the scrotum — may be an abscess that needs draining or a different diagnosis like cancer.
- Nausea, vomiting, or confusion along with testicle pain and fever — signs the infection may be severe (sepsis, meaning bacteria in the blood poisoning the whole body) and affecting your organs.

Treat it — in this order

1. Ceftriaxone 500 mg intramuscular (IM) shot once PLUS doxycycline 100 mg by mouth twice daily for 10 days (if under 35 or sexually transmitted infection suspected) → Ceftriaxone (a powerful antibiotic that punches through bacterial cell walls) kills gonorrhea (*Neisseria gonorrhoeae*), and doxycycline (an antibiotic that stops bacteria from making proteins they need to live) kills chlamydia (*Chlamydia trachomatis*). Together they stop the bacteria swimming backward from the urethra, halt the infection, and let the swelling go down over the next few days.

2. Levofloxacin 500 mg by mouth once daily for 10 days (if over 35 or bladder bacteria suspected and local resistance < 10%) → Levofloxacin (a fluoroquinolone antibiotic that stops bacteria from copying their DNA) kills bladder bacteria like *E. coli* and other gut bacteria (enteric gram-negative rods) that travel backward into the epididymis in older men or those with urinary blockage. Stops the infection and lets inflammation melt away.
3. Nonsteroidal anti-inflammatory drug (NSAID) such as ibuprofen 400–600 mg by mouth three times daily with food → Ibuprofen blocks cyclooxygenase (COX, an enzyme that makes pain chemicals) so your body makes less prostaglandins (the messengers that trigger pain, swelling, and heat). This dials down inflammation in the epididymis, cuts pain, and helps blood flow return to normal faster.
4. Scrotal elevation and support (athletic supporter, jock strap, rolled towel, or pillow under the scrotum when lying down) → Lifting the scrotum helps veins drain pooled blood away from the swollen epididymis, reduces pressure and stretching, and eases pain. This is why Prehn sign (pain relief with lifting) happens in epididymitis.
5. Partner notification, testing, and treatment (if sexually transmitted pathogen found) → Treats the partner's chlamydia or gonorrhea infection (often with the same antibiotics), stops the patient from getting infected again after his treatment finishes, and breaks the transmission chain in the community so fewer people get sick.

Your top priorities at the bedside

1. Give the first dose of ceftriaxone 500 mg intramuscular injection and doxycycline 100 mg by mouth in the clinic or emergency department before discharge. — why: Early antibiotics stop bacterial reproduction within hours, reducing tissue damage and preventing abscess formation or spread of sexually transmitted infection to partners.
2. Teach the patient to elevate the scrotum on a rolled towel or wear a snug athletic supporter continuously for the first 48 hours. — why: Elevation uses gravity to reduce blood pooling and lymph fluid buildup in the inflamed epididymis, lowering swelling pressure on pain nerves and speeding healing.
3. Administer ibuprofen 400–600 mg by mouth with food and teach the patient to take it every 8 hours for at least 3 days. — why: Nonsteroidal anti-inflammatory drugs block prostaglandins (chemicals that cause swelling and pain) at the injury site, shrinking inflammation faster than pain medicines alone.