Testicular Cancer

Testicular cancer shows as a painless, hard lump; ultrasound confirms it, surgery removes the testicle, blood tumor markers guide treatment, and staging scans tell us if it spread—then we give chemo or radiation to kill any leftover cancer cells.

THE ONE-LINE TRUTH

A painless lump in a young man's testicle needs an ultrasound of the scrotum right away.

The chain — how it unfolds

1. A germ cell in the testicle picks up DNA damage and starts dividing out of control. — why: Risk factors—undescended testicle (cryptorchidism) exposing cells to higher body temperature, family history passing down DNA mutations, or prior cancer in the other testicle—make it more likely that a germ cell will break its stop signals and become a tumor. Age 15–35 is peak time because germ cells are dividing fast during and after puberty, giving more chances for copying errors.
2. The rogue cells pile into a hard, painless lump inside the testicle. — why: Cancer cells stick together and grow as a solid mass. Because the tumor grows slowly and does not stretch the scrotum's outer layers fast, it usually does not hurt—pain comes from infections or twists that happen suddenly, not from cancer creeping up over weeks.
3. The man (or his doctor) feels the lump during a testicular self-exam or physical. — why: The testicle normally feels smooth and squishy, so a hard spot or a lump that does not match the other side stands out. This is the first domino that gets noticed—the painless lump is the alarm bell.
4. Some men notice a dull ache or heavy, pulling-down feeling in the scrotum or lower belly. — why: The growing tumor adds weight and pulls on the spermatic cord (the bundle of blood vessels, nerves, and the vas deferens tube that connects the testicle to the body). The ache is not sharp pain—it is more like wearing a heavy weight in your underwear.
5. If the tumor makes hCG, the man's chest tissue swells and gets tender (gynecomastia). — why: Non-seminoma tumors, especially choriocarcinoma type, pump out hCG (the hormone pregnant women make). hCG travels in the blood and tells breast tissue to grow, just like it does during pregnancy. The man notices his nipples hurt or his chest looks puffy—this is a red flag that the tumor is making hormones.

6. Ultrasound of the scrotum shows a solid mass inside the testicle, and blood tests check tumor markers (AFP, hCG, LDH). — why: Ultrasound uses sound waves to see inside the testicle—cancer shows up as a dark or mixed-texture lump that is different from the normal tissue. Blood tests measure AFP (made by yolk sac tumors), hCG (made by choriocarcinoma), and LDH (a general marker of cell turnover that goes up when cancer is growing fast). These numbers help confirm cancer and tell us what type.
7. Surgery removes the whole testicle through a cut in the groin (radical inguinal orchiectomy). — why: We take out the entire testicle (not just the lump) because cancer cells can hide anywhere in it, and cutting into the scrotum might spill cancer cells into local tissues. Going through the groin lets us clamp the spermatic cord first, stopping blood flow and any cancer cells from escaping during surgery. The testicle goes to pathology, where a specialist slices it thin and looks under a microscope to name the exact cancer type and see if it broke through the outer shell.
8. CT scans of the chest, belly, and pelvis check if cancer spread to lymph nodes or lungs. — why: Testicular cancer loves to spread first to retroperitoneal lymph nodes (bean-shaped filters along the back wall of the belly), then to the lungs. The CT scan is a detailed X-ray that shows if nodes are swollen or if there are spots in the lungs. This staging tells us if the cancer is still local (Stage I), in nearby nodes (Stage II), or in distant organs (Stage III)—and that picks the treatment plan.

Spot it — what you see, and why

- A hard lump or swelling in one testicle: Cancer cells multiply inside the testicle and form a solid mass that pushes the normal tissue out of the way, making the testicle feel bigger or heavier on one side.
- A heavy or dragging feeling in the scrotum: The growing tumor adds weight to the testicle, pulling down on the sac (scrotum) like carrying a small stone in your pocket.
- Dull ache in the lower belly or groin: The tumor stretches the capsule (outer shell) around the testicle and tugs on the spermatic cord (the bundle of tubes and blood vessels feeding the testicle), sending dull pain signals to nearby nerves.
- The lump does not shine light through (does not transilluminate): Cancer tissue is solid and blocks light completely, unlike a fluid-filled cyst (hydrocele) that glows when you shine a flashlight through the scrotum.
- Breast tenderness or growth (gynecomastia): Some testicular tumors release human chorionic gonadotropin (hCG, a pregnancy hormone) or make extra estrogen (a female hormone), which causes breast tissue to swell and become tender.
- Back pain that will not go away: Cancer that has spread to lymph nodes in the back of the belly (retroperitoneal nodes) presses on nerves along the spine, causing steady aching pain.

Red flags — act now

- A hard, painless lump in the testicle that does not go away
- Breast swelling or tenderness in a young man
- Back pain that lasts more than a few weeks without injury
- Coughing up blood or trouble breathing
- Sudden severe testicular pain with a known mass

Treat it — in this order

1. Radical inguinal orchiectomy (surgical removal of the testicle through a groin incision) → Removes the entire testicle, spermatic cord, and tumor in one piece through the groin (not the scrotum) so cancer cells do not spill into the scrotum's lymph drainage, which goes to different nodes and could spread the cancer. This surgery cures stage I testicular cancer in most men and gives a tissue diagnosis (seminoma vs. non-seminoma) that guides all further treatment.
2. Sperm banking (cryopreservation) before surgery or chemotherapy → Saves healthy sperm cells frozen in liquid nitrogen so a man can father biological children later. One testicle removal usually leaves enough sperm production, but chemotherapy (especially cisplatin-based regimens) and radiation both damage the cells in the remaining testicle that make sperm, often causing permanent infertility.
3. Active surveillance (for low-risk stage I seminoma or stage I non-seminoma) → Skips immediate chemotherapy or radiation and instead watches closely with blood tumor markers (AFP, beta-hCG, LDH) every 1–2 months and CT scans every 3–6 months for 2–3 years. If cancer comes back, treatment starts then. This approach avoids chemo side effects in the 70–80% of men whose cancer never comes back after surgery alone. It works because testicular cancer is so curable even if it recurs.
4. BEP chemotherapy (bleomycin, etoposide, cisplatin) for stage II or III disease → Poisons all fast-dividing cancer cells throughout the whole body by damaging their DNA and stopping them from copying themselves. BEP shrinks tumors in belly lymph nodes and distant sites (like lungs) that surgery cannot reach. It cures more than 90% of men with advanced testicular cancer. Given as 3–4 cycles (each cycle is 3 weeks).
5. Retroperitoneal lymph node dissection (RPLND) after chemotherapy → Surgically removes all lymph nodes in the back of the belly (the retroperitoneum) after chemotherapy shrinks tumors. This clears out any residual cancer masses ≥ 1 cm that might still have living tumor cells hiding inside dead tissue (teratoma or viable cancer). RPLND can cure men even when chemo does not kill every cell.

Your top priorities at the bedside

1. Arrange urgent scrotal ultrasound with Doppler within 24 hours of presentation — why: Ultrasound uses sound waves to show if the lump is solid tumor or fluid-filled cyst (hydrocele), and Doppler checks blood flow patterns that differ between cancer and benign (not cancer) lumps
2. Draw blood for tumor markers AFP, hCG, and LDH before any surgery or treatment — why: Baseline tumor marker levels help classify cancer type and stage, and later levels track if treatment is working or if cancer comes back
3. Provide sperm banking referral and education before orchiectomy or chemotherapy starts — why: Chemotherapy drugs damage rapidly dividing sperm cells, and removing one testicle plus treatment can cause permanent azoospermia (no sperm in semen), taking away the chance to father biological children