

Ultrasound, CT, MRI or nuclear scan: choosing urology imaging

Ultrasound, CT, MRI and nuclear imaging each answer different questions, and the best test is the least burdensome one that can change the next decision. The protocol and contrast choice matter as much as the type of scan, and every incidental finding needs someone responsible for follow-up.

Which Imaging Tool Answers Which Question?	
Ultrasound 	- Drainage - Bladder volume - Scrotum - No ionizing radiation
CT 	- Stones - Trauma - Anatomy - Rapid imaging - Radiation/contrast considerations
MRI 	- Soft-tissue characterization - Prostate/renal questions - No ionizing radiation - Magnet/implant and time considerations
Nuclear imaging 	- Differential organ function - Drainage or disease-specific tracer behavior - Radionuclide exposure
Right question → right protocol → actionable result.	

Figure 46.1. Which Imaging Tool Answers Which Question? Ultrasound, CT, MRI, and nuclear imaging provide different information; selection follows the clinical question.

Key points

- Imaging is not a ladder with MRI always above CT and CT above ultrasound.
- Ultrasound avoids radiation and is useful for kidneys, bladder, prostate and scrotum, but may miss small ureteral stones.
- CT is rapid and highly informative for stones, trauma and masses; the protocol determines what it can answer.
- MRI gives detailed soft-tissue information without radiation, but takes longer and needs review of implants and gadolinium use.
- Contrast is neither harmless nor always dangerous; the decision should be individualized.
- Bring the actual images, not only reports, and know who owns follow-up of incidental findings.

Questions to ask your urologist

- What question is this scan meant to answer?
- Why is this type of imaging and this protocol the right fit?
- How do radiation, contrast, implants, kidney function or pregnancy affect the choice?
- Do you need my prior images, not just the reports?
- Who will follow up any incidental finding, and when?

