CONDITION

Injury - kidney and ureter

A kidney or ureter injury is damage caused by trauma or a medical procedure.

WHAT IT IS
Traumatic damage to a kidney or urine-draining tube

BODY SYSTEM
Urinary system

MAIN SYMPTOMS
Side pain, abdominal pain, blood in urine, bruising

WHAT CAUSES IT
Impact, penetrating trauma, or medical procedures

HOW IT IS DIAGNOSED
Contrast CT and sometimes urinary tract imaging

MAIN TREATMENT
Monitoring, drainage, embolization, or surgery

CAN IT BE CURED?
Sometimes - many injuries heal or can be repaired

IS IT AN EMERGENCY?
Sometimes - especially after major trauma or internal bleeding

LONG-TERM OUTLOOK
Most stable, limited injuries heal with preserved kidney function

Overview

The kidneys filter waste and extra water from your blood to make urine. They sit toward the back of the upper abdomen, one on each side of the spine.

Each kidney connects to the bladder through a narrow tube called a ureter. Urine flows down these tubes before leaving the body through the urethra.

A kidney injury can involve bruising, a tear in the kidney tissue, damage to its blood vessels, or separation from the ureter. A ureter injury may cause a partial tear, complete cut, blockage, or loss of blood supply to part of the tube.

These injuries can happen after a strong impact, a penetrating wound, or a medical procedure. Ureter injuries are uncommon after ordinary blunt trauma because the tubes are small, flexible, and protected deep inside the body. They are more often injured during surgery or another

procedure near the urinary tract.

Minor kidney injuries often heal without an operation. More serious injuries can cause internal bleeding, urine leakage, infection, or loss of kidney tissue. Early assessment matters because visible blood in the urine does not reliably show how severe an injury is.

Symptoms

Symptoms depend on which structure is injured and whether bleeding or urine leakage is occurring.

Possible symptoms include:

A person can have a significant kidney or ureter injury without visible blood in the urine. This is more likely with some blood-vessel injuries, complete ureter disruption, or injuries found after an operation.

A ureter injury that happens during surgery may not cause symptoms straight away. Over the following hours or days, it may cause increasing abdominal or side pain, fever, nausea, reduced urine output, abdominal swelling, or urine leaking through a wound or drain. Recovery from the original operation may also stop progressing as expected.

Severe internal bleeding can cause weakness, pale or clammy skin, a fast heartbeat, confusion, fainting, or shortness of breath. These are emergency symptoms.

- Pain or tenderness in the side, back, or abdomen
- Blood in the urine, which may look pink, red, or brown
- Bruising over the side, lower ribs, back, or abdomen
- Abdominal swelling or fullness
- Nausea or vomiting
- Difficulty passing urine or passing less urine than usual

Causes and risk factors

Blunt trauma is the most common general cause of kidney injury. It can result from a road collision, fall, sports impact, assault, or crushing injury. A sudden stop can also stretch or tear the kidney's blood vessels or the point where the kidney joins the ureter.

Penetrating injuries include gunshot and stab wounds. These may damage nearby organs as well as the kidney or ureter.

Ureter injuries can occur during operations involving the pelvis, abdomen, bowel, reproductive organs, or urinary tract. They may also happen during procedures that use instruments inside the ureter. An injury may involve a direct cut, heat damage, crushing, a stitch or clip around the ureter, or disruption of its blood supply.

Factors that can make injury more likely or its effects more serious include:

Do not stop a prescribed blood thinner like warfarin or apixaban on your own. Tell the emergency or surgical team that you take it.

- Abnormal kidney position or structure
- A swollen kidney caused by blocked urine flow
- Kidney cysts or tumours
- Previous abdominal, pelvic, or urinary tract surgery
- Scar tissue that changes normal anatomy
- Having only one working kidney
- Medicines that reduce blood clotting

Diagnosis

Assessment begins with the circumstances of the injury, your symptoms, blood pressure, pulse, and an examination of the abdomen, back, ribs, and pelvis. Other injuries are assessed at the same time.

Blood tests may check your red blood cell level, kidney function, and blood chemistry. A urine test can detect blood that is not visible. These tests support the assessment, but they cannot confirm the location or full severity of an injury by themselves.

For someone whose circulation is stable, the main imaging test is usually a CT scan of the abdomen and pelvis using contrast dye injected into a vein. The scan shows kidney tissue, major blood vessels, internal bleeding, and many injuries to nearby organs. Delayed images taken after the kidneys release contrast into the urine can show leakage from the kidney or ureter.

If ureter damage remains uncertain, a clinician may perform retrograde pyelography. During this procedure, contrast is placed into the ureter through a small instrument passed into the bladder. X-rays then show whether the ureter is blocked or leaking. Imaging may instead be performed from above through a kidney drainage tube called a nephrostomy.

Ultrasound can help identify fluid or monitor a known problem, but a normal ultrasound does

not rule out kidney or ureter injury.

Kidney injuries are often graded from 1 to 5. Lower grades generally describe bruising or smaller tears. Higher grades involve deeper tears, major blood vessels, or severe disruption. The grade helps guide care, but treatment also depends on bleeding, other injuries, kidney function, and whether your circulation is stable.

Treatment and management

Immediate care focuses on maintaining breathing and circulation and finding any other serious injuries. You may receive intravenous fluids, blood products, pain relief, and treatment for associated trauma.

Many stable kidney injuries can be managed without an operation. This may involve observation in hospital, repeated examinations, blood tests, monitoring of urine output, and activity limits while the injury begins to heal. Follow-up imaging is used when symptoms, the injury pattern, or suspected complications make it necessary.

Ongoing bleeding may be treated with angiographic embolization. A specialist passes a thin tube through a blood vessel and blocks the specific vessel that is bleeding. This can control bleeding while preserving more of the kidney.

Surgery may be needed for uncontrolled bleeding, unstable circulation, certain major blood-vessel injuries, or damage found during an operation for other injuries. Surgeons preserve functioning kidney tissue when possible. Removal of part or all of a kidney is sometimes necessary when damage cannot be safely repaired.

Urine leakage from a kidney may settle as the injury heals. A persistent or complicated leak may need an internal ureteric stent, which is a small tube that keeps urine flowing toward the bladder. A collection of leaked urine may also need drainage through the skin.

Treatment for ureter injury depends on its location, extent, blood supply, and when it is discovered. A small injury may be managed with a stent. A larger tear or completely divided ureter usually requires surgical repair. If the injury is found later, a nephrostomy may first drain urine directly from the kidney into an external bag. Repair may take place after inflammation and infection are controlled.

Complications

Possible early complications include continued bleeding, infection, a collection of leaked urine called a urinoma, and an abscess. Urine or blood can also irritate nearby tissues.

A healing ureter can develop scar tissue and become narrow. This is called a stricture. It can block urine flow and cause swelling of the kidney, known as hydronephrosis. Persistent blockage can gradually reduce kidney function.

Other possible complications include:

Some complications appear days or weeks after the original injury. Keeping follow-up appointments helps identify them before permanent damage develops.

- Delayed bleeding
- Recurrent urinary infections
- Persistent pain
- Abnormal connection between blood vessels
- Raised blood pressure after kidney injury
- Reduced function in the affected kidney
- Kidney failure when both kidneys, or a single working kidney, are severely damaged

Prevention

Not every kidney or ureter injury can be prevented. Sudden accidents and injuries during necessary medical procedures can occur even when reasonable precautions are taken.

You can reduce some trauma risks by wearing a seat belt, using suitable protective equipment for sports or work, following road and workplace safety rules, and using fall-prevention measures where needed.

If you are having abdominal or pelvic surgery, tell the surgical team about previous operations, urinary tract conditions, or unusual kidney anatomy. Preventing procedure-related ureter injury is mainly the responsibility of the clinical team through careful planning, identification of anatomy, and recognition of possible damage.

Prompt assessment after significant trauma does not prevent the original injury, but it can reduce harm from bleeding, urine leakage, or obstruction.

Living with it and what to expect

Recovery depends on the depth and location of the injury, whether blood vessels or the ureter were affected, and whether other organs were injured. A limited kidney injury may heal over several weeks, although discomfort and reduced stamina can continue during recovery.

You may temporarily need to avoid heavy lifting, contact sports, and activities that could cause another impact. The timing of a return to work, driving, exercise, or sport is based on healing, symptoms, and the demands of the activity.

Follow-up may include blood pressure checks, kidney function tests, urine tests, or imaging. A stent or nephrostomy usually needs planned review, care, and later removal or replacement. Seek advice if a drainage tube stops draining, moves, leaks heavily, or causes worsening pain.

Many people with an injury to one kidney keep normal overall kidney function because the other kidney can provide substantial reserve. Even a single healthy kidney can often support everyday life. The outlook is more serious when both kidneys are injured, there was major blood-vessel damage, or the person had limited kidney function beforehand.

After ureter repair, urine may flow normally for the long term. However, scarring can develop months later, so follow-up may continue after you feel well. New side pain, repeated urine infections, or an unexplained decline in kidney function may lead to further imaging.

When to get medical help

Call emergency services after a major blow, penetrating wound, crushing injury, or road collision involving the abdomen, side, or back. Do not drive yourself if you feel faint, weak, confused, or severely unwell.

Get emergency help for:

If you recently had abdominal, pelvic, or urinary surgery, seek urgent assessment for fever, worsening side or abdominal pain, repeated vomiting, reduced urine output, increasing abdominal swelling, or unexpected clear fluid leaking from a wound or the vagina.

Routine follow-up is appropriate for improving discomfort, planned blood pressure or kidney tests, and questions about activity. Contact your care team sooner if pain returns, urine becomes bloody, you develop burning during urination, or a stent or nephrostomy causes new problems.

- Fainting, confusion, pale or clammy skin, or a rapid heartbeat
- Severe or rapidly worsening abdominal, back, or side pain
- Heavy blood in the urine or blood clots with difficulty urinating
- Abdominal swelling after an injury
- Little or no urine after significant trauma
- A penetrating wound near the abdomen, back, or side

Common questions

Can a bruised kidney heal on its own?

Many kidney bruises and smaller tears heal with observation rather than surgery when circulation is stable. Monitoring is still important because bleeding or urine leakage may not be obvious at first.

Does blood in my urine mean my kidney is badly damaged?

Not necessarily. A small injury can cause visible blood, while some serious injuries cause little or none. The injury history, examination, circulation, and imaging are more useful for judging severity.

Can you live normally with one kidney?

Many people live active lives with one healthy kidney. They may need periodic blood pressure, urine, and kidney function checks. Damage to both kidneys or to a single working kidney needs closer care.

How long does a kidney injury take to heal?

Healing often takes weeks, but there is no single timetable. Deeper injuries, urine leakage, surgery, and other trauma can extend recovery. Activity should increase according to follow-up advice rather than pain alone.

What happens if a ureter is cut during surgery?

If it is found immediately, it may be repaired during the operation. If discovered later, urine may first be drained with a stent or nephrostomy. A larger injury may then need reconstructive surgery.

Will I need another CT scan?

Not everyone needs routine repeat CT imaging. It may be used for a severe injury, worsening symptoms, fever, ongoing blood loss, suspected urine leakage, or concern about blocked urine flow.

Sources

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