CONDITION

Bilateral hydronephrosis

Learn what swelling of both kidneys means, including possible causes, symptoms, tests, treatment, complications, and when to seek urgent care.

WHAT IT IS
Swelling of both kidneys' urine-collecting areas

BODY SYSTEM
Urinary system

MAIN SYMPTOMS
Side or back pain, difficulty urinating, reduced urine output, fever or chills

WHAT CAUSES IT
Blocked urine flow or poor bladder emptying

HOW IT IS DIAGNOSED
Ultrasound or other imaging

MAIN TREATMENT
Urinary drainage and underlying-cause treatment

CAN IT BE CURED?
Sometimes, treatable causes can be corrected

IS IT AN EMERGENCY?
Sometimes, fever with side or back pain

LONG-TERM OUTLOOK
Kidney function may improve, but recovery can be incomplete

Overview

Bilateral hydronephrosis means that the urine-collecting areas of both kidneys are enlarged or swollen. This usually happens when urine cannot drain normally from the kidneys to the bladder or out through the urethra, the tube that carries urine out of the body.

Hydronephrosis is a finding rather than a disease by itself. It may be seen on an ultrasound, CT scan, or another imaging test. The underlying cause can be temporary and treatable, but it can also be a longer-lasting blockage or a problem with bladder function.

When both kidneys are affected, doctors pay close attention to kidney function. A severe or prolonged blockage can increase pressure within the urinary system and reduce the kidneys' ability to filter waste from the blood. However, the amount of swelling on an imaging report does not always show how much the kidneys have been affected. Some people with marked

hydronephrosis have stable kidney function, while others with less swelling may need prompt treatment.

Bilateral hydronephrosis can develop at any age. In adults, it is often related to a blockage at or below the bladder, although both ureters-the tubes connecting the kidneys to the bladder-can also be affected. In children, possible causes include conditions present at birth.

The urgency depends on the cause, symptoms, kidney test results, and whether infection is present. An infected and obstructed urinary system needs prompt drainage and medical treatment.

Symptoms

Bilateral hydronephrosis may cause no symptoms, especially if it develops slowly. It is sometimes found during imaging performed for another reason.

Possible symptoms include:

Pain varies according to the cause. A stone can produce sudden, intense waves of pain, while a slowly developing blockage may cause pressure, a dull ache, or no pain at all.

A very full bladder can sometimes be felt as discomfort or swelling in the lower abdomen. Some people continue to pass urine even when there is a significant blockage. Urine output alone cannot rule out hydronephrosis.

Infants and young children may have less specific symptoms, such as poor feeding, vomiting, fever, irritability, urinary infections, or poor growth. Hydronephrosis may also be detected on an ultrasound before birth.

Seek emergency care for an inability to urinate, severe or worsening pain, confusion, fainting, or repeated vomiting that prevents fluid intake. Fever or chills with side or back pain, especially when accompanied by reduced urine output, may indicate infection behind a blockage and requires urgent medical assessment.

- Pain in the side, back, lower abdomen, or groin
- Trouble starting urination
- A weak or interrupted urine stream
- A feeling that the bladder has not emptied
- Frequent or urgent urination
- Leaking urine or loss of bladder control

- Passing less urine than usual
- Blood in the urine
- Nausea or vomiting
- Fever, chills, or pain with urination if an infection is present

Causes and risk factors

Bilateral hydronephrosis usually develops because urine flow is blocked or because the bladder does not empty normally. The location and cause of the problem can differ from person to person.

A blockage at the bladder outlet can affect drainage from both kidneys. Possible causes include an enlarged prostate, narrowing of the urethra from scar tissue, bladder stones, severe constipation, or a growth pressing on or involving the bladder outlet.

The bladder may also fail to empty because its muscles or nerves are not working normally. This is called neurogenic bladder when it results from a nerve problem. It can occur with spinal cord injury, multiple sclerosis, diabetes-related nerve damage, stroke, certain birth conditions, or after some pelvic procedures. Medicines that affect bladder contraction or tighten the bladder outlet can sometimes contribute to urinary retention.

Both ureters may be narrowed or compressed. Causes can include:

Congenital conditions are present from birth. Examples include posterior urethral valves, which are obstructing tissue folds in the urethra of some male infants, and abnormalities where the ureter joins the kidney or bladder. Urine flowing backward from the bladder toward the kidneys, called vesicoureteral reflux, can also enlarge the collecting systems.

Risk is higher in people with previous urinary stones, repeated urinary infections, pelvic cancer, prostate enlargement, pelvic surgery or radiation, bladder-emptying problems, or known urinary tract abnormalities. A history of hydronephrosis does not establish its current cause, so new or worsening findings still need evaluation.

- Stones in both ureters
- Scar tissue after surgery, radiation, inflammation, or injury
- Tumors or enlarged lymph nodes in the abdomen or pelvis
- Retroperitoneal fibrosis, a rare condition that causes tissue to form around structures behind the abdominal organs
- Blood clots or other material blocking urine flow

- Changes related to pregnancy, which can widen the kidney drainage system and sometimes worsen an existing obstruction

Diagnosis

Evaluation begins with the symptoms, medical history, and physical examination. A clinician may ask about pain, fever, urinary flow, previous stones, infections, operations, medicines, pregnancy, and neurologic conditions. The abdomen, back, external genital area, or prostate may be examined when relevant.

Blood tests can measure creatinine, a waste product used to estimate kidney function. Electrolytes such as potassium may also be checked because kidney dysfunction or a severe blockage can disturb the body's salt and fluid balance.

A urine test can look for blood, white blood cells, bacteria, crystals, or protein. If infection is possible, a urine culture may be used to identify bacteria and help guide antibiotic treatment. A normal urine test does not exclude an obstruction.

Ultrasound is commonly used to confirm hydronephrosis because it does not expose the patient to radiation. It can show enlargement of the kidney collecting systems and may reveal bladder distention or some stones. A measurement of urine remaining in the bladder after urination, called a post-void residual, can help identify urinary retention.

Additional tests depend on the clinical situation. A CT scan can provide more detail about stones, masses, or the level of a blockage. MRI or MR urography may be useful in selected cases. A nuclear medicine renal scan can assess drainage and compare how much each kidney contributes to overall function.

Cystoscopy involves passing a thin camera through the urethra to examine the urethra and bladder. It may be recommended when narrowing, a bladder abnormality, or another lower urinary tract cause is suspected.

Imaging can show dilation without proving that urine flow is currently blocked. Doctors interpret the scan together with symptoms, laboratory results, bladder measurements, and sometimes functional testing.

Treatment and management

Treatment focuses on protecting kidney function, relieving significant obstruction, managing infection, and addressing the underlying cause. Not everyone with bilateral hydronephrosis needs the same procedure or the same level of urgency.

Prompt drainage may be necessary when there is infection with obstruction, worsening kidney function, severe symptoms, very low urine output, or substantial urinary retention. If the blockage is at the bladder outlet, a clinician may place a urinary catheter through the urethra to drain the bladder. When this is not possible, drainage may sometimes be established through the lower abdomen.

A blockage higher in the urinary tract may be bypassed with a ureteral stent, a small internal tube running from the kidney to the bladder. Another option is a nephrostomy tube, which is placed through the skin into the kidney and drains urine into an external bag. The choice depends on the location and cause of the obstruction, the person's condition, and available expertise.

Drainage treats the immediate pressure but may not correct the cause. Later treatment may involve removing a stone, opening a narrowed area, treating prostate obstruction, repairing an anatomic abnormality, or managing a tumor or external compression. People with bladder nerve or muscle problems may need a structured bladder-emptying plan.

Antibiotics like amoxicillin or doxycycline are used when a bacterial infection is diagnosed or strongly suspected. They do not remove a physical blockage. When infection is trapped above an obstruction, drainage is usually an important part of treatment.

After a major blockage is relieved, some people produce a large amount of urine for a period of time. This is called post-obstructive diuresis . Clinicians may monitor urine output, blood pressure, fluids, kidney function, and electrolytes because excessive fluid and salt loss can occur.

Mild dilation without evidence of active obstruction may sometimes be monitored rather than treated immediately. This decision should be based on the suspected cause, symptoms, kidney function, and follow-up imaging-not on the imaging description alone.

Complications

Untreated or prolonged obstruction can damage kidney tissue. Depending on its severity and duration, this may lead to acute kidney injury, which is a sudden decline in kidney function, or chronic kidney disease, which is longer-term loss of function. Kidney function may improve after drainage, but recovery can be incomplete when obstruction has been severe or longstanding.

Urine trapped above a blockage can increase the risk of urinary infection. An infection may spread to the bloodstream and become life-threatening, particularly when drainage is blocked. This is why fever, chills, and flank pain with suspected obstruction require urgent assessment.

Other possible complications include repeated infections, stone formation, persistent pain, blood in the urine, and ongoing bladder dysfunction. Severe kidney failure can cause fluid retention or abnormal electrolyte levels. Dialysis is occasionally needed when kidney failure or related complications are severe, but it is not a routine treatment for hydronephrosis.

Treatment procedures also have possible risks, including bleeding, infection, tube or stent discomfort, and movement or blockage of a drainage device. The treating team can explain the expected benefits and risks of a recommended procedure.

Follow up

Follow-up is used to confirm that urine is draining, kidney function is stable or improving, and the underlying cause has been addressed. The plan may include repeat blood tests, urine testing, bladder-emptying measurements, or follow-up imaging. People with a catheter, stent, or nephrostomy tube need instructions for care and a clear plan for removal or replacement.

Routine follow-up is important even when pain improves. Loss of pain does not always mean that an obstruction has fully resolved. Keep scheduled appointments and ask when kidney tests or imaging should be repeated.

Contact the treating clinician promptly for new urinary difficulty, increasing pain, visible blood in the urine, leaking around a drainage tube, or a clear change in urine output.

Seek urgent or emergency care for:

- Fever or chills with back, side, or abdominal pain
- Inability to urinate
- Very little urine, especially with swelling, weakness, or shortness of breath
- Severe or rapidly worsening pain
- Repeated vomiting or inability to keep fluids down
- Confusion, fainting, or severe weakness
- A nephrostomy tube that stops draining, falls out, or is associated with fever or worsening pain

Sources

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