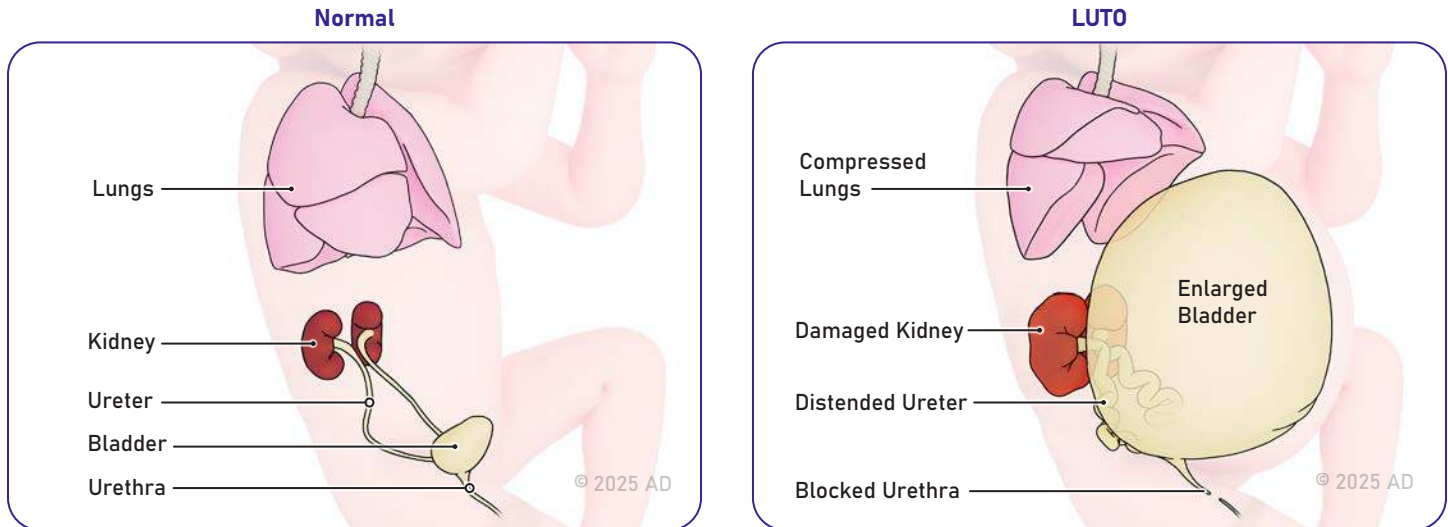




## OVERVIEW

The urinary tract includes the kidneys, ureters, bladder, and urethra, which help produce and remove urine.

**Lower urinary tract obstruction (LUTO)** happens when the urethra is blocked, preventing urine from leaving the body.

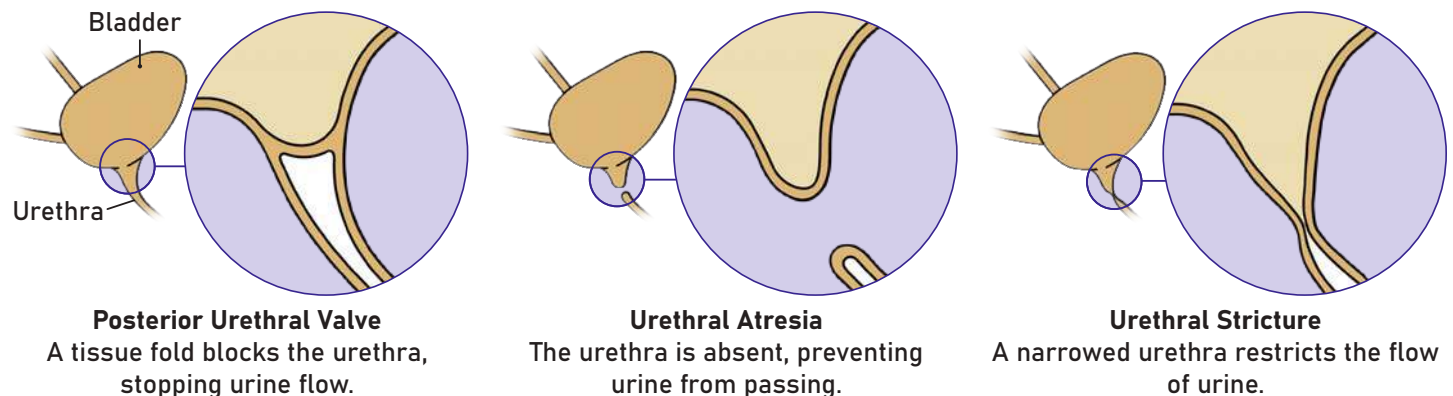


This can damage the kidneys and reduce amniotic fluid, which is needed for lung development. Since the placenta supports the baby in the womb, damaged lungs or kidneys may cause serious health issues after birth.

If LUTO has caused damage to the baby's organs, they may not work properly which can affect the baby's health and lower the chance of survival.

## CAUSES

LUTO can happen because of a problem the baby's **genetics**, or it can happen for no known reason ("**isolated**" LUTO). Whether genetic or isolated, LUTO is caused by a structural issue with the urethra. After birth, doctors can run tests to find out exactly why LUTO happened, which helps them decide how to treat the baby.



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## DIAGNOSIS



### Ultrasound

Uses sound waves to check organ development and growth.



### MRI

Creates detailed images of the fetal urinary tract.



### Fetal Echocardiography

Examines the heart for abnormalities, as babies with LUTO have a higher risk of heart issues.



### Amniocentesis

Tests amniotic fluid for genetic conditions.



### Urinary Electrolytes

Used to analyze urine to assess kidney function.

## INTERVENTIONS

Since these procedures carry risks for both baby and mother, they are only considered for cases where the benefits outweigh the potential risks.



### Vesicocentesis

A needle drains urine from the baby's bladder to reduce pressure; may be repeated. The urine that was removed can be used to evaluate the kidney function.



### Amnioinfusion

Sterile fluid is added to the uterus to support lung development; may be repeated.



### Pigtail Shunt

A small tube (or "shunt") is placed in the baby's bladder to drain urine into the amniotic sac.



### Fetal Surgery (Fetal Cystoscopy)

In rare cases, a cystoscope (small, surgical camera) can be inserted into the baby's urethra to remove the blockage before birth.

Fetal intervention may improve survival for some babies with LUTO, but **these interventions can also be risky for both the baby and the mother**. Risks include shunt displacement, infection, rupture of membranes, pre-term delivery or early labor, and miscarriage. Interventions may need to be repeated.

## OUTCOMES

### What Happens After Fetal Treatment for LUTO?

After treatment, the baby will need to be delivered in a hospital with a neonatal intensive care unit (NICU), where doctors will evaluate the baby and address their unique medical needs. Surgery may be needed to create a way for urine to leave the body, and some babies may require dialysis or a kidney transplant.

### Will My Baby Be Healthy Later?

The outlook for babies with LUTO depends on how serious the blockage is and whether other organs, like the kidneys or lungs, are also affected. Babies with severe LUTO have a lower chance of surviving, and even if they do survive birth, they may still need a lot of medical support from pediatric specialties such as urology, nephrology, surgery, and transplant. NICU care and close monitoring are crucial.

## RESOURCES



Webpage:  
Lower Urinary Tract Obstruction  
<https://www.hopkinsmedicine.org/>



YouTube video:  
"What is LUTO?"  
<https://youtu.be/iy93ZxkyZAg>



Webpage:  
Lower Urinary Tract Obstruction (LUTO)  
<https://dannhardt.com/luto-thesis/>

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