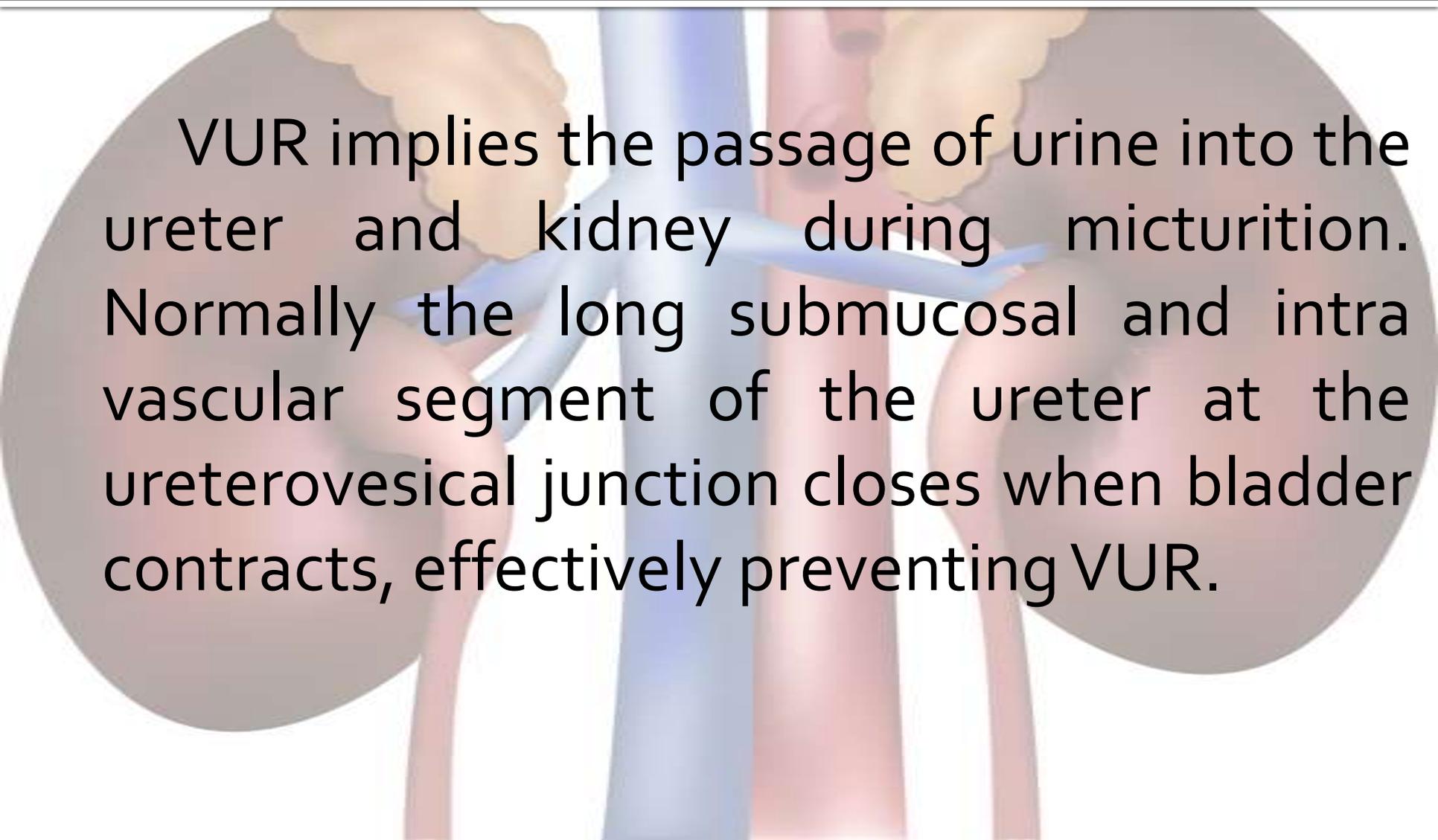


# RENAL SYSTEM

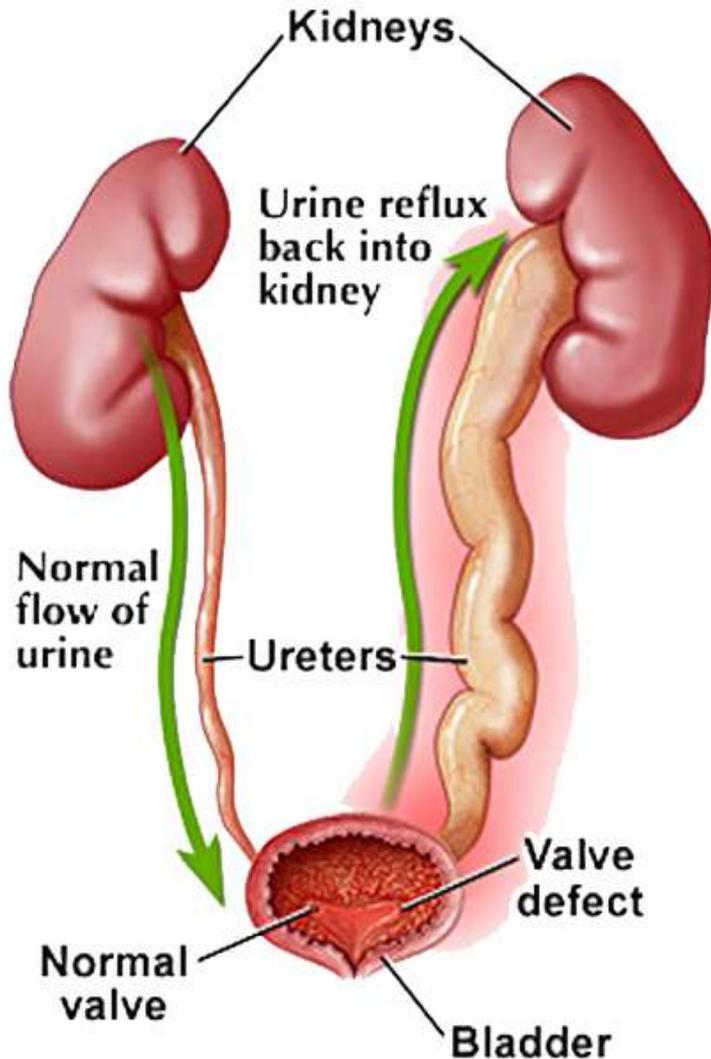
VESICO URETERAL REFLUX

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# VESICO URETERAL REFLUX



VUR implies the passage of urine into the ureter and kidney during micturition. Normally the long submucosal and intravascular segment of the ureter at the ureterovesical junction closes when bladder contracts, effectively preventing VUR.



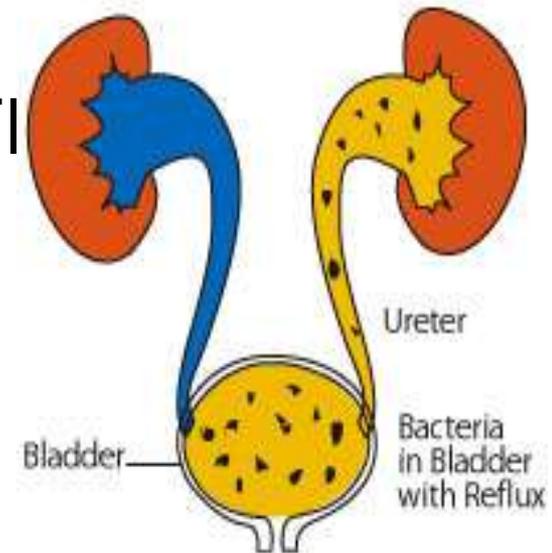
It is an abnormal retrograde flow of bladder urine into the ureters. Urine normally travels from the kidneys via the ureters to the bladder. In vesicoureteral reflux the direction of urine flow is reversed.

# INCIDENCE

- <10% of the population.
- 17.2-18.5% in children without UTI
- In those with UTI the incidence is 70%
- Younger children are more prone
- It decreases to 15% by the age of 12.
- It is more common in males ante-natally, in later life there is a female preponderance with 85% of cases.

# ETIOLOGY

- Vesicoureteral reflux may present before birth as prenatal hydronephrosis, an abnormal widening of the ureter or with a UTI or acute pyelonephritis.
- It is associated with recurrent UTI



# CLINICAL MANIFESTATIONS

Newborns may be lethargic with faltering growth

- UTI

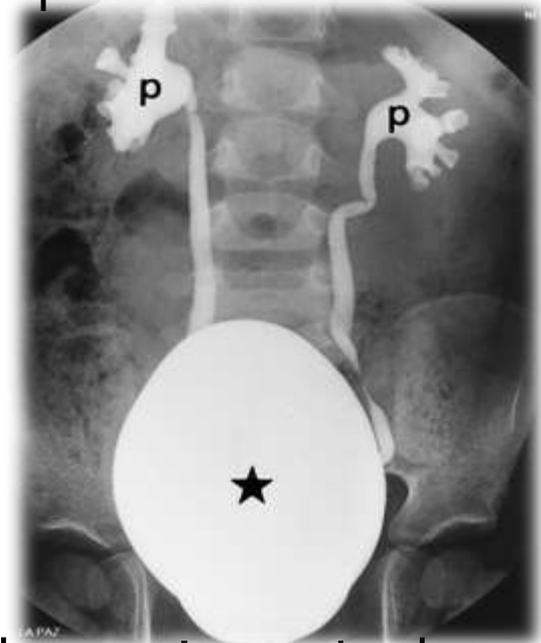
If the child is with UTI, he may have:

- pyrexia
- dysuria
- frequent urination
- malodorous urine
- Chills
- Vomiting
- feeling that the bladder does not empty completely

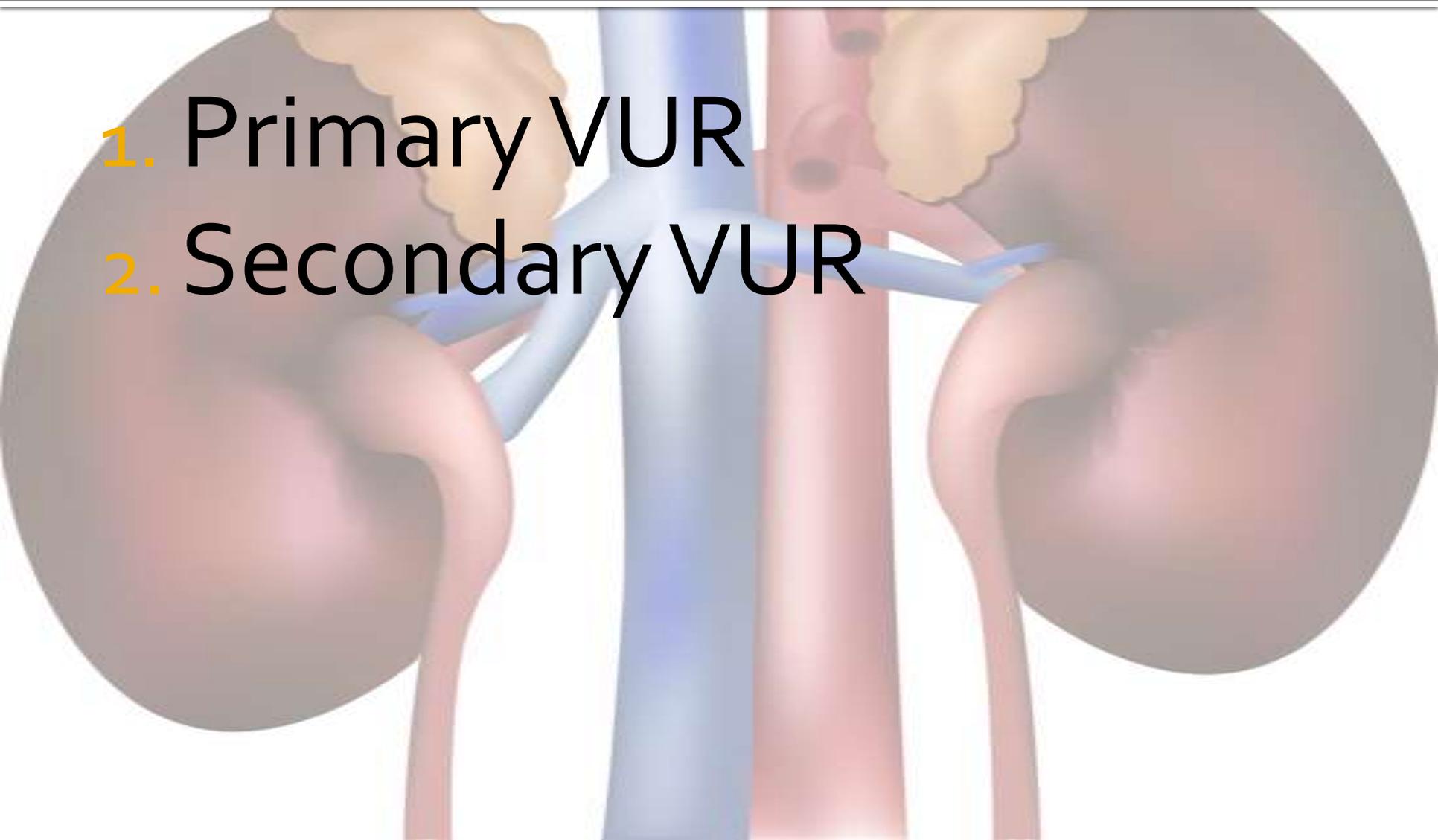


# DIAGNOSTIC EVALUATION

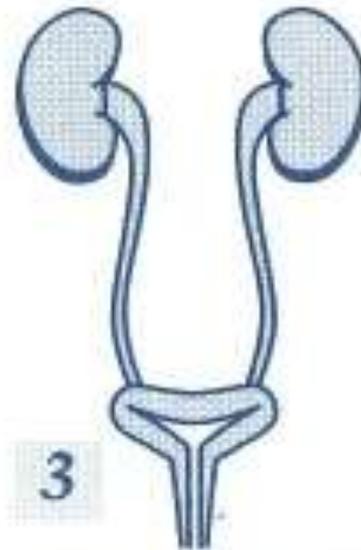
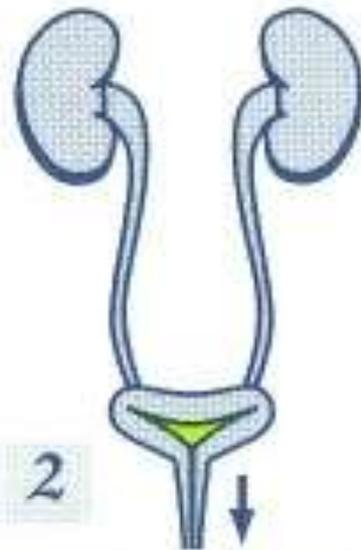
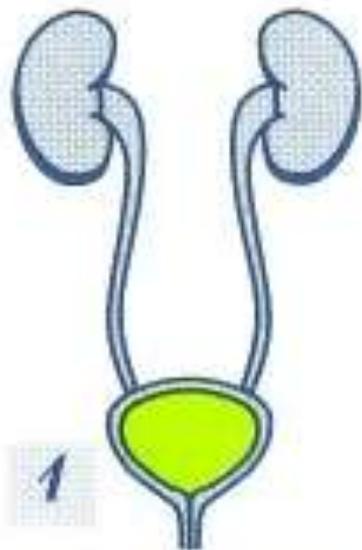
- History Collection & Physical Examination  
urinary tract infection
- Nuclear cystogram  
for subsequent evaluations as there is less exposure to radiation
- Fluoroscopic voiding cysto urethrogram  
Grading the initial work up
- Ultrasonic cystography
- Abdominal ultrasound
- Urethral dialation
- urine culture  
to check for a UTI
- Ultrasound of the kidneys  
to find out the size and shape of the kidneys. It can't detect reflux.



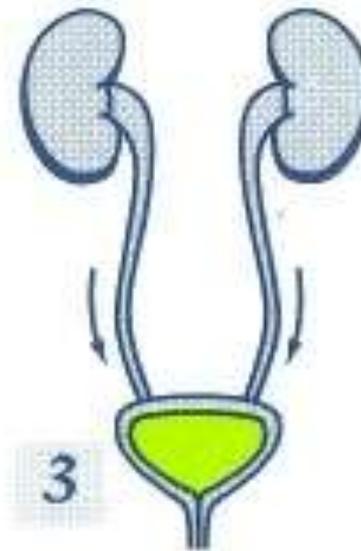
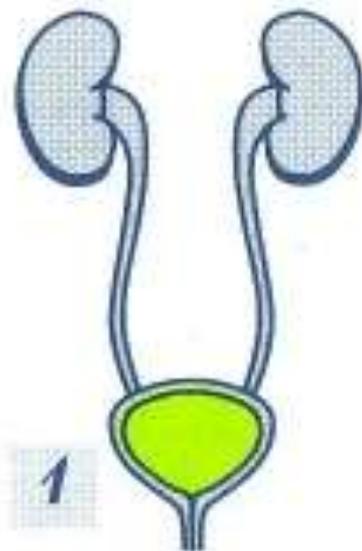
# TYPES

1. Primary VUR
  2. Secondary VUR
- 

*Normal*



*Reflux*



# 1. Primary VUR

- present at birth.
- It is caused by a defect in the development of the valve at the end of the tube that carries urine from the kidneys to the bladder (ureter). This is the most common type of VUR and is usually detected shortly after birth.

# Secondary VUR

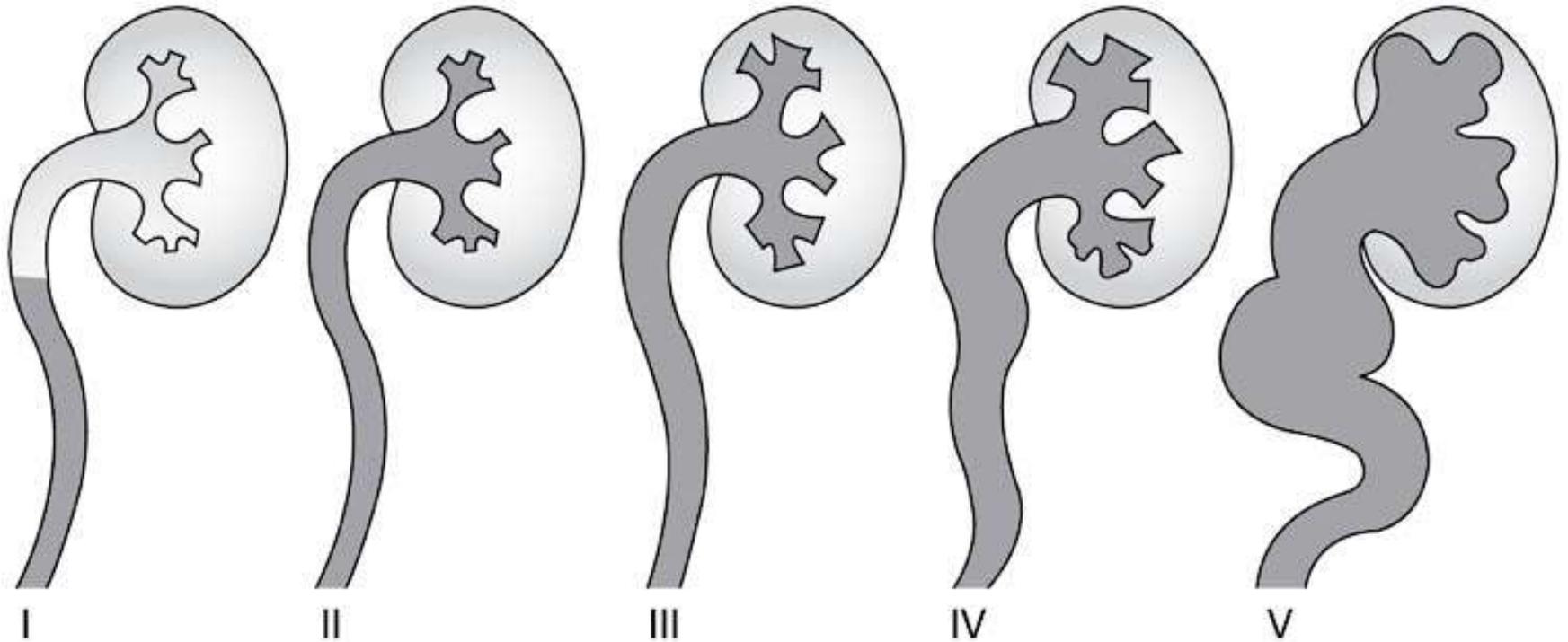
- occurs when an obstruction in the bladder or urethra causes urine to flow backward into the kidneys.
- occur at any age and can be caused by surgery, injury, a pattern of emptying the bladder that's not normal, or a past infection that puts pressure on the bladder. It is more common in children who have other birth defects, such as spina bifida.

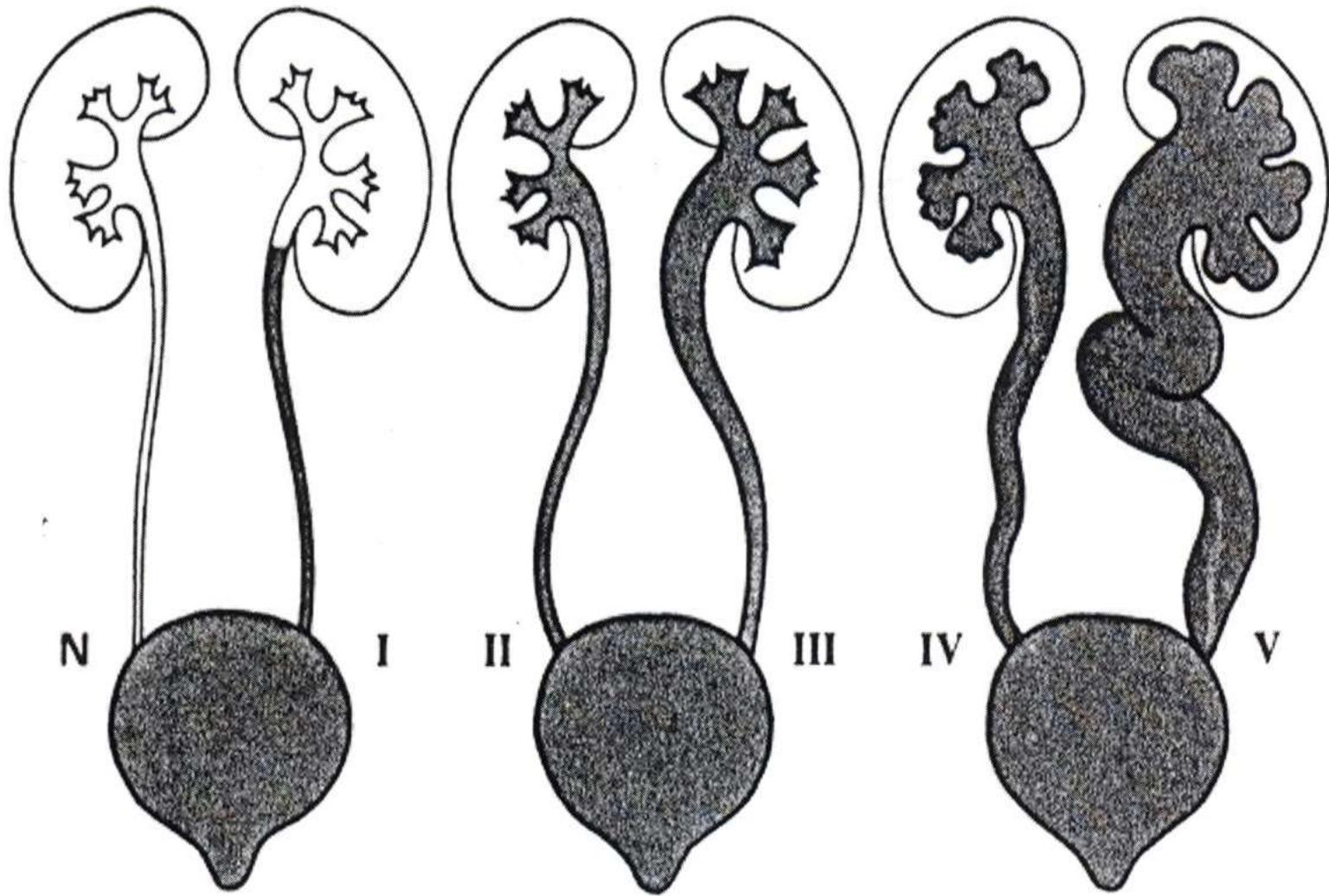
# GRADING OF VUR

## International Classification

- Grade I - reflux into non-dilated ureter
- Grade II - reflux into the renal pelvis and calyces without dilatation
- Grade III - mild/moderate dilatation of the ureter, renal pelvis and calyces with minimal blunting of the fornices
- Grade IV – dilation of the renal pelvis and calyces with moderate ureteral tortuosity
- Grade V – gross dilatation of the ureter, pelvis and calyces; ureteral tortuosity; loss of papillary impressions

# International grading of VUR





# TREATMENT

## Goal

- to minimize infections, renal injury and other complications of reflux.
- In newborn & infants , prophylactic antibiotics
- In older children, bowel and bladder management
- Good perineal hygiene, and timed and double voiding are also important aspects of medical treatment. Bladder dysfunction is treated with the administration of anticholinergics.

# Endoscopic injection

Deflux is a gel that is used in endoscopic injections to treat Vesicoureteral Reflux. Deflux consists of two types of sugar-based molecules called dextranomer and hyaluronic acid. Both materials are also biocompatible, which means that they do not cause significant reactions within the body. Hyaluronic acid is produced and found naturally within the body.



# Surgical Management

A surgical approach is necessary in cases where a breakthrough infection results despite prophylaxis.

There are three types of surgical procedures

- endoscopic (STING/HIT procedures)
- laparoscopic
- open procedures (Cohen procedure, Leadbetter-Politano procedure).



# Follow up

- Annual evaluation
- Blood  
pressure, weight, height, VCU, urine  
culture



THANK YOU..