Horseshoe Kidney

Horseshoe kidney is characterized by fusion of the inferior renal poles below the inferior mesenteric artery. Renal function is typically normal. Horseshoe kidney is associated with Turner syndrome and trisomy syndromes. Diagnosis can be made by ultrasound. Important complications include hydronephrosis, nephrolithiasis, and infection. Another consideration to remember is that patients have an increased risk for renal cancer. Nevertheless, horseshoe kidney has an excellent prognosis.



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Charactersitics

Fusion of Inferior Renal Poles
Fusion of In-fur Kidney Poles
Horseshoe kidney is characterized by a fusion of the inferior renal poles. Instead of having two kidneys, the patient will have one kidney with a "U" shape.

Inferior Mesenteric Artery
In-fur Mouse Archer
During fetal development, the kidney moves proximally. If horseshoe kidney occurs, the kidney will be trapped under the inferior mesenteric artery.

Normal Renal Function
Normal Kidney with Normal-sign
Horseshoeing of the kidney doesn't interfere with renal function. Patients present with normal renal function.

Associations

Turner Syndrome
Turnip
Horseshoe kidney can be seen in 14-20% of patients with Turner syndrome. This is the most common renal abnormality seen in patients with Turner syndrome.

Trisomy Syndromes
Tricycle
The incidence of Horseshoe kidney is higher in patients with trisomy syndromes. These include Edward syndrome (67% cases), and Down syndrome (1% cases).

Diagnosis

Ultrasound
Ultrasound-machine
Ultrasound is the most common diagnostic tool used to visualize horseshoe kidneys. Diagnosis will be made with the presence of fusion of the kidney's isthmus which is seen in the inferior part of the kidney. It will be hard to be seen if malrotation occurs or there is an altered renal axis.

Considerations

Hydronephrosis
Water-in-kidney
Horseshoe kidneys can cause abnormal positioning of the ureter. This frequently results in the stenosis of the ureteropelvic junction causing hydronephrosis.

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Nephrolithiasis

Kidney Throwing Stones

Nephrolithiasis is one of the most common complications and is seen in 20-60% of patients with horseshoe kidneys. It is a result of a stone formation due to impaired drainage of the collecting system.

Infection

Infectious-bacteria

Infection is the other complication that may occur in patients with horseshoe kidney due to the presence of urine stasis resulting from ureteropelvic junction stenosis or stone formation.

Increased Risk of Renal Cancer

Up-arrow Risk Kidney Car-gnome Tumor-guy

Horseshoe kidney carries an increased risk of renal cancer. Renal cell carcinoma is the most common renal cancer type seen in these patients.

Excellent Prognosis

Doctor with Excellent Prognosis

Horseshoe kidney has an excellent prognosis, and typically doesn't affect life expectancy. One-third of those with horseshoe kidney will have this disease discovered incidentally.

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