The renal sinus :

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The renal sinus is a central spacious cavity formed by the extension of the perinephric space into the deep recess located at the medial border of the kidney.The renal sinus is surrounded by the kidney parenchyma laterally. The major branches of the renal artery and vein along with the major and minor calices of the collecting system are located within the renal sinus. The remainder of the sinus is filled with adipose tissue, lymphatic channels, nerve fibers of the autonomic nervous system, and varying quantities of fibrous tissue.Therefore, various pathologic conditions can occur in the renal sinus from any of its constituents. In addition, the renal sinus can be secondarily involved by surrounding renal parenchymal and adjacent retroperitoneal lesions.As with any anatomic region, renal sinus lesions can be classified as nontumorous or tumorous. Nontumorous lesions include renal sinus lipomatosis, renal sinus cysts, vascular lesions, and fluid collections. Tumors involving the renal sinus can be classified according to their origins into four subgroups: (a) tumors of the renal pelvis, (b) primary tumors of mesenchymal origin, (c) tumors of the renal parenchyma that project into the renal sinus, and (d) retroperitoneal tumors that extend to the renal sinus.A broad spectrum of pathologic lesions can occur in the renal sinus. Therefore, the diagnosis of renal sinus lesions relies on a multimodality imaging approach including excretory urography, Ultrasonography (US), Computed Tomography (CT), Magnetic Resonance imaging (MRI), and angiography.Renal sinus lesions can be seen as either peripelvic or parapelvic lesions at excretory urography.The most common causes of peripelvic lesions splaying and elongating the pelvicaliceal system include renal sinus cysts and renal sinus lipomatosis. The uncommon causes include arteriovenous communications, renal sinus hemorrhage, urine extravasation into the renal sinus, and lymphoma infiltrating the renal sinus. Parapelvic lesions encroaching on the renal sinus suggest any of the mass lesions of the kidney, including vascular lesions. An irregular pelvicaliceal deformity suggests direct invasion by malignant tumors or unusual inflammatory conditions.Ultrasonography is an excellent noninvasive technique used to confirm whether such a mass is cystic, solid, or vascular. If US findings suggest a solid mass, Computed tomography (CT) is used as a problem-solving technique and for evaluation of tumor stage or to determine the extent of the lesion. In general, the coronal plane of cross-sectional imaging is the most useful for the evaluation of renal sinus lesions because it provides a comprehensive view of complicated renal sinus disease. Familiarity with the imaging features and differential diagnoses of various renal sinus pathologic processes will facilitate prompt, accurate diagnosis and treatment.Magnetic

resonance (MR) imaging is an alternative to CT for the evaluation of renal sinus lesions because it allows detailed tissue characterization of complicated renal sinus lesions and direct multiplanar images with the same image resolution in the coronal, sagittal, and axial planes. It can also be used in patients with renal failure or contrast material allergies.