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IMAGES IN SURGERY

Comprehensive 3D CT Imaging of Horseshoe Kidney with Anatomical Details

Kaushik Bhattacharya^{1,*}, Aarzo Nagpal², Prabhdeep Singh Chowdhary², Jaspreet Singh Bedi² and Rakhi Kumari²

¹Associate Professor, Department of Surgery, Mata Gujri Memorial Medical College and LSK Hospital, Kishanganj - 855107, Bihar, India

²Postgraduate Student, Department of Surgery, Mata Gujri Memorial Medical College and LSK Hospital, Kishanganj - 855107, Bihar, India

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Abstract

A 3D CT scan should be the investigation of choice in case of congenital anomalies like Horseshoe kidney, as it guides the surgeon precisely before any major surgical intervention.

Keywords: Horseshoe kidney, 3D CT imaging, Colorectal cancer

*Corresponding Author: Kaushik Bhattacharya
Email: kbhattacharya10@yahoo.com

A 30 year male patient came with hematuria along with recurrent urinary tract infection of more than a decade. Ultrasound revealed a horseshoe kidney with fusion of the lower pole. Three-dimensional (3D) CT revealed a horseshoe kidney with left ureteric calculi (Figure 1). The patient underwent surgery initially for the ureteric calculi and at present under follow-up.

Horseshoe kidney is a congenital renal fusion abnormality, having an incidence of 0.25–0.5% of the population, where abnormal renal anatomy with atypical vasculature poses an operative challenge and complicates tumour resection, especially during colorectal tumours. The renal vasculature, tumour

vasculature, and tumour involvement of the pelvicalyceal system are difficult to assess with two-dimensional (2D) images, but with Three-dimensional (3D) reconstructions of the horseshoe kidney, the subjective knowledge of surgical anatomy increases the surgeons' confidence and improves the surgical intraoperative decision. The 3D virtual reconstruction is used as an investigation of choice for laparoscopic and robotic-assisted partial nephrectomy [1]. With the help of 3D CT, precise vascular anatomy around the horseshoe kidney was delineated and used during partial nephrectomy in renal cell carcinoma [2].



Figure 1. 3D CT showing horseshoe kidney with calculus left ureter.

Statements and Declarations

Conflicts of interest

The authors declare that they do not have conflict of interest.

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