

# Calyceal crescents (of Dunbar and Nogrady)

Bradley A. Cagle <sup>1</sup> and Raymond B. Dyer<sup>1</sup>

<sup>1</sup>Department of Radiology, Wake Forest Baptist Medical Center, Wake Forest University School of Medicine, Medical Center Blvd., Winston-Salem, NC 27157, USA

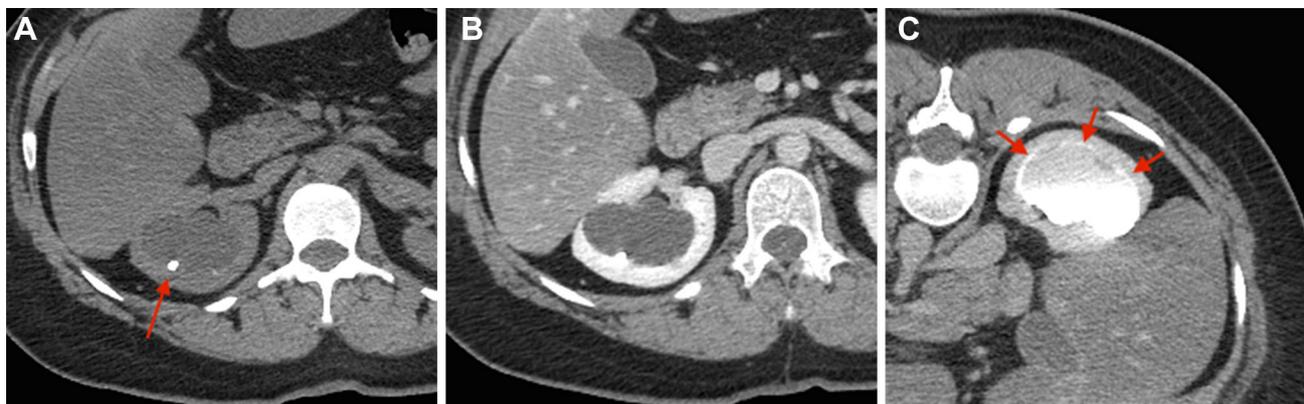
In the presence of chronic hydronephrosis, the normal vertical orientation of collecting tubules in the renal medulla may be altered by progressive dilatation of the calyx [1]. The positional change in the tubules, such that they lie parallel to the margin of the dilated calyx as opposed to their normal vertical orientation in the medulla, may produce a “crescent” shape when the tubules are opacified with concentrated contrast material (Fig. 1). Although originally described at conventional excretory urography [1], the appearance may also be seen during CT urography (Fig. 2A–C). The calyceal crescent sign is seen early in the course of the contrast examination and fades as the dilated collecting system becomes opacified [1, 2].

Dunbar and Nogrady described the appearance of calyceal crescents on urography performed in infants and children with obstructive hydronephrosis, usually from congenital ureteropelvic junction obstruction (UPJO) or chronic upper tract dilatation in patients with vesicoureteral reflux [1]. In adults, a broader differential

diagnosis should be entertained, including congenital UPJO, secondary UPJO from tumor, or chronic ureteral obstruction [2]. Calyceal crescents are not seen with acute hydronephrosis, as time is required for the tubular realignment. When calyceal crescents are seen, it usually signifies increased intrapelvic pressure and indicates that the affected kidney retains some intrinsic function [1]. This implies that some renal function might be recoverable, if the cause of the elevated intrapelvic pressure or obstruction is corrected [1].



**Fig. 1.** Vintage shutters with crescent moon-shaped carvings.



**Fig. 2.** **A** Unenhanced axial CT image demonstrates severe hydronephrosis involving the upper pole of the right kidney. The dilated collecting system contains a small stone (arrow). **B** Early excretory phase image shows unopacified urine in the

dilated upper pole collecting system. **C** Delayed image obtained with the patient prone shows a thin “crescent” of contrast material along the posterior aspect of the dilated collecting system (arrows), which is now partially opacified.

**Compliance with ethical standards**

**Funding** None.

**Conflict of interest** The authors declare that they have no conflict of interest.

**Research involving human and animal rights** This article does not contain any studies with human participants or animals performed by any of the authors.

**Informed consent** Not applicable.

**References**

1. Dunbar JS, Nogrady MB (1970) The calyceal crescent—a roentgenographic sign of obstructive hydronephrosis. *AJR* 110:520–528
2. Khanna G (2005) The calyceal crescent sign. *Radiology* 236:653–654