

## **Bovine kidney: anatomical relationships between the renal venous arrangement and the kidney collecting system**

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Recently, the bovine kidney has also been used for urologic experimental studies on laparoscopic partial nephrectomy. The objective of this work is to present a systematic study of the anatomical relationship between the intrarenal veins and the collecting system using three-dimensional endocasts of the bovine kidney, in order to help urologists in experimental research and urological surgical training when using the calf model. The kidney collecting system and intrarenal veins were studied using three-dimensional endocasts. Casts were prepared from 20 bovine kidneys using an injection-corrosion technique. Free anastomoses between the intrarenal veins were identified. Anastomoses were found in all renal parenchyma, as previously reported in pigs<sup>1</sup> and humans<sup>2</sup>. Around the minor calices, a collar-shaped venous anastomosis was formed, similar to that of pigs<sup>1</sup> and man<sup>2</sup>. The renal vein was formed by two trunks in 5 of the 20 (25%) kidneys studied, three trunks in 11 of 20 (55%) kidneys, four trunks in 3 of 20 cases (15%) and five trunks in 1 kidney (5%). This is similar to humans<sup>2</sup> but different from pigs, which had only two or three trunks<sup>1</sup>. A dorsal and a ventral venous plexus were found in the cranial pole in 55% of the specimens, similar to human kidneys, where the plexus occurred 84.6% of the time<sup>2</sup>. This is different from pigs, where only the ventral surface of the cranial pole was drained by large veins<sup>1</sup>. The dorsal surface of the renal pelvis was void of large veins. Therefore, direct punctures of the dorsal surface of the renal pelvis in the bovine would not result in important vascular complication as in human<sup>2</sup>. Although some results of intrarenal venous arrangement in the bovine could not be completely transposed to humans, other similarities between bovine and human renal veins support utilization of the bovine as a good animal model for urologic procedures.

**Financial support:** This work was supported by grants from the Foundation for Research Support of Rio de Janeiro (FAPERJ), Brazil.

### **References**

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