Traumatic kidney injury before and after reconstruction

Three-dimensional (3D) angio-computed tomography has refined strategic planning in reconstructive surgery after trauma [1]. We describe a dramatic case of grade IV renal trauma after a skiing accident in a 32-year-old man [2]. After losing control he had crashed against a snowmaking machine, fracturing his left twelfth rib and the transverse process of his third lumbar vertebra, and thereby rupturing his kidney. After emergency triage [3], a 3D-reconstruction of the arterial tree to the traumatized kidney demonstrated stretched out arteries in the hilum supplying both halves (Fig. 1a). A big hematoma filled the perinephric space (Fig. 1b). Both halves were separated by hematoma, but the parenchyma was still perfused. These images motivated us to attempt a complete reconstruction of the kidney. After informed consent was obtained the kidney was explored through a left flank incision. The perirenal hematoma was removed and vascular control achieved, then the lacerated renal veins were reconstructed. A nephrostomy was placed in the upper half of the kidney and a pigtail catheter in the lower half (Fig. 1c). The collecting system was approximated and the kidney was placed in a vicryl bag. At one and a half years follow-up the kidney functions well and is the same size as the contralateral kidney.

Performing a 3D-arterial tree reconstruction of a traumatized kidney allows accurate evaluation of the renal parenchyma. In grade IV renal injuries this allows for reconstruction planning in cases where exploration is indicated.

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References

1. Santucci R A, Wessells H, Bartsch G, Descotes J, Heyns C F, McAninch J W, Nash P, Schmidlin F (2004) Evaluation and management of renal injuries: consensus statement of the renal trauma subcommittee. *BJU International* 93 (7): 937–954
2. Moore EE, Shackford SR, Pachter HL, et al (1989) Organ injury scaling: spleen, liver, and kidney. *J Trauma* 29: 1664–1666
3. Carlin BI, Resnick MI (1995) Indications and techniques for urologic evaluation of the trauma patient with suspected urologic injury. *Semin Urol* 13: 9–24

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