

CASE REPORT

TRAUMA AND RECONSTRUCTIVE UROLOGY

Grade IV renal trauma in a 17-year-old patient

Badereddin Mohamad Al-Ali¹, Felix Thimary¹, Karl Pummer¹

¹Department of Urology, Medical University Graz, Austria

²Department of Radiology, Medical University Graz, Austria

Article history

Submitted: Nov. 18, 2011

Accepted: Jan. 17, 2012

Correspondence

Badereddin Mohamad Al-Ali
Medical University of Graz
Department of Urology
7, Auenbruggerplatz 7
A-8036 Graz, Austria
phone: +43 676 761 5811
bader1971@gmx.at

Renal trauma occurs in 1–5% of all trauma cases. The kidney is the most commonly injured genitourinary and abdominal organ.

In this case we present a 17-year-old patient with a grade IV trauma of the left kidney with renal rupture, hematoma, and urinoma. He was referred to our hospital in hemodynamic stability; therefore, a conservative approach was chosen.

One year after the accident the patient was free from symptoms, and the renal function was normal; CT-scan revealed neither hematoma nor urinoma.

Since nothing is known on the long-term outcomes in patients with severe renal traumas, long-term follow up studies are highly recommended.

Key Words: grade IV trauma ◊ urinoma ◊ hematoma

INTRODUCTION

Conservative management of solid organ injuries is already part of routine clinical practice.

Advances in intensive care units as well as synchrony in multidisciplinary approaches allowed for expansion of possibilities in this field, such as conservative treatment. Indications for surgical management in blunt solid abdominal organ injuries have diminished in recent years [8]. By definition renal trauma grade IV according to AAST (the American Association for surgery of Trauma) “is laceration through the corticomedullary junction into the collecting system or vascular segmental renal artery; vein injury with contained hematoma; partial vessel laceration; or vessel thrombosis”.

CASE REPORT

A 17-year-old male patient was referred to our hospital because of hematuria and left renal trauma grade IV due to a motorbike accident. On admission, the patient complained of left-sided flank pain and had hematuria with stable vital parameters. A CT-scan of the abdomen revealed a grade IV trauma of

the left kidney with multifragmentary renal ruptures, a large 7.5 cm retroperitoneal hematoma, and a urinoma (Figure 1).

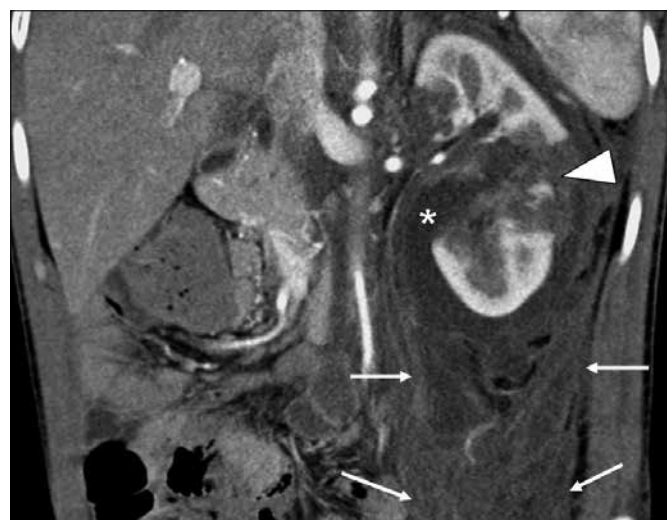


Figure 1. Shows a grade IV trauma of the left kidney with multifragmentary renal ruptures and a large retroperitoneal haematoma and urinoma 7.5 cm.

The patient was thermodynamically stable and the renal function normal (serum creatinine 0.96 mg/dl, blood urea nitrogen 21 mg/dl). Therefore, a conservative approach was chosen and broad-spectrum antibiotic administered, as well as bed rest, hydration, clinical monitoring, and urethral catheterization.

Ten days later he was discharged from our department and blood laboratory tests before discharge showed: hemoglobin (13 g/dl), creatinine (0.9 mg/ml), and CRP (9.8 mg/dl). Comparison of CT scans from two days and two weeks later revealed a decrease in the size of the hematoma from 7.5 to 3.5 cm (Figure 2), with laboratory tests as follows: hemoglobin (14 g/dl), creatinine (0.9 mg/ml), and CRP (1.3 mg/dl).

Radionuclide scan (dynamic scintigraphy with 99 m Technetium–diethylene triamine pentacetic acid, DMSA) revealed a left renal function of 32% and right renal function of 68% – further clinical course was uneventful.

At the last outpatient control, 1 year after the accident – the patient was free from symptoms, renal function was normal, CT scan did not reveal hematoma or urinoma (Figure 3), radionuclide scan revealed a left renal function of 38% and a right renal function of 62%, and hypertension was not noted.

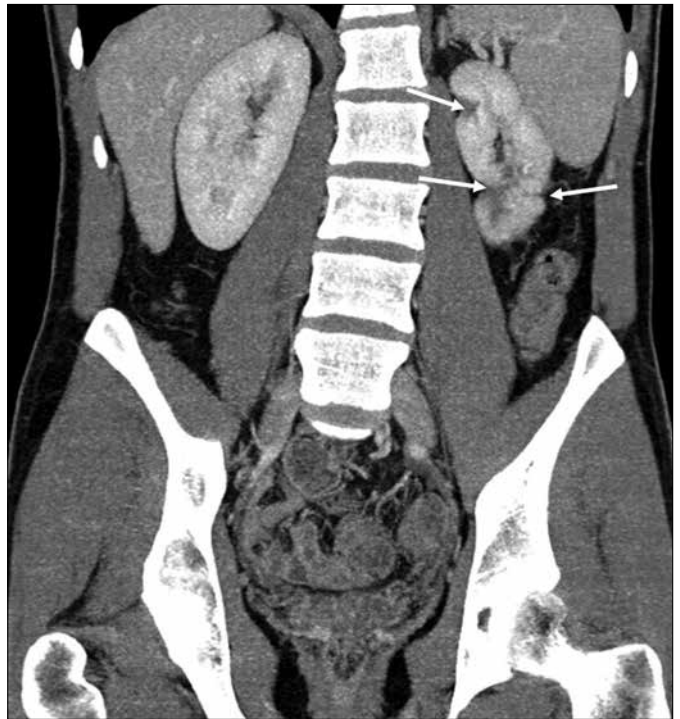


Figure 3. Shows a CT scan one year later without hematoma or urinoma.



Figure 2. CT scan two weeks later with a decrease of urinoma from 7.5 to 3.5 cm.

DISCUSSION

The vast majority of traumatic renal lacerations can be managed conservatively [1], avoiding additional loss of renal parenchyma [2]. Open surgical exploration is rarely indicated and is associated with a high likelihood of organ loss. Especially in the case of an emergency surgical intervention in a clinically unstable patient, the nephrectomy rate nearly approaches 100% [3]. Even if primary conservative management is successful, as in this case, potential complications require the consequent follow-up of these patients. Apart from urinoma formation, secondary hemorrhages are seen in up to 25% of the grade III–IV renal traumas – primarily caused by an arteriovenous fistula [4, 5]. The frequency of post-traumatic hypertension is estimated to be less than 5% [4], in our patient hypertension has not yet been recorded.

According to the EAU Guidelines [4] urinoma is usually managed with endourological techniques, our patient developed a urinoma that was managed conservatively.

The comprehensive medical management of such patients requires lifelong regular control, as up to one third of the patients with grade III–IV renal traumas develop hypertension (even many years after the trauma) as well as hyperfiltration-induced renal insufficiency [6, 7].

Indications for surgical management in blunt solid abdominal organ injuries have diminished in recent years [8]. These indications include life-threatening bleeding and accompanying extraabdominal or intraabdominal lesion – some studies verified that con-

servative management of major blunt renal trauma is appropriate.

Since nothing is known about long-term outcomes in patients with severe renal trauma, prospective long-term follow up studies are highly recommended.

References

1. Master VA, McAninch JW. Operative management of renal injuries: parenchymal and vascular. *Urol Clin North Am.* 2006; 33: 21–31.
2. Danuser H, Wille S, Zöschner G, Studer U. How to treat blunt kidney ruptures: primary open surgery or conservative treatment with deferred surgery when necessary? *Eur Urol.* 2001; 39: 9–14.
3. Husmann DA, Morris JS. Attempted nonoperative management of blunt renal lacerations extending through the cortico-medullary junction: the short-term and long-term sequelae. *J Urol.* 1990; 143: 682–684.
4. Djakovic N, Plas E, Martínez-Piñeiro L, Lynch Th, Mor Y, Santucci RA, et al. European Association of Urology: Guidelines on Urological Trauma. 2009; Edition: 6–22.
5. Heyns CF: Renal trauma: indications for imaging and surgical exploration. *BJU Int.* 2004; 93: 1165–1170.
6. Santucci RA, Wessells H, Bartsch G, Descotes J, Heyns CF, McAninch JW, Nash P, Schmidlin F: Evaluation and management of renal injuries: consensus statement of the Renal Trauma Subcommittee. *BJU Int.* 2004; 93: 937–954.
7. Wessells H, Deirmenjian J, McAninch JW: Preservation of renal function after reconstruction for trauma: quantitative assessment with radionuclide scintigraphy. *J Urol.* 1997; 157: 1583–1586.
8. Stahlschmidt CM, Stahlschmidt FV, Von Bahten LC: Conservative management of a grade V renal trauma associated with a grade III hepatic lesion: is it possible. *Ulus Truvma Acil Cerrahi Derg.* 2006; 12: 311–314. ■