

## **Renal gunshot wounds: clinical management and outcome**

Voelzke BB, McAninch JW

*Department of Urology, University of California San Francisco at San Francisco General Hospital, San Francisco, California, USA*

J Trauma. 2009 Mar;66(3):593-600; discussion 600-1

**Background:** To analyze our experience with renal gunshot wounds (GSW).

**Methods:** We analyzed our prospective trauma database for patients with renal GSW.

**Results:** Two hundred one patients (206 renal units) with renal GSW were collected from our database. Preoperative imaging (1-shot intravenous pyelogram, dedicated intravenous pyelogram, or computed tomography) was performed in 68.7% (n = 140). Gross or microscopic (>5 red blood cell/high power field) hematuria was present in 88.7%. Injury to other organs was present in 96.5% (194 of 201), with >1 organ involved in 74.6% (other than kidney). The liver was the most commonly injured organ. Using the American Association for the Surgery of Trauma grading system, there were 46 grade 1 (G1), 21 G2, 62 G3, 51 G4, and 26 G5 injuries. The trend to observe without renal exploration has not changed significantly during the past three decades (1978-1989 = 32.8%, 1990-1999 = 39%, 2000-2007 = 30.4%). Ninety-five renal units (excluding nephrectomy) underwent repair with associated small or large bowel injuries without any known complications, including 14 patients with mesh used during renal repair. The renal salvage rate was 85.4% (n = 176 of 206) with two delayed nephrectomy procedures for persistent bleeding after initial repair. The total number of nephrectomy procedures was 30 of 206 renal units. Postoperative imaging was obtained in 32.8% (55 of 201) patients, and there were no known cases of postinjury hypertension. Overall survival was 90.6% (182 of 201), with 2 intraoperative and 17 postoperative deaths. There were no postoperative infections related to renal reconstruction. Isolation of renal vessels was obtained in all patients before opening Gerota's fascia with no deaths secondary to urologic intervention.

**Conclusion:** Selective observation and various operative techniques can yield high renal salvage rates approximating 85% after GSW.

## **Editorial Comment**

Grade for grade, it never made much sense to me to treat isolated low velocity gunshot wounds (GSWs) much differently from blunt renal injuries. This article by Voelzke from San Francisco General confirms by own clinical experience. In other words, that most isolated Grade 3 and 4 renal injuries, whether from gunshot or blunt mechanisms, can be expectantly and successfully managed. While with penetrating high grade injuries the risk for a delayed pseudo-aneurysm and re bleed can be higher, up to one fourth of cases – such events can be managed successfully by selective embolization by the interventional radiologist. I feel that we explore too many isolated renal injuries in general and we need to do more expectant management.

***Dr. Steven B. Brandes***

*Associate Professor, Division of Urologic Surgery*

*Washington University in St. Louis*

*St. Louis, Missouri, USA*

*E-mail: brandess@wudosis.wustl.edu*