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MP20-04 GRADE V RENAL TRAUMA: SUCCESS ROLE FOR CONSERVATIVE MANAGEMENT IN THE NATIONAL TRAUMA DATABANK

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Authors

Hakam, Nizar
Shaw, Nathan
Lui, Jason
[et al.](#)

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**MP20-03
SELECT INTERMEDIATE-GRADE BLUNT RENAL INJURIES ARE APPROPRIATE FOR EARLY DISCHARGE**

George Koch, Madeleine Ball, Craig Hill, Jackson Cabo, Helen Gambrah, Abimbola Ayangbesan, Rohan Bhalla, Niels Johnsen, Nashville, TN*

INTRODUCTION AND OBJECTIVE: Expectant management for blunt renal trauma has primarily taken place in ICU settings. Recent reports have questioned this practice, as most patients do not require surgery or angioembolization for low-grade renal injuries. American Association for the Surgery of Trauma renal injury grade (AAST) III injuries are sometimes categorized with AAST IV and V injuries, as "High Grade Renal Trauma." Unlike AAST IV and V injuries, however, AAST III injuries rarely require surgical or procedural intervention and thus may be candidates for early discharge. We hypothesized that patients with blunt AAST III injuries discharged within 48 hours of admission do not have increased rates of readmission due to renal complications compared to patients observed for more than 48 hours.

METHODS: Renal trauma patients from 2005 through 2020 were identified from our institutional trauma registry. Patients with AAST III blunt renal injuries were included. Patients who died within 48 hours of admission were excluded. Univariable analysis was used to identify variables associated with discharge within 48 hours. Reasons for readmission were tabulated and compared between patients who were and were not discharged within 48 hours of admission.

RESULTS: Of the 1751 renal trauma patients, 377 (21.5%) presented with a blunt AAST III renal injury and survived beyond 48 hours from admission. Sixty-five of 377 (17.2%) AAST III injuries were discharged within 48 hours of admission and 312 of 377 (82.8%) were admitted for more than 48 hours. On univariate analysis, arrival condition (responsive vs. unresponsive, $p < 0.001$), hypotension on arrival ($p = 0.02$), Injury Severity Score (ISS, $p < 0.001$) and presence of a splenic injury ($p = 0.04$) were associated with length of stay longer than 48-hours. No patients required a urologic procedure. While 35 patients (9.2%) required a readmission for non-urologic reasons, 3 in the early discharge group and 32 in the group admitted for more than 48 hours, no patients required readmission for renal or urologic reasons.

CONCLUSIONS: Intermediate-grade blunt renal traumas have a low risk of complication and intervention, and thus a low rate of readmission, with non-renal injuries often driving a patient's length of stay and risk for readmission. Select patients with isolated AAST III injuries or AAST III injuries with less severe concomitant injuries may be appropriate for early discharge.

Source of Funding: None

**MP20-04
GRADE V RENAL TRAUMA: SUCCESS ROLE FOR CONSERVATIVE MANAGEMENT IN THE NATIONAL TRAUMA DATABANK**

Nizar Hakam, Nathan Shaw, Jason Lui, Behnam Nabavizadeh, Kevin Li, Patrick Low, Benjamin Breyer, San Francisco, CA*

INTRODUCTION AND OBJECTIVE: Conservative management is now standard for most renal trauma as it decreases complications and nephrectomy rates. However, American Association for the Surgery of Trauma (AAST) grade V injuries renal injuries continue to largely require intervention and sparse data is available on conservative management. We investigate whether conservative management was pursued in patients who survive grade V renal injuries using the National Trauma Databank (NTDB).

METHODS: Patients with grade V renal trauma were identified in the 2018 NTDB ($n = 612$). Patients who survived to final hospital discharge were included ($n = 474$). Conservative management was defined by the absence of any surgical or procedural intervention. Percutaneous or cystoscopic drain placement was exempted from procedural intervention. Characteristics of patients who underwent conservative vs non-conservative management were compared.

RESULTS: Out of 474 patients, 175 (36.9%) were managed conservatively. In the 299 patients managed non-conservatively, most common interventions were surgical exploration ($n = 200$, 66.9%), nephrectomy ($n = 196$, 65.6%), kidney angioembolization ($n = 60$, 20.1%), open surgical bleeding control ($n = 37$, 12.4%), and surgical repair of the kidney or renal artery ($n = 22$, 7.4%). Patient characteristics are depicted in Table 1, stratified by management approach. Patients managed conservatively had more favorable hemodynamic parameters compared to those managed non-conservatively, exhibiting lower mean pulse rate (99.9 vs 106.2, $p = 0.01$). They had less hypotension on arrival (8.6% vs 17.4%, $p = 0.008$) and received fewer blood transfusion (28% vs 67.2%, $p < 0.001$). They also were younger (mean age 26.7 vs 30.5, $p = 0.01$), less likely to be male (71.4% vs 91.6%, $p = 0.01$), less likely to have sustained a penetrating injury (6.7% vs 51.2%, $p < 0.001$), and had a significantly different distribution of trauma mechanism (Table 1).

CONCLUSIONS: A conservative approach may be safe in a subset of patients with grade V renal injury, especially in those who were less likely to be in shock, receive blood transfusion, or sustain penetrating injury. Further research to identify phenotypes amenable to conservative management is warranted to improve patient outcomes.

Table 1. Clinical characteristics of patients with grade V renal trauma who survived to discharge, stratified by management approach.

	Total N=474 No. (%)	Conservative management N=175 No. (%)	Non-conservative management N=299 No. (%)	p value ¹
Age ² mean (SD)	29 (16.1)	26.7 (17.2)	30.5 (15.2)	0.01
Sex ³ male	369 (77.9)	125 (71.4)	244 (81.6)	0.01
Penetrating injury	165 (34.8)	12 (6.7)	153 (51.2)	<0.001
Mechanism of trauma				<0.001
Gunshot wound	154 (32.5)	10 (5.7)	144 (48.2)	
MVA ⁴ (patient driver or passenger)	106 (22.4)	57 (32.5)	49 (16.4)	
MVA (patient driver/passenger of vehicle other than car v. stationary object)	50 (10.5)	26 (14.9)	24 (8)	
Fall	49 (10.3)	26 (14.9)	23 (7.7)	
Physical abuse or assault	30 (6.3)	21 (12)	9 (3)	
MVA (patient driver/passenger of vehicle other than car v. vehicle)	33 (7)	15 (8.6)	18 (6)	
MVA (pedestrian patient hit by vehicle)	29 (6.1)	12 (6.9)	17 (5.7)	
Sharp object / stab	11 (2.3)	2 (1.1)	9 (3)	
Other	12 (2.5)	6 (3.4)	6 (2)	
Injury Severity Scale ⁵ median (IQR)	34 (26 - 41)	33 (26 - 43)	34 (26 - 38)	0.91
Pulse mean (SD)	103.9 (26.4)	99.9 (25.5)	106.2 (26.6)	0.01
Hypotension ⁶	67 (14.1)	15 (8.6)	52 (17.4)	0.008
Glasgow Coma Scale median (IQR)	15 (14 - 15)	15 (15 - 15)	15 (14 - 15)	0.04
Transfusion	250 (52.7)	49 (28)	201 (67.2)	<0.001
Other injuries				
Head injury	81 (17)	36 (20.6)	45 (15.1)	0.123
Bony injuries	182 (38.4)	71 (40.6)	111 (37.1)	0.45
Spinal	176 (37.1)	53 (31.4)	121 (40.5)	0.09
Chest	248 (52.3)	81 (46.3)	167 (55.9)	0.044
Solid organ	326 (68.8)	98 (56)	228 (76.3)	<0.001
Gastrointestinal	144 (30.4)	15 (8.6)	129 (43.1)	<0.001
Major vascular	18 (3.8)	5 (2.9)	13 (4.4)	0.41

¹ P values correspond to tests comparing conservative vs non-conservative management groups.
² All normally distributed continuous variables are expressed as mean (Standard Deviation (SD)).
³ All categorical variables are expressed as frequency (%).
⁴ MVA = Motor vehicle accident.
⁵ All skewed continuous variables are expressed as median (interquartile range (IQR)).
⁶ Hypotension was defined as systolic blood pressure < 90 mmHg.

Source of Funding: None

**MP20-05
LATE COMPLICATIONS AFTER BLUNT RENAL TRAUMA: A FRENCH MULTICENTER STUDY**

Godefroi Brenot, Saint Mandé, France; Inès Dominique, Paris, France; Benoît Peyronnet, Rennes, France; Pierre-Henri Savoie, Toulon, France; Paul Chiron, Saint Mandé, France*

INTRODUCTION AND OBJECTIVE: Among genitourinary traumas, blunt trauma to the kidney (BTK) is the most common: their initial management has been well studied, but their long-term future is