Title

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Journal

Investigative Urology, 209(Supplement 4)

ISSN

0021-0005

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Publication Date

2023-04-01

DOI

10.1097/ju.0000000000003259.01

Peer reviewed

Trauma/Reconstruction/Diversion: External Genitalia & Urotrauma (including Transgender Surgery) II

Podium 12

Saturday, April 29, 2023 **7:00 AM-9:00 AM**

PD12-01

THE ROLE OF NON-OPERATIVE MANAGEMENT IN SEVERE RENAL INJURIES: DO ALL GRADE V INJURIES NECESSITATE INTERVENTION?

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INTRODUCTION AND OBJECTIVE: Non-operative management has become standard for most renal trauma. Little data exists regarding conservative management of American Association for the Surgery of Trauma (AAST) grade V injuries. We aim to evaluate management of grade V renal trauma, focusing on feasibility and safety of non-operative management.

METHODS: Grade V renal trauma cases submitted with available imaging from 21 Level-1 trauma centers through the Multi-institutional Genito-Urinary Trauma Study (MiGUTS). We report management patterns categorized as *expectant* (observation with no interventions), *conservative* (performing kidney angioembolization, or stent / nephrostomy tube / perirenal drain placement), or *operative* (performing kidney related surgical interventions).

RESULTS: 21 cases were independently radiologically verified as grade V cases by the 2018 AAST classification and were included in analysis. Most were males (15; 71%) with blunt trauma (20; 95%) and median age was 34 years (IQR 25-29). Most common management approach was operative (8, 38%), followed by conservative (7, 33%) and expectant (6, 29%). All those operatively management had nephrectomy, with 2 having a failed angioembolization attempt before nephrectomy. 4 out of 7 patients in the conservative group had angioembolization and the other 3 had a stent or drainage tube. Transfusion requirements were progressively higher with groups requiring more aggressive treatment, and injury characteristics differed significantly across management groups in terms of hematoma size, laceration size and proportion of cases with >50% and >95% devascularization (Table 1). Vascular contrast extravasation tended to be higher in operatively managed patients, but was not statistically significant.

CONCLUSIONS: There is a significant role for non-operative management for grade V renal trauma, particularly in those with blunt trauma and are stable enough to undergo imaging.

Table1. Comparison of patient and injury clinical and radiological characteristics according to management approach. All continuous variables expressed as median (IQR). P values are derived from statistical tests comparing all 3 groups.

	Expectant (n=6)	Conservative (n=7)	Operative (n=8)	p value
Age	42.5 (25 - 63)	32 (21 - 34)	43.5 (25.5 - 48)	0.54
Male sex	5 (83.3%)	4 (57.1%)	6 (75%)	0.7
BMI	28.3 (23.5 - 33)	25.8 (22.1 - 29.7)	24.6 (22.3 - 26.2)	0.57
ISS	31 (25 - 38)	29 (26 - 35)	35 (30 - 41.5)	0.51
lowest SBP ED	117.5 (110 - 122)	111 (106 - 123)	84.5 (69 - 119.5)	0.43
Shock /first 4 hours	2 (33.3%)	3 (42.9%)	6 (75%)	0.3
HR in ED	84.5 (80 - 94)	96 (80 - 108)	100.5 (66.5 - 126.5)	0.85
Lowest Hgb in ED	13.2 (11.5 - 13.7)	10.2 (9.8 - 12.5)	12.8 (10.5 - 13.2)	0.06
No. RBC transfusion /first 24 hours	0 (0 - 0)	1 (0 - 1)	7 (1.5 - 16)	**0.011**
Associated injuries	5 (83.3)	5 (71.4)	6 (75)	1
Vascular contrast extravasation	2 (33.3%)	3 (42.9%)	7 (87.5%)	0.11
Hematoma size (cm)	2.18 (0.8 - 4.45)	5.35 (2.75 - 6.95)	6.85 (5.78 - 7.25)	**0.04**
Hematoma size ≥3.5 cm	2 (33.3%)	5 (71.4%)	7 (87.5%)	0.15
Para-renal hematoma	4 (66.7%)	7 (100%)	7 (87.5%)	0.25
Laceration size (cm)	0.75 (0 - 3.45)	4.55 (4.25 - 4.8)	3.8 (3.2 - 4.93)	**0.016**
Laceration size ≥2.5 cm	2 (33.3%)	7 (100%)	7 (87.5%)	**0.015**
Devascularization >50%	5 (83.3%)	1 (14.3%)	5 (62.5%)	**0.037**
>50% - 95%	1 (16.7%)	1 (14.3%)	2 (25%)	1
>95%	4 (66.7%)	0	3 (37.5%)	**0.042**
Main vascular injury	3 (50%)	1 (14.3%)	2 (25%)	0.41
Completely shattered kidney	1 (16.7%)	5 (71.4%)	5 (62.5%)	0.14

Source of Funding: None

PD12-02

URINARY EXTRAVASATION AFTER RENAL TRAUMA: SHOULD IT BE A CRITERION FOR THE AMERICAN ASSOCIATION FOR SURGERY OF TRAUMA (AAST) GRADE IV INJURY?

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INTRODUCTION AND OBJECTIVE: Urinary extravasation (UE) is a main criterion for grade IV renal trauma. An appropriately-timed excretory phase CT is needed for accurate diagnosis. We aimed to assess the compliance with excretory phase imaging in a multi-center study and evaluate the management of UE after high-grade renal trauma (HGRT).

METHODS: We used HGRT data from 7 Level-1 trauma centers. Patients with CT scans were included. Demographics, injury and imaging characteristics, and interventions were reviewed. We assessed compliance with obtaining excretory phase CT and its timing (9 minutes delay considered as adequate), and the rate of interventions for UE. We defined UE information as Ux (unknown/excretory imaging not done), U0 (no UE in excretory imaging), and U1 (UE present).

RESULTS: We reviewed data from 550 patients with HGRT (grades III: 284 [51.5%]; IV: 250 [45.5%]; V: 16 [3%]) according to the 2018 AAST grading system. Only 324 (59%) had excretory phase images available within the initial CT to assess for UE with compliance rates between 26% to 100% between different centers. The median time between the arterial and delayed phase was 8 minutes (IQR: 4−11); 51% of the excretory images were inadequately timed (<9 minutes). Overall, 94 (17%) were diagnosed with UE either initially (n=62) or in follow up images (n=32). Of these, 22 (23%) underwent ureteral stent placement and 5 (5%) received peri-renal drains. Of the 262 with U0, 21 had UE diagnosed in follow up studies (8% missed UE with initial excretory imaging). Of the 226 with Ux, 11 were diagnosed with UE in follow up imaging (5% missed UE without initial excretory imaging). 59 of 94 patients with UE (63%) would have been grade IV only due to UE. Compared to the other patients with UE, these had lower rates of bleeding interventions (8% vs. 31%), active bleeding, and had smaller hematoma and lacerations sizes.

CONCLUSIONS: About 40% of those with HGRT did not undergo excretory phase imaging in the initial assessment. The compliance in obtaining these images and the timing were variable and suboptimal. These can lead to inaccurate and incomplete grading of renal injuries in regards to UE. UE status can be provided as separate information or be included under grade III renal injuries.

Source of Funding: None