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Abstract Title: **Patient Clinical and Radiographic Characteristics Associated with Failed Angioembolization as First-Line Therapy after Trauma: Results from the American Association for the Surgery of Trauma Genitourinary Trauma study**

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Renal Angioembolization

- Utilization has increased in recent decades
- Repeat interventions or failure (0-33%)

Hypothesis: Factors associated with ongoing or large blood loss would be associated with angioembolization failure

Methods

- Includes 14 Level-1 trauma centers (MiGUTS)
- Inclusion Criteria
 - AAST renal trauma grade III-V (HGRT)
 - Angioembolization for renal bleeding
- Failure if followed by:
 - (1) repeat angiography
 - (2) exploratory laparotomy

Results

Table 1 – Demographics and Injuries Characterization

		Successful (n = 17)	Failed (n = 9)	p-value
Age in years, median (IQR)		48 (27-75)	32 (24-46)	NS
ISS, median (IQR)		22 (10-33)	34 (29-44)	<0.05
Injury Mechanism	Blunt	14 (82%)	8 (89%)	NS
	Penetrating	3 (18%)	1 (11%)	
Renal Trauma Injury	Grade 3	8 (47%)	0 (0%)	<0.05
	Grade 4	8 (47%)	7 (78%)	
	Grade 5	1 (6%)	2 (22%)	

AE Angioembolization ISS Injury Severity Score BMI Body Mass Index

Table 2 – Clinical Course Data

		Successful (n = 17)	Failed (n = 9)	p-value
SBP ER in mmHg, median (IQR)		126 (111-150)	114 (111-138)	NS
SBP Nadir ER in mmHg, median (IQR)		85 (70-111)	98.5 (80-120.5)	NS
Length of Hospital Stay in days, median (IQR)		9 (4-21)	9 (7-16)	NS
Length of ICU Stay in days, median (IQR)		3 (2-8)	3 (3-13)	NS
Mortality	No	14 (82%)	9 (100%)	NS
	Yes	3 (18%)	0 (0%)	

AE Angioembolization SBP Systolic Blood Pressure ER Emergency Room

Table 3 – Renal Radiographic Data

	Successful (n = 12)	Failed (n = 7)	p-value
Renal vascular contrast extravasation present	9 (75%)	7 (100%)	NS
Laceration Size, cm mean (SD)	2.6 (1.8-3.3)	3.4 (2.2-4.6)	NS
Renal Hematoma Size, cm mean (SD)	3.8 (2.7-4.8)	7.1 (3.9-10.2)	<0.05

Discussion

- Fail rate varies widely
 - Likely related to institutional policies on who should be offered immediate operative management vs. angioembolization (A lower threshold to operate will result in less severe injuries being managed non-operatively)
- Renal angioembolization failure associated with a larger perirenal hematoma size
 - Likely reflects more severe injuries that would be difficult to manage with embolization alone

Conclusions

- Failure rate in this study = 35%
- Failure associates with higher renal injury grade, more severe additional injuries, and larger perirenal hematomas

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