

Sex Differences in Blunt Traumatic Aortic Injury from the Aortic Trauma Foundation Global

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INTRODUCTION

- Trauma is the leading cause of death in people younger than 45 years and blunt traumatic aortic injury (**BTAI**) is the 2nd leading cause of death after blunt trauma.
- There have been reports on variations in physiological response to trauma between men and women, as well as **sex/gender disparities in aortic** disease outcomes.



OBJECTIVE

The aim of our study is to analyse the preoperative features and postoperative outcomes in women with BTAI, as well as possible ***sex-gender differences*** in this clinical scenario



METHODS

- Between 2016 and 2022, a retrospective review of data collected, including **781 patients with BTAI** who were entered into the Aortic Trauma Foundation international multicentre registry.
- **Primary outcomes:** Sex-differences in-hospital mortality and aortic-related deaths.
- **Secondary** outcomes: Sex differences in BTAI related injuries and perioperative complications.

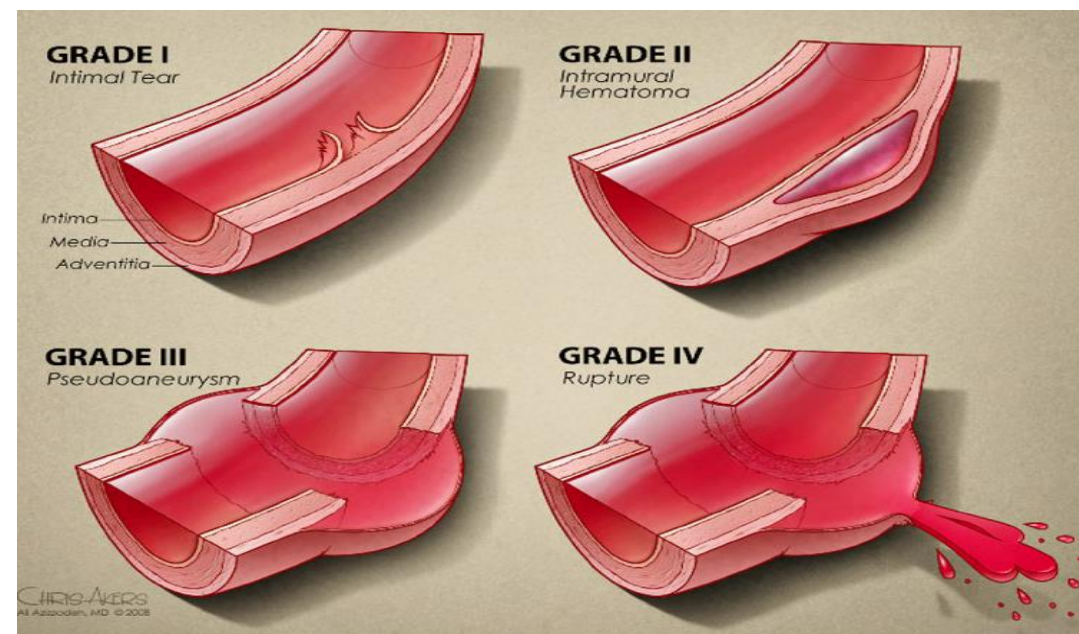


METHODS

- All patients with complete injury grade information were included in the study.

- Using **SVS guidelines**:

- Aortic injury severity was defined as:
 - Grade 1 (intimal tear).
 - Grade 2 (intramural hematoma).
 - Grade 3 (pseudoaneurysm) .
 - Grade 4 (rupture).



- **Outcome variables**: survival, surgical, medical complications, re-intervention, intensive care unit (ICU) and in-hospital length of stay (LOS), blood transfusion required, and follow-up.



RESULTS

- **Mean age** was 43 ± 18 years-old and women were significantly older than men 48 ± 18.6 vs 42.3 ± 17.6 ($p < 0.0001$).
- Injury severity score and GCS did not differ between women and men.



RESULTS

- **In-hospital mortality** was 12% for the entire cohort.
- There were no significant differences in mortality rates between men and women.
- Women more often presented with **pelvic** fracture (41 vs 30%, $p < 0.004$), **splenic** injury (31 vs 23%, $p < 0.05$), **renal** injury (22 vs 14%, $p < 0.02$), **sacral** spine fracture (12 vs 6%, $p < 0.02$) and **sternal** fracture (17 vs 10%, $p < 0.02$).



Patient Demographics. N= 781

	Women (n= 82)	Men (n= 599)	p value
Gender	23 %	77 %	
Age	48 +/- 18	42 +/- 17	>0.0001
TEVAR	55 %	61 %	0.04
Pelvic fractures	41 %	30 %	<0.004
Splenic injury	31 %	23 %	<0.05
Renal injury	22 %	14 %	<0.02
Sacral spine fracture	12 %	6 %	<0.02
Sternal fracture	17 %	10 %	<0.02



DISCUSSION

- The most **important differences** found in women in our group included a significant higher rate of pelvic fracture (41 vs. 30%, $p < 0.004$), splenic injury (31 vs. 23%, $p < 0.05$), renal injury (22 vs. 14%, $p < 0.02$), and sternal fracture (17 vs. 10%, $p < 0.02$).
- On the other hand, we did **not find sex differences as regards** the distribution of aortic injury grade, or differences regarding in-hospital mortality and aortic-related mortality.



DISCUSSION

- Sternal fractures were also more common in women (17 vs. 10%, $p < 0.02$).
- **Previous series** have reported high mortality rates in patients presenting with sternal fractures, ranging between 24 % and even 45%. Factors associated with this higher mortality include concomitant associated injuries, including pulmonary, cardiac, esophageal, spinal and thoracic aortic injuries.

DISCUSSION

- This is one of the **largest prospective** observational studies of BTAI, including 781 patients who were evaluated and treated, with complete injury grade information in all patients.
- **Future studies** evaluating sex-related rates of complications, rupture, infection, and reinterventions after BTAI in the long-term are needed for a better understanding of this pathology.

CONCLUSIONS

Women with BTAI presented more frequently with intra-abdominal and pelvic injuries, and sternal fractures appear to predict a higher mortality in women with BTAI. There was no difference in mortality between men and women with BTAI.

