

Outcome of Traumatic Aortic Rupture: A 14-Year Experience

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Background

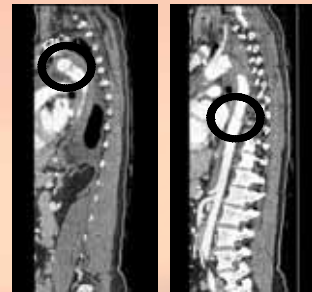
- Traumatic aortic ruptures account for 16% to 23% of all motor vehicle fatalities; approximately 60% to 85% of patients die at the scene of the accident
- Patients who survive the traumatic event and reach the hospital are treated with different strategies depending on physiologic status

Three treatment options for severe aortic injury

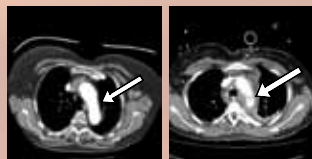
- Surgery with open technique
 - Thoracic Endovascular Aortic Repair (TEVAR)
 - Medical management of injury without surgery
- *TEVAR technique was not available during this study period

Methods

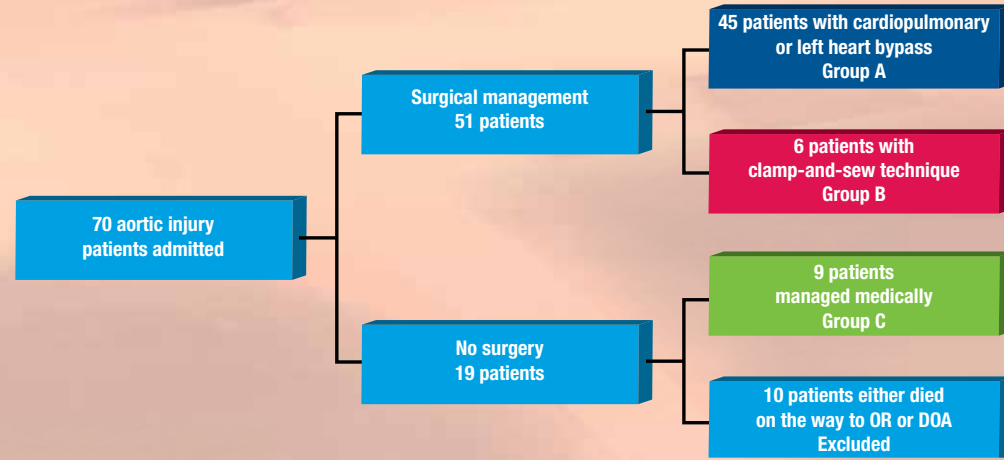
- Retrospectively reviewed LVHN trauma database from 1994 to 2008
- 70 patients were admitted with severe aortic trauma
 - separated into three groups based on treatment
 - cardiopulmonary or left heart bypass
 - clamp-and-sew
 - medically managed
- 10 patients DOA or rupture prior to planned surgery were excluded from analysis
- Glasgow Coma Scale (GCS), Injury Severity Score (ISS), and TRISS were compared between aortic rupture patients and general trauma cohort



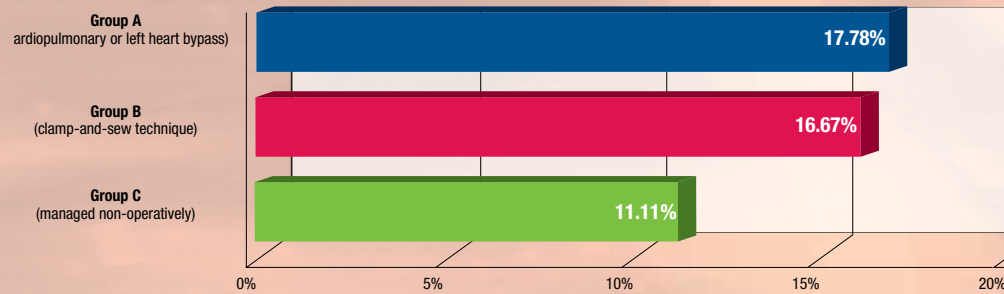
Descending aortic transection or rupture



Cross-section Ct Scan of a normal aorta



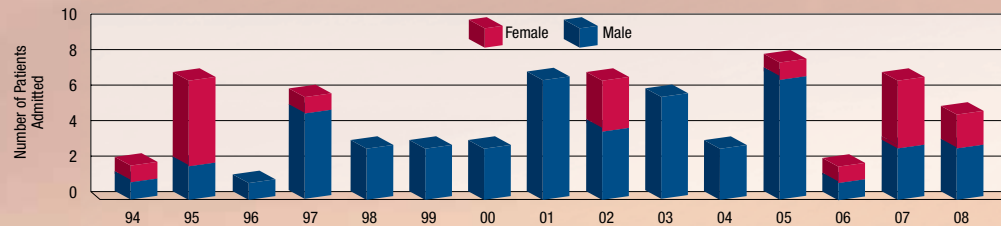
Mortality Rate



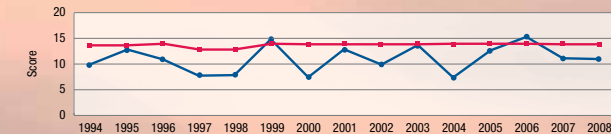
Surgical Complications

Patients	Total Number of Patients	Paralysis	Percent Affected
Group A	45	3	6.67%
Group B	6	2	33.3%

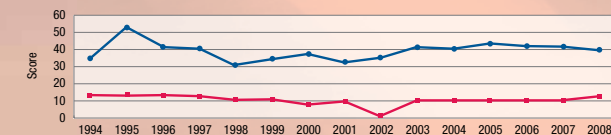
Acute Aortic Injury Admissions



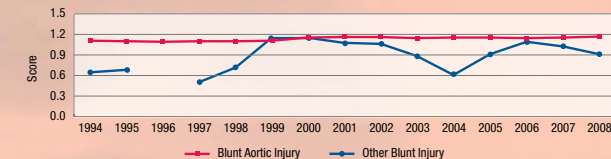
Glasgow Coma Scale



Injury Severity Score



Trauma Score - Injury Severity Score



Results

- 51 (72.9%) patients underwent surgery
- 45 (88%) were operated on utilizing cardiopulmonary or left heart bypass with average bypass time of 67 min.
- 6 (12%) were operated on using clamp-and-sew method with average clamp time of 36 min
- Paralysis rate was 6.6% (3) for perfusion cohort, 33.3% (2) for clamp-and-sew cohort
- In-hospital mortality rates were similar (17.78% vs. 16.67%)
- Non-operative patient in-house mortality rate was 11.11%
- Aortic trauma cohort presented with worse GCS (11.13 vs. 13.87), ISS (38.73 vs. 10.00), TRISS (0.74 vs. 0.95) compared to general trauma cohort

Conclusion

- Surgery for traumatic aortic rupture with cardiopulmonary or left heart bypass offered excellent mortality and paraplegia rates
- Traumatic aortic patients presented with worse physiologic profiles, which likely contributed to mortalities and complications
- Properly selected medically managed patients have reasonable outcome 24 hours after hospital admission

Group Statistics

	Injury Group	N	Mean	Std. Deviation	Std. Error Mean
GCS	Aortic Blunt Injury	15	11.1333	2.64215	.68220
	Other Blunt Injury	15	13.8667	.35187	.09085
ISS	Aortic Blunt Injury	15	38.7333	5.36479	1.38518
	Other Blunt Injury	15	10.0000	2.90320	.74960
TRISS	Aortic Blunt Injury	14	.7414	.18134	.04847
	Other Blunt Injury	15	.9540	.02229	.00575