Outcome of Traumatic Aortic Rupture: A 14-Year Experience

Matthew Wilson
Lehigh Valley Health Network, Matthew.Wilson@lvhn.org

James K. Wu
Lehigh Valley Health Network, james.wu@lvhn.org

Sanjay M. Mehta MD
Lehigh Valley Health Network, Sanjay_M.Mehta@lvhn.org

Theodore G. Phillips MD
Lehigh Valley Health Network, Theodore.Phillips@lvhn.org

Raymond L. Singer MD
Lehigh Valley Health Network, raymond.singer@lvhn.org

See next page for additional authors

Follow this and additional works at: https://scholarlyworks.lvhn.org/medicine

Part of the Cardiology Commons, Medical Sciences Commons, and the Surgery Commons

Published In/Presented At
Authors

This poster is available at LVHN Scholarly Works: https://scholarlyworks.lvhn.org/medicine/253
Outcomes of Traumatic Aortic Rupture: A 14-Year Experience

Matthew Wilson, James K. Wu, M.D., Sanjay M. Mehta, M.D., Theodore G. Phillips, M.D., Raymond L. Singer, M.D., Michael F. Szwarz, M.D., Gary W. Szydlowski, MD Department of Surgery Division of Cardiothoracic Surgery, Lehigh Valley Health Network

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

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 paralysis 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

Glasgow Coma Scale

Injury Severity Score

Trauma Score - Injury Severity Score

Glasgow Coma Scale

Injury Severity Score

Trauma Score - Injury Severity Score

Surgical Complications

<table>
<thead>
<tr>
<th>Patients</th>
<th>Total Number of Patients</th>
<th>Paraplegia</th>
<th>Percent Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>45</td>
<td>3</td>
<td>6.6%</td>
</tr>
<tr>
<td>Group B</td>
<td>22</td>
<td>2</td>
<td>9.3%</td>
</tr>
</tbody>
</table>