ECMO In Trauma
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HCMC
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DISCLOSURE
- No conflict of interest or relevant financial interest
- No unlabeled or investigational use of a product

OBJECTIVE
- Review experience with veno-venous (V-V) ECMO in critically-injured patients
- Understand the potential impact of specific injuries on decision-making around extracorporeal support
- Illustrate how regionalized trauma and ECMO systems overlap in the Upper Midwest

Hennepin Case #1

“Trimodal” Distribution of Trauma Deaths

New Engl J Med 1972

Hennepin Case #1

PROLONGED EXTRACORPOREAL OXYGENATION FOR ACUTE POST-TRAUMATIC RESPIRATORY FAILURE (SHOCK-LUNG SYNDROME)
Use of the Bousman Membrane Lung

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V-V ECMO For Trauma: Literature

<table>
<thead>
<tr>
<th>Author</th>
<th>Institution</th>
<th>N</th>
<th>Population</th>
<th>ECMO Duration</th>
<th>Hospital Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michaels (1999)</td>
<td>U Michigan</td>
<td>30</td>
<td>80% blunt injury</td>
<td>10 days</td>
<td>54%</td>
</tr>
<tr>
<td>Cordell-Smith (2005)</td>
<td>Leicester, England</td>
<td>28</td>
<td>86% MVC</td>
<td>6 days</td>
<td>71%</td>
</tr>
<tr>
<td>Bein (2012)</td>
<td>U.S. Military</td>
<td>5</td>
<td>3 GSW</td>
<td>8 days</td>
<td>100%</td>
</tr>
<tr>
<td>Ried (2013)</td>
<td>Regensburg, Germany</td>
<td>26</td>
<td>81% MVC</td>
<td>6 days</td>
<td>81%</td>
</tr>
<tr>
<td>Guirand (2014)</td>
<td>Wake Forest U</td>
<td>26</td>
<td>81% blunt injury</td>
<td>9 days</td>
<td>58%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>115</td>
<td>~80% blunt injury</td>
<td>6-10 days</td>
<td>54-100%</td>
</tr>
</tbody>
</table>

Bagram Air Base, Afghanistan

Hennepin Case #2

V-V ECMO For Trauma: Highlights

- Victims of trauma are generally young & healthy
- Challenges to “standard” ARDS management
  - Prone position
  - Intra-abdominal pressure
  - Intracranial pressure
- Use of anticoagulation in pts at risk for hemorrhage
- Timing of definitive procedures/repairs
- A multidisciplinary, coordinated approach across systems and specialties is required

SUMMARY

- V-V ECMO is a resonable strategy for select patients with refractory respiratory failure following trauma, with similar outcomes to uninjured patients
- Deferred anticoagulation and interfacility transport are increasingly possible
- Trauma systems and ECMO centers may benefit from coordination at a state or regional level

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REFERENCES


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