Autologous Blood Transfusion in Trauma Patients Saves Lives

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DISCLOSURES

• No financial disclosures relative to content

• Am a Country Girl ➔ Disclosures
  • Own a Farm
  • Raise my Food
  • Have Boots, Knife and Rifle
  • Have Limited Internet and Cell Service
Autologous Blood......What are We Talking About?

• Giving shed blood back
• Cell Saver
• Chest Tube Auto-transfusion
Autologous Blood

**PRO**
- Own Blood Type
- No Worry over Antibodies
- Readily Available in OR
- Warm
- No Additives
- Not Old

**CON**
- Inflammatory Effects
- Cytokines
- Red Cells, Not Clotting Factors
Concede

• Fresh, warm, whole blood is Best
• Autologous blood is **NOT** fresh, warm, whole blood
• Cytokines seem to be bad
• Priming Inflammatory Response seems Bad
The Only Walking Blood Bank
But........

**Creation, Implementation, and Maturation of a Massive Transfusion Protocol for the Exsanguinating Trauma Patient**

Timothy C. Nunez, MD, Pampee P. Young, MD, PhD, John B. Holcomb, MD, and Bryan A. Cotton, MD, MPH


**Autotransfusion Devices or “Cell-Saver” Techniques:** Given the proven reduction in the use of the precious commodity of banked blood, we **would recommend** that those centers with the capability to provide this adjunct “around the clock” **strongly consider the addition of this valuable tool to their MT protocol.”**
Transfusion of post-operative shed blood: laboratory characteristics and clinical utility
M. Munoz, J. J. Garcia-Vallejo, M. D. Ruiz, R. Romero, E. Olalla, C. Sebastian

“..has proved to reduce post-operative homologous transfusion requirements..without any clinically relevant complication”
Intraoperative Blood Salvage in Penetrating Abdominal Trauma: a Randomised, Controlled Trial

Douglas M. Bowley, Philip Barker, Kenneth D. Boffard

Table 2.
Patient outcomes by study treatment arm

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Control</th>
<th>Cell save</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank blood transfusion in first 24 hours</td>
<td>11.17 (±SD 6.06)</td>
<td>6.47 (±SD 5.4)</td>
<td>0.008</td>
</tr>
<tr>
<td>Cause of death</td>
<td>EX: 10/15</td>
<td>EX: 8/14</td>
<td>0.71</td>
</tr>
<tr>
<td></td>
<td>MOF: 5/15</td>
<td>MOF: 6/14</td>
<td></td>
</tr>
<tr>
<td>Survival</td>
<td>8/23 (35%)</td>
<td>7/21 (33%)</td>
<td>1.0</td>
</tr>
</tbody>
</table>

SD: standard deviation; EX: exsanguination; MOF: multiple organ failure.
The CS group and no-CS group had similar lengths of stay in the intensive care unit (8 vs 8 days; $P= .54$) and hospital (18 vs 20 days; $P= .75$), and there was no difference in mortality (6 patients [13%] vs 10 [21%]; $P= .56$).
In Fact........EAST Guidelines

Red Blood Cell Transfusion in Adult Trauma and Critical Care

Published 2010 Citation: Crit Care Med 2009 Vol. 37, No. 12 and J Trauma. 2009 Dec; 67 (6): 1439-42

Recommendations Regarding Strategies to Reduce RBC Transfusion

4. Intraoperative and postoperative blood salvage and alternative methods for decreasing transfusion may lead to a significant reduction in allogeneic blood usage. (Level 2)
Allogeneic Blood Transfusion Increases the Risk of Postoperative Bacterial Infection: A Meta-analysis

Gary E. Hill, MD, William H. Frawley, PhD, Karl E. Griffith, MD, John E. Forestner, MD, and Joseph P. Minei, MD
Allogenic Blood Transfusion in the First 24 Hours after Trauma Is Associated with Increased Systemic Inflammatory Response Syndrome (SIRS) and Death

JAMES R. DUNNE, DEBRA L. MALONE, J. KATHLEEN TRACY, and LENA M. NAPOLITANO
My Opponent

- Highly Educated
- Profoundly Respected
- Full Professor, Harvard
- High Science
- Markers, Cytokines
- Ivy Tower
- Unlimited Resources
Try This Out.....

• You are Surgeon on Call
• Level III
• 16 yo, sp ATV, Awake/Alert, GCS 15
• HR 140, SBP 80
• + FAST

• → Operating Room
Oh......It’s Your Buddy’s Kid
Findings

• Grade IV Spleen → Bucket
• Grade V Liver → Cautery, Ligate, Pack
• Meanwhile, anesthesia resuscitates
  • Quickly – make a Choice..........
Options

- Cell saver
- Crystalloid
What We Know About Crystalloids

Aggressive Early Crystalloid Resuscitation adversely affects Outcomes in Adult Blunt Trauma Patients: An Analysis of the Glue Grant Database

George Kasotakis, MD, Antonis Sideris, MD, Yuchiao Yang, PhD, Marc de Moya, MD, Hasan Alam, MD, David R King, MD, Ronald Tompkins, MD, ScD, George Velmahos, MD, MsEd, PhD, and The Inflammation and Host Response to Injury Investigators
A dose response analysis revealed patients with a C:PRBC ratio >1.5:1, had over a 70% higher independent risk of MOF, and over a 2-fold higher risk of ARDS and ACS.
Independent OR for C:PRBC ratio > 1.5:1

Figure 1. Independent odds ratios (ORs) associated with Infusion of crystalloid in a ratio >1.5:1 relative to PRBCs and the development of MOF, ARDS, and ACS.
Benefits of Initial Limited Crystalloid Resuscitation in Severely Injured Trauma Patients at Emergency Department

H Wang, et al.
When You are in the Mecca
But What if You Are Not, Don’t You Still Deserve a Chance to Live ???

AUTOLOGOUS BLOOD TRANSFUSION IN TRAUMA SAVES LIVES !!!!!!