Perspective

EMS, Grade 5-6 Liver injuries, and a team getting it right

Peter Nichol, MD
• There is a wolf in the house

• Dressed up like grandma

• About to eat a small child
The Call

9 year-old
S. Western Wisconsin
Trampled by cows
Patient is coding awaiting Med Flight
Assumptions

Clearly this kid is going to be Amish
Farm accidents are ugly

Especially in a rural state.
Liver injuries

5 & 6 are bad!

<table>
<thead>
<tr>
<th>GRADE</th>
<th>HEMATOMA</th>
<th>VASCULAR INJURY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sub-capsular</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>&lt;10% surface area</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>≤50% surface area</td>
<td>&lt;10 cm in diameter</td>
</tr>
<tr>
<td>3</td>
<td>&gt;50% surface area</td>
<td>&gt;10 cm in diameter</td>
</tr>
<tr>
<td>4</td>
<td>Expanding / ruptured hematoma with active bleeding</td>
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<tr>
<td></td>
<td>Intra-parenchymal</td>
<td></td>
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<tr>
<td>5</td>
<td>Juxtahepatic venous injuries I.E retrohepatic iver or central major hepatic veins</td>
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<tr>
<td>6</td>
<td>Hepatic avulsion</td>
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</table>
Injury to the inferior vena cava from either blunt or penetrating trauma is frequently lethal with half of patients dying before reaching the hospital and mortality of up to 75% in patients who do reach the hospital. Prognosis depends largely on whether or not spontaneous tamponade has occurred with most in hospital deaths occurring from uncontrolled exsanguination during attempted vascular repair.
And what do you do?

Although several techniques have been described to facilitate venous hemorrhage control in the juxtahepatic area (e.g. intracaval shunts, venovenous bypass, hepatotomy with selective vessel ligation, hepatic vascular isolation, circulatory arrest), no evidence suggests that direct repair of a retrocaval injury is necessary if bleeding is controlled by spontaneous or manual tamponade. These techniques or embolization may play a role in hemorrhage control as a last resort if packing is unsuccessful. (DP/JW)
But.....
“You miss 100% of the shots you do not attempt”

Wayne Gretzky
Reflection

On mine and others’ lessons
A truck, a driveway, a child

Lesson One
A swing set and a child

Lesson Two
The hardest lesson

Matthew
Some things come to you broken

Your job is not to break them further, and if you are fortunate, sometimes they can be fixed
Grade 6 success
An oral history
Part I
Grade 6 success

An oral history
Part II
“You play the hand you’re dealt”

And EMS dealt us a great hand!
The calm before the storm
Game on!

3 anesthesiologists
4 surgical attendings
32 people in the OR

All in Flow
Abdomen packed
Aorta clamped
Still bleeding from liver
2 transplant surgeons in the room
Liver isolation, and repair

Game on!
Being fluid

I Can’t see Jack Squat

Go to the other side with anesthesia

Sympathetic collapse-Epi bags

Acid wash-Bicarb
82 units of RBCs
23 units Plts
56 units FFP
7 units Cryo

Glimmer of hope
4 hours in and we haven’t lost him yet.

“We’re gonna get out of the F*&King OR with him alive!!!”

Glimmer of hope
In that moment

I remembered Matthew
Upon further reflection

Lessons learned
Is she bluffing? | Are you stupid?
Cows are as dangerous as moose.
Like bull fights

Injuries are always more severe than they appear on the surface
Fortuna quadrigis preparatis
It’s going to happen to you.

Seek comfort in those around you.
Cherish your victories
They are rare and precious
Thank you!!