Trauma calls: role of the general surgeon and CT scanning

R G Dattani, T Richards, C D Smith, T R Magee

Background and objective: General surgeons are required in only a minority of trauma call cases to assess for abdominal injuries. Computed tomography (CT) accurately detects blunt abdominal injuries and may have replaced the need for general surgeons at trauma calls. This study evaluated the role of general surgeons at trauma calls and assessed use of CT in cases of suspected abdominal trauma.

Methods: (a) Eighteen month analysis of trauma calls at a district general hospital and (b) three month prospective study of all trauma cases presenting to A&E.

Results: (a) There were 73 trauma calls and the mechanism of injury in most cases was a road traffic accident (RTA). Most patients had orthopaedic and/or neurosurgical injuries. The general surgeons assessed 22 trauma call patients. Abdominal injury was excluded in 13 (four by clinical examination and nine following CT). (b) Forty three patients fulfilled the criteria for a trauma call and 14 trauma calls were made. The mechanism of injury in most was RTA and most had orthopaedic and/or neurosurgical injuries. The general surgeons assessed 10/43 potential trauma call patients, and abdominal injury was excluded in five (one by clinical examination and four following CT).

Conclusion: A&E staff managed most trauma calls. Most patients did not require general surgical intervention. For penetrating injuries, presence of a general surgeon remained crucial. For blunt injuries CT was an important adjunct. These data suggest that general surgeons do not routinely have to attend all trauma calls but can be called if abdominal and/or vascular injuries are specifically suspected.

RESULTS

Eighteen month analysis of trauma calls

Between October 2001 and March 2003 there were 73 trauma calls. The mechanism of injury in most of the cases was an RTA (fig 1). The majority of patients had orthopaedic and/or neurosurgical injuries (table 1). The orthopaedic surgeons managed all the head and chest injuries.

General surgeons assessed 22 trauma call patients (30.1%): abdominal injury was excluded in 13 patients (17.8%; four by clinical examination (5.5%) and nine following a CT (12.3%)), and only nine patients (12.3%) were admitted under the general surgeons. Seven patients (9.6%) required operative surgical intervention: four for penetrating injuries (three abdominal stabwounds, one laceration to axilla) and three for blunt trauma (splenic injury, liver injury, and oesophageal injury). Two patients (2.7%) were admitted for observation. Both had superficial abdominal lacerations incurred by stabbing and both made an unremarkable recovery.

Three month prospective study

Between April and June 2003, 43 patients fulfilled the criteria for a trauma call (see box 2). Fourteen trauma calls (32.6%)...
were made. The mechanism of injury in most cases was an RTA (fig 2), and most of the injuries were orthopaedic and/or neurosurgical (table 2).

The general surgeons assessed 10 (23.3%) of the 43 potential trauma call patients. Abdominal injury was excluded in five patients (11.6%): one by clinical examination (2.3%) and four following a CT (12.3%). Only six patients (14.0%) were admitted under the general surgeons: four patients (9.3%) for observation (three superficial abdominal lacerations, one abdominal bruising) and two (4.7%) required splenectomy.

**DISCUSSION**

The trauma team approach to management of a seriously injured patient remains crucial for improving patient outcome. Currently, most of the trauma cases in our unit are managed by A&E staff. This may reflect the availability of senior A&E staff and high incidence of orthopaedic and/or neurosurgical injuries. Following initial assessment in A&E, these patients are referred directly to orthopaedic surgeons. In the present study, although general surgeons assessed up to 30% of the patients, only a minority were admitted under their care. Despite absence of a general surgeon in the trauma team, no patient died from undiagnosed abdominal injury.

Twelve of 16 trauma call patients (75%) and six of seven potential trauma call patients (85.7%) had a CT scan for suspected abdominal trauma. Abdominal CT was positive in three of the twelve trauma call patients (25%) and two of the six potential trauma call patients (33%). These results are similar to those of a prospective multicentre study of 2299 patients with suspected blunt abdominal trauma. That study also showed that CT correctly predicted abdominal injuries in 99.63% of their patients and admission or observation was not necessary after a negative abdominal CT scan. In our study, all patients who had surgical intervention for blunt trauma had had a prior positive CT scan. No patients with a negative CT scan underwent an operation.

**Table 1** Nature of injuries in trauma call patients (October 2001–March 2003)

<table>
<thead>
<tr>
<th>Nature of injuries</th>
<th>No (%) of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orthopaedic injuries</td>
<td>19 (26.0)</td>
</tr>
<tr>
<td>Neurosurgical injuries</td>
<td>8 (11.0)</td>
</tr>
<tr>
<td>Maxillofacial injuries</td>
<td>2 (2.7)</td>
</tr>
<tr>
<td>Combination of the above</td>
<td>29 (39.7)</td>
</tr>
<tr>
<td>General surgical</td>
<td>9 (12.9)</td>
</tr>
<tr>
<td>Fatal cardiac arrests</td>
<td>6 (8.2)</td>
</tr>
</tbody>
</table>

**Box 1**: Members of trauma team at the Royal Berkshire Hospital

- A&E consultant (during working hours)
- A&E middle grade doctor (registrar or staff grade)
- Anaesthetic registrar
- Intensive care unit senior house officer (SHO)
- Orthopaedic SHO and registrar
- Two A&E nurses
- Radiographer
- Porter

**Box 2**: Criteria for activating the trauma team at the Royal Berkshire Hospital

- Road traffic accident (RTA) involving fatality
- RTA where patient has been ejected from the vehicle
- RTA with vehicle roll over
- Fall from a height > 6 m (20 feet)
- Any gunshot wound
- Knife wound above the waist
- Hanging
- Drowning
- Major burns or explosion
- Electrocution
- Crush injury to the trunk or limbs
- A child pedestrian or cyclist hit by a vehicle
- Any trauma presenting with low blood pressure (<100 mm Hg systolic), tachycardia (pulse >100/min), airway compromise, or signs of pneumothorax

![Figure 1](https://www.emjonline.com)  
**Figure 1**: Mechanism of injury in 73 trauma call patients (October 2001–March 2003).

![Figure 2](https://www.emjonline.com)  
**Figure 2**: Mechanism of injury in 43 potential trauma calls (April–June 2003).

**Table 2**: Patients fulfilling criteria for a trauma call (April–June 2003)

<table>
<thead>
<tr>
<th>Nature of injuries</th>
<th>No (%) of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orthopaedic injuries</td>
<td>17 (39.5)</td>
</tr>
<tr>
<td>Neurosurgical injuries</td>
<td>8 (18.6)</td>
</tr>
<tr>
<td>Maxillofacial injuries</td>
<td>3 (7.0)</td>
</tr>
<tr>
<td>Chest injuries</td>
<td>1 (2.3)</td>
</tr>
<tr>
<td>Combination of the above</td>
<td>7 (16.3)</td>
</tr>
<tr>
<td>General surgical</td>
<td>6 (14.0)</td>
</tr>
<tr>
<td>Fatal cardiac arrests</td>
<td>1 (2.3)</td>
</tr>
</tbody>
</table>
In the case of penetrating injury (8.2% of trauma call patients and 7.0% of potential trauma call patients), general surgical assessment was essential to determine if operative intervention was required. Most of the patients admitted under the general surgeons had a penetrating injury.

The low incidence of intra-abdominal and vascular injury was similar to the findings of the North Staffordshire Trauma Centre and the first report of the UK Major Trauma Outcome Study. This reflects the pattern of trauma seen in the UK where RTA is the commonest mechanism of injury, compared with the USA where penetrating injury can make up to 40% of trauma cases.

**CONCLUSION**

In the present study, the majority of casualties generating a trauma call were managed by A&E staff. Most patients did not require general surgical intervention. In penetrating injuries, presence of a general surgeon remained crucial. In blunt injuries, CT was an important adjunct to aid diagnosis. These data suggest that general surgeons do not routinely have to attend all trauma calls but can be called if abdominal and/or vascular injuries are specifically suspected.

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**REFERENCES**

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