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Papers presented

Has the trauma surgeon become house staff for the surgical subspecialist?

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Abstract

Background: The role of the trauma surgeon is perceived to be mostly supportive of other procedure-oriented specialties. We designed this study to characterize the surgical and nonsurgical responsibilities of the contemporary trauma surgeon.
Methods: Trauma patients admitted to an urban academic level I trauma center were studied using trauma registry data for 2004.
Results: The large majority of patients admitted to trauma service has mild single-system injuries to 1 or 2 anatomic regions. Most (57%) did not have injuries to the neck, chest, or abdomen. Head and extremity injuries were present in 45% and 46% of patients, respectively. Surgeries were performed by orthopedists in 28%, trauma surgeons in 11%, and neurosurgeons in 6% of patients.
Conclusions: The contemporary trauma surgeon has little surgical opportunity and provides a disproportionate amount of nonsurgical care in support of consultant specialists. This is a major deterrent to general surgeon interest in trauma care and must be addressed as the acute-care surgeon evolves.

Keywords: Trauma surgeon; Acute care surgery; Emergency surgeon

Care of the trauma patient has changed dramatically in the past 15 years. Decreased penetrating trauma, better noninvasive diagnostic imaging, nonsurgical management of solid-organ injuries, development of endovascular therapy, and evolutions in postinjury critical care clearly have been beneficial to the trauma patient, but also have reduced the surgical potential of the trauma surgeon. Conversely, trauma remains a multidisciplinary disease requiring the participation of consultant specialists including orthopedic surgeons, neurosurgeons, maxillofacial, and reconstructive surgeons. Although the trend in nonsurgical and minimally surgical strategies has reduced the frequency of trauma surgeon–performed surgeries, other specialties continually introduce new surgical techniques to treat the trauma patient. Orthopedic trauma is largely surgical and the advent of damage-control orthopedics and neurosurgery has further increased the surgical potential for these services. Thus, as the opportunity of the trauma surgeon has dwindled, and that of the consultant specialist has increased, the trauma surgeon has experienced a shift of primary responsibilities toward nonsurgical management strategies and interdisciplinary care coordination. It is exactly this shift in practice that has driven graduating residents and practicing general surgeons away from trauma as a career or part of a general surgery practice.

Efforts to prevent the extinction of the trauma surgeon are centered on re-establishing surgical domain in non-trauma general surgery and expanding into select emergent procedures that traditionally are performed by consultant specialists [1]. This offers an attractive alternative to the largely nonsurgical practice that many professional trauma surgeons experience today. However, the solution also must consider the role of the trauma surgeon in nonsurgical patient care. The paradigm shift to acute-care surgery must be founded not only on increasing the opportunities for

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complex surgical procedures, but also on addressing the other aspects of trauma care that deter interest in this vital field of medicine. To develop a viable evolutionary strategy, we must first have an honest and accurate assessment of the duties currently assumed by the trauma surgeon. The purpose of this study was to describe the current role of the trauma surgeon in the multidisciplinary care of the trauma patient at an urban academic level I trauma center. We hypothesized that, despite a near-optimal environment for the acute-care surgeon, the trauma service at Denver Health Medical Center (DHMC) provides an unreasonably high proportion of nonsurgical care support to procedure-oriented consultant specialists [2].

Methods

The Rocky Mountain Regional Trauma Center at DHMC is an American College of Surgeons Committee on Trauma–verified and state-certified urban academic level I trauma center. The DHMC also serves as the safety net hospital for the city and county of Denver. A tiered trauma team response is triggered by prehospital or emergency department personnel on injured patients arriving to the emergency department (ED). The trauma team consists of multidisciplinary health care providers, including physicians (from a variety of services), nurses, health care technicians, radiology personnel, and others, depending on the level of response required. The attending trauma surgeon has ultimate responsibility and authority for the initial evaluation and management of the injured patient. The response system is flexible and can be upgraded or downgraded at the discretion of the trauma team leader. Patients requiring admission to the trauma/acute-care service are admitted under the attending surgeon. The general surgeons at DHMC participate equally in trauma call and provide comprehensive elective and nonelective general surgery services that include thoracic and vascular services.

Trauma team activation is the highest level of response for patients at risk of critical injury. It is triggered before or on patient arrival by emergency medical services (EMS) or the emergency physician for patients with (1) blunt and penetrating injuries with a prehospital systolic blood pressure of less than 90 mm Hg; (2) penetrating gunshot wounds to the torso; (3) stab wounds to the torso requiring endotracheal intubation; (4) amputation proximal to the wrist or ankle; (5) a Glasgow Coma Scale of less than 8 or respiratory compromise, with presumed thoracic, abdominal, or pelvic injury; (6) interhospital transfers requiring blood transfusion to maintain vital signs; or (7) when the emergency medicine attending or chief surgical resident suspects the patient is likely to require urgent surgical intervention. The attending surgeon leads the trauma team during the trauma activation and is expected to be present in the ED before arrival of the patient or within 15 minutes when notification is short.

Trauma team alert is a moderate response required for patients transported to DHMC via code 10 (EMS lights and sirens) but who do not meet criteria for trauma activation. In this case the chief surgical resident and attending emergency physician lead the trauma team during the evaluation and resuscitation of the patient. The attending surgeon is notified and responds based on the initial evaluation and is expected to evaluate all trauma alerts within 6 hours of patient arrival.

A trauma consult is reserved for patients who do not meet activation or alert criteria, but who have the potential for serious injury based on an initial evaluation performed by the emergency physician. It is required on any patient with a recent history of trauma that is to be admitted to the obstetric, pediatric, or medicine services from the ED or at the discretion of the emergency physician. The evaluation is performed by the surgical house staff under the supervision of the attending surgeon.

Patients who are admitted to the hospital for more than 12 hours or die on arrival with a principal diagnosis of acute trauma are entered into the Colorado Trauma Registry. Data for this study were abstracted from the trauma registry maintained at the DHMC for patients injured between January 1st and December 31st, 2004. Injuries were classified using the abbreviated injury scale (AIS) regions. The cervical, thoracic, and lumbar spine regions were pooled into a spine category. External (skin and integument) injuries were excluded when calculating the number of systems involved in multisystem injuries. Surgical interventions were defined as procedures performed in the operating room and classified according to the service that performed the surgery.

Results

In 2004 there were 2,791 patients with trauma diagnoses evaluated in the ED. Registry data were not recorded for 561 patients who were discharged alive within 12 hours of admission. Data on 2,230 patients were used in this study; 1,612 (72%) were male and the average age was 37.4 ± .4 years. Most patients (1,934; 87%) were victims of blunt trauma with an average Injury Severity Score (ISS) of 12.8 ± .3. The admission status according to trauma team response is shown in Table 1, 480 (22%) patients were transported directly to the operating room before admission to the surgical intensive care unit (SICU) or ward. The length of stay for all trauma patients was 5.8 ± .2 days, for a total of 12,916 days.

The trauma team was activated for 159 (7%) patients. All 116 survivors were admitted to the acute-care surgery service; 27 (23%) were admitted to the ward, 87 (75%) were admitted to the SICU, and 63 (54%) required urgent or emergent surgeries. Thirty-eight (24%) trauma activations were for patients with an ISS of less than 16; 46 (28%) were for patients with injuries isolated to 1 AIS region, mostly located in the head, and 27 (17%) did not have any injuries to the neck, chest, or abdomen. Seventy-nine patients (50%)

Table 1
Trauma team response and admission disposition of all trauma patients

Response	Admission status				Discharge	Total
	Dead	ICU	Ward	Observation		
None	1	0	482	65	22	570
Consult	0	233	191	47	0	471
Alert	9	561	363	86	11	1030
Activation	43	87	27	2	0	159
Total	53	881	1063	200	33	2230