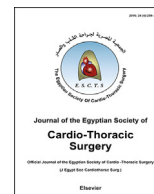


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Long term management of thoracic trauma in a high frequency trauma center; what have we learned?



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ABSTRACT

Background: One of the most frequently seen lethal casualties is the thoracic trauma (TT). We aim to distinguish risk factors affecting the outcome of TT to find the best way for its management.

Methods: Over a 12-year data were collected and retrospectively analyzed patients with TT. Two patients' groups were involved: Group I: patients managed between January 2003–December 2008. Group II: patients managed between January 2009–December 2014. Risk factors were analyzed.

Results: A total number of 630 thoracic trauma cases were admitted. Group I included 285 patients (197 males, their mean age 46 years). 345 patients were managed in Group II (251 males, their mean age 49 years). Higher thoracic trauma score (TTS), and higher abbreviated injury score (AIS thoracic) were associated with overall higher morbidity and mortality ($p = .017$). 94 (15%) of patients who had severe lung contusions showed a higher morbidity and mortality ($p < .001$). 23 (8%) patients had emergency thoracotomy in group I versus 14 (4%) patients in group II ($p = .041$). Overall mortality was 12.5% with higher incidence in group I ($p = .024$). Overall morbidity was 52% ($n = 331$) with a higher incidence in group I ($p = .039$). More young patients (<50 years) were frequently injured but showed fewer mortality rates ($p = .014$).

Conclusions: Optimal management is achievable in specialized centers under the supervision of an experienced thoracic surgeon. Early mobilization and repeated bronchoscopic examination resulted in a good outcome in most of the patients. Severe pulmonic injuries marked TTS and AIS thoracic scores, and also the age were independent prognostic factors for the outcome.

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1. Introduction

Trauma keeps on being a noteworthy general medical issue worldwide as it leads to high morbidity and mortality in developed and developing nations. Thoracic trauma (TT) includes 15–20% of all injuries [1,2].

TT is responsible for one quarter of casualty related deaths. Blunt TT is most frequently seen than penetrating trauma, with the most frequent causes being road traffic accidents, fall from height, and crush injuries [3,4].

Closed TT are frequently associated with fracture ribs and pulmonary contusions (PC). In spite of the fact that the general impact of chest wall fractures on mortality stays questionable, flail chest was accounted for the delayed ventilation weaning and more lethality. The intercostal tube is the first management option in many cases. Moreover, the other surgical options are incidentally required, and sometimes mandatory in serious cases [5,6].

Various scoring frameworks have been created for prognostic value in TT patients, for example, thoracic trauma score (TTS), injury severity score (ISS), abbreviated injury score thoracic (AIS thoracic), and pulmonary contusion score (PCS). However, existing data stay dubious about final risk in term of morbidity and mortality [7,8].

It is well known that the quality and the outcome of treatment in specialized hospitals, with the presence of different discipline and “know how” experience, is well known. The use of acute trauma life support (ATLS) guidelines and consistent uniform of triage system is an important task to insure the right treatment on the right time through the right person dealing with polytraumatized patients [3,9]. However, the new generations of chest computed tomography (CT) are very important to get a clear image to confirm or exclude occult injuries. So, the rate of emergency thoracotomies will decrease [10,11]. In this study, we would like to detect the prognostic factors affecting the outcome.

2. Data analysis

2.1. Data collection

All trauma cases managed at the A&E center at our institution were recorded. The execution of a new thoracic surgery unit at our institution in 2009 was the cut point between the two groups. Data for age, gender, trauma mechanisms, type of transport, ISS, AIS thoracic, TTS, operative procedures, ICU procedures, length of intubation, complications, in hospital stay, and mortality rates were compared.

2.2. Statistical analysis

Our data were analyzed by using univariable and multivariable analysis. Chi-square (X²-Test) was used for the univariable data. The numerical variables were compared by the *t*-test or the Wilcoxon rank-sum test. For multivariable analysis, a Cox regression model was used with a forward stepwise selection of covariates. Data analysis were performed using SPSS software (Version 16; SPSS, Inc., Chicago, IL, USA).

3. Patients & thoracic trauma risk factors analysis

3.1. Patient characteristics

1122 trauma cases were managed at our institution between January 2003 and December 2014. 1070 cases (95%) had blunt trauma. TT cases represented about 56% of them (630 patients); they were classified into two groups. **Group I:** the cases that were managed from January 2003 to December 2008 (285 patients). **Group II:** the cases that were managed from January 2009 to December 2014 (345 patients) [Table 1].

Table 1
Patients' data.

Patients' characteristics	Group I	Group II
Number	285	345
Age		
Mean ± (Range)	46 ± (16–89)	49 ± (15–93)
Gender (Male)	197	251
Air transport	66%	72%
Intubation through the emergency team	84%	88%
Time of transport (min.)	78 ± 52	71 ± 49
Time from arrival to chest X-ray (min.)	9 ± 5	7 ± 4
Time from arrival to CT-scan (min.)	26 ± 10	22 ± 8
Number of patients received blood transfusion	33%	31%
Bronchoscopy	3%	16%
Traffic accidents	63%	63%
Work related accidents	35%	34%
Suicide and crime	2%	3%

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