



Emergency department thoracotomy of severely injured patients: an analysis of the TraumaRegister DGU®

Stefan Schulz-Drost^{1,2} · David Merschin¹ · Denis Gümbel^{1,3} · Gerrit Matthes^{1,3} · Friedrich Frank Hennig² · Axel Ekkernkamp^{1,3} · Rolf Lefering⁴ · Sebastian Krinner² · the TraumaRegister DGU

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Abstract

Aim of the study Emergency department thoracotomy (EDT) may be the last chance for survival in some severe thoracic trauma. This study investigates a representative collective with the aim to compare the findings in Europe to the international experience. Moreover, the influence of different levels of trauma care is investigated.

Methods All emergency thoracotomies in patients with an ISS ≥ 9 from TR-DGU (2009–2014) within the first 60 min after arrival were identified. EDTs were identified separately, and mini thoracotomies and drainage systems were excluded.

Results 99,013 patients with sufficient data were observed. 1736 (1.8%) received thoracotomy during their hospital stay. 887 patients had a thoracotomy within the first hour in the emergency department (ED). 52.5% were treated in supraregional trauma centers (STC), 36.4% in regional (RTC) and 11.0% in local trauma centers (LTC). The mortality rates were 39.4% (STC), 20.9% (RTC) and 20.8% (LTC). The overall mortality rate showed no significant differences for blunt (28.2%) and penetrating trauma (31.3%). In case of cardiac arrest in the ED, a survival rate of 4.8% for blunt trauma and 20.7% for penetrating trauma was determined if EDT was carried out. Those patients showed a higher rate in severe thoracic organ injuries due to penetrating trauma but less extrathoracic injuries.

Conclusion Just over half of EDTs were performed in STC. Emergency room resuscitation followed by EDT had survival rates of 4.8% and 20.7% for blunt and penetrating trauma patients, respectively.

Keywords Trauma registry · Emergency room thoracotomy · Resuscitative thoracotomy · Chest trauma · Polytrauma

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✉ Stefan Schulz-Drost
Stefan.schulz-drost@gmx.de

¹ Department for Trauma Surgery and Orthopaedics, BG Klinikum Unfallkrankenhaus Berlin gGmbH, Warener Str. 7, 12683 Berlin, Germany

² Department of Orthopaedic and Trauma Surgery, Universitätsklinikum Erlangen, Krankenhausstr. 12, 91054 Erlangen, Germany

³ Centre of Orthopaedics, Trauma Surgery and Rehabilitative Medicine, Ferdinand-Sauerbruch-Straße, Universitätsmedizin Greifswald, 17475 Greifswald, Germany

⁴ Faculty of Health, Department of Medicine, Institute for Research in Operative Medicine (IFOM), University Witten-Herdecke, Ostmerheimer Straße 200, 51109 Cologne, Germany

Abbreviations

ACS	American College of Surgeons
AIS	Abbreviated Injury Scale
CPR	Cardiopulmonary resuscitation
CT	Computed tomography
CXR	Chest X-ray
DGU	German Trauma Society
EDT	Emergency Department Thoracotomy
FAST	Focused Abdomen Sonography in Trauma
GCS	Glasgow Coma Scale
LTC	Local Trauma Center (Level III)
ISS	Injury Severity Score
mmHg	Millimeter of Mercury
QM	Quality Management
RTC	Regional Trauma Center (Level II)
RISC	Revised Injury Severity Classification
SOL	Signs of life
STC	Supraregional Trauma Center (Level I)
TR-DGU	TraumaRegister DGU®
USA	United States of America