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ORIGINAL ARTICLE

Surgical treatment strategies in pediatric trauma patients: ETC vs. DCO—an analysis of 316 pediatric trauma patients from the TraumaRegister DGU®

Klemens Horst[1] · Hagen Andruszkow[1] · Christian David Weber[1] · Miguel Pishnamaz[1] · Matthias Knobe[1] · Felix Marius Bläsius[1] · Philipp Lichte[1] · Rolf Lefering[2] · Frank Hildebrand[1]

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Abstract

Purpose External fixation within the damage control concept in unstable multiple trauma patients is widely accepted. Literature about its usage in the pediatric trauma population, however, is rare. The aim of the present study was to elucidate the factors associated with the application of external fixation in the severely injured child.

Methods Patients with severe trauma aged 0–54 years documented in the TraumaRegister DGU® were included in this study. Demographic data, pattern of injury, injury severity, use of the damage control orthopedics (DCO) or early total care (ETC) concept, duration of mechanical ventilation, intensive care stay, and total hospital stay as well as the occurrence of complications and mortality were evaluated. Statistical evaluation was performed using SPSS (Version 21.0.0) using Chi square tests and linear regression models.

Results While injury severity was comparable between children and adults, type of accident and injury patterns showed significant differences, Overall, the majority of surgical fracture stabilization in $AIS_{Extremity} \geq 3$ injuries followed the DCO concept in adults (60.3%) and the ETC protocol in children (49.4%). Conservative treatment was chosen for only 11.6% of all children and 9.6% of all adults. An increasing injury severity, $AIS_{Extremity} \geq 3$ and $AIS_{Extremity} \geq 3$ in ≥ 2 body regions, and a more advanced age were found to be independent factors in the use of the DCO concept in children.

Conclusion Use of external fixation increases with age and plays a minor role in the very young trauma population. However, this does not produce a difference in outcome between children and adults.

Keywords ETC · DCO · Children · Severely injured

Abbreviations

ACCP	American College of Chest Physicians
AIS	Abbreviated injury score
CNS	Central nervous system
CT	Computer tomography
DCO	Damage control orthopedic surgery
ESIN	Elastic intramedullary nailing
ETC	Early total care
ICU	Intensive care unit
ICM	Intensive care medicine

✉ Klemens Horst
khorst@ukaachen.de

Hagen Andruszkow
handruszkow@ukaachen.de

Christian David Weber
cdweber@ukaachen.de

Miguel Pishnamaz
mpishnamaz@ukaachen.de

Matthias Knobe
mknobe@ukaachen.de

Felix Marius Bläsius
fblaesius@ukaachen.de

Philipp Lichte
plichte@ukaachen.de

Rolf Lefering
rolf.lefering@uni-wh.de

Frank Hildebrand
fhildebrand@ukaachen.de

[1] Department of Trauma and Reconstructive Surgery, RWTH Aachen University, Pauwelsstreet 30, 52074 Aachen, Germany

[2] IFOM, Institute for Research in Operative Medicine, Faculty of Health, University Witten/Herdecke, Ostmerheimer Straße 200, 51109 Cologne, Germany

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