



# Use of the Trauma Pelvic Orthotic Device (T-POD™) for Rapid Stabilization of Pelvic Fractures in the Emergency Department



T.R. Bilski<sup>1</sup>, A.J. Brooks<sup>1</sup>, D. Scaff<sup>1</sup>, J.P. Pryor<sup>1</sup>, C.T. Born<sup>2</sup>, M.K. Fitzpatrick<sup>1</sup>, C.W. Schwab<sup>1</sup>

<sup>1</sup>Division of Traumatology and Surgical Critical Care, University of Pennsylvania Medical Center, Philadelphia, Pennsylvania, USA, <sup>2</sup> Department of Orthopaedic Surgery, Temple University Hospital, Philadelphia, Pennsylvania, USA

## OBJECTIVES

Hemodynamic compromise in patients with a rotationally unstable pelvic fracture is associated with mortality from uncontrolled hemorrhage. Essentially all algorithms for trauma resuscitation recommend bony pelvic reduction to reduce the pelvic volume. A number of techniques have been described including placement of an anterior external fixator, pelvic C-clamp or a circumferential sheet. These techniques suffer from requiring significant levels of expertise and application time or failure to assure closure of the pelvis in all body types. The Trauma Pelvic Orthotic Device (T-POD™) is a two-piece “corset” device of sufficient length and width used to achieve rapid pelvic stability regardless of body habitus. The objective of this study was to describe our experience with the T-POD™ for the prompt bony reduction and stabilization of pelvic fractures.

## MATERIAL and METHODS

Retrospective review of the University of Pennsylvania Trauma Registry from March 2001 to December 2004 for all patients admitted with pelvic fractures initially managed with the placement of a T-POD™ in the trauma bay.

## RESULTS

481 patients with a pelvic fracture were admitted during the review period. 51 (36 male, 15 female) patients were managed with a T-POD™ that was applied in the trauma bay for hemodynamic compromise and / or pelvic instability. Injuries were sustained from motor vehicle crash (20), pedestrian vs. automobile (13), motorcycle crash (8), fall (6) and other (4). The T-POD™ was applied within 15 minutes of arrival in the trauma bay in 80% of the patients. The mean injury severity score was 26 and overall mortality 23.5%. There was no significant difference in ISS or admission systolic blood pressure between survivors and non-survivors. Seventeen of the patients underwent emergent angiography for contrast blush on CT scan or hemodynamic instability and 13 patients underwent emergency laparotomy for abdominal injuries; 10 patients underwent both. All the procedures were performed with the T-POD™ in-situ.

**TABLE 1. Patient Characteristics: 481 patients with pelvic fractures admitted to Hospital of the University of Pennsylvania March 2001 – December 2004**

	T-POD™ (total 51 patients)	No T-POD™ (total 430 patients)
<b>Gender:</b> Male	36 (70.6)	273 (63.4)
Female	15 (29.4)	157 (36.5)
<b>Age (avg yrs)</b>	47	43
<b>ISS* (avg)</b>	26	19
<b>Admission SBP* ≤ 90 mmHg</b>	7 (13.7)	27 (6.3)
<b>Admission HR*: ≥ 100 bpm</b>	24 (47.1)	153 (35.6)
≤ 40 bpm	4 (7.8)	10 (2.3)
<b>Admission Temp ≤ 95°F</b>	4 (7.8)	24 (5.6)
<b>LOS* (avg days)</b>	21	12
<b>Length of ICU Stay (avg days)</b>	6	3
<b>Mechanism of Injury</b>		
MVC*	20 (39.2)	184 (42.8)
Pedestrian Struck	13 (25.5)	61 (14.2)
MCC*	8 (15.7)	28 (6.5)
Fall	6 (11.8)	83 (19.3)
Other**	4 (7.8)	74 (17.2)
<b>Mortality</b>	12 (23.5)	34 (7.9)

Data are given as the number (percentage) of patients unless otherwise indicated. \*ISS Injury Severity Score; SBP Systolic Blood Pressure; HR Heart Rate; LOS Length of Stay; MVC Motorvehicle Crash; MCC Motorcycle Crash. \*\*Other includes: crush, ATV Crash, Bicycle Crash, Gunshot Wound, Assault

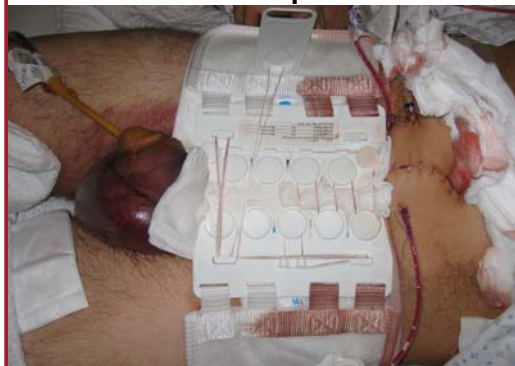
## CONCLUSIONS

The T-POD™ is a safe and user friendly device that achieves rapid reduction of the unstable pelvis. It allows for ongoing resuscitation and angioembolization, and easy access for trauma laparotomy.

Pre TPOD XR



TPOD in place



Post TPOD XR

