C-clamp and pelvic packing for control of hemorrhage in patients with pelvic ring disruption

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BACKGROUND
Exsanguinating hemorrhage is the major cause of death in patients with pelvic ring disruption.

AIMS
The aim of this study was to document outcomes after the stabilization of pelvic ring injuries by a C-clamp and control of hemorrhage by pelvic packing. Physiological parameters were tested as prognostic factors.

SETTING AND DESIGN
This was a retrospective study at a level I trauma center. The study period was from January 1996 to December 2007.

MATERIALS AND METHODS
Fifty patients with pelvic ring disruption and hemorrhagic shock were analyzed. The pelvic rings were fixed by a C-clamp, and patients with ongoing hemorrhage underwent laparotomy and extra- and/or intra-peritoneal pelvic packing. Clinical parameters (heart rate, mean arterial pressure) and physiological parameters (lactate levels, hemoglobin, hematocrit) were documented at admission and at different time points during the initial treatment (1, 2, 3, 4, 6, 8, and 12h after admission).

RESULTS
Within 12 h of admission, 16 patients died (nonsurvivors) due to hemorrhagic shock (n=13) or head injuries (n=3). In this group, 12 patients underwent laparotomy with pelvic packing. Thirty-four patients survived the first 12 h (early survivors) after fixation by a C-clamp and additional packing in 23 patients. Four of these patients died 12.3±7.1 days later due to multiple organ failure (n=3) or severe head injury (n=1). The blood lactate level at admission was significantly higher in the group of nonsurvivors (7.2±0.8 mmol/L) compared to the early survivors (4.3±0.5 mmol/L, P<0.05). While hemoglobin values improved within the first 2 h in nonsurvivors, lactate levels continued to increase.
CONCLUSION
Pelvic packing in addition to the C-clamp fixation effectively controls severe hemorrhage in patients with pelvic ring disruption. Early sequential measurements of blood lactate levels can be used to estimate the severity of shock and the response to the shock treatment.

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