

The Use of Resuscitative Endovascular Balloon Occlusion of the Aorta in Patients with Pelvic Ring Injuries

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Purpose: The treatment of patients with pelvic ring injuries and hemodynamic instability continues to be challenging due to the lack of consensus regarding management. Addressing hemorrhage is a priority in these situations and resuscitative endovascular balloon occlusion of the aorta (REBOA) has emerged as a method that allows for minimally invasive hemorrhage control in patients with pelvic ring injuries. However, due to the often severe nature of injury and associated polytrauma, high risks of complications and mortality remain. The aim of this study is to examine the outcomes of patients with pelvic ring injuries who have undergone REBOA to evaluate the efficacy of the procedure.

Methods: This was a retrospective study that reviewed patients who sustained blunt-force pelvic ring injuries and underwent REBOA between January 1, 2012 and December 31, 2021. Patients with penetrating trauma or chronic pelvic conditions were excluded. The primary outcomes for this study were mortality and major in-hospital complications after REBOA placement. Patient demographics, severity of injury, fracture characteristics, REBOA procedure details, and shock parameters were also collected to assess the overall status of the patient.

Results: 51 patients received REBOA in their treatment and had pelvic injuries classifiable by the Young-Burgess classification: 13 lateral-compression (LC)-1, 4 LC-2, 8 LC-3, 13 antero-posterior compression (APC)-2, 10 APC-3, and 3 vertical shear. The patients had an average age of 42 years, ISS of 42, heart rate of 115, systolic blood pressure of 85, and lactic acid level of 7.9 mMol/L. Angiography and embolization were performed in 20 patients. In-hospital mortality occurred in 26 patients, with 5 patients requiring lower extremity fasciotomies, 3 requiring lower extremity amputations, and 5 requiring thrombectomy.

Conclusion: REBOA is a minimally invasive procedure that can be included in the treatment algorithm for pelvic fractures with significant hemorrhage. However, the implementation of REBOA is infrequent and generally reserved for critically ill patients. This study provides insight into the risks associated with REBOA use for patients with pelvic ring injuries, but further research is needed to establish more specific indications for use. In patients with pelvic ring injuries for which REBOA is considered, there is a high risk of death and major complication. Therefore, caution should be exercised when considering REBOA use to manage hemodynamic instability in patients with pelvic ring injuries.