

ACS COT Residents Trauma Papers Competition Title Page

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Use of Resuscitative Endovascular Balloon Occlusion of the Aorta in Traumatic Brain Injury Patients: A Nationwide Analysis.

Introduction

Resuscitative endovascular balloon occlusion of the aorta (REBOA) has emerged as a noninvasive alternative to resuscitative thoracotomy for non-compressible torso hemorrhage. However, its use in severely injured traumatic brain injured (TBI) patients has not been explored. The aim of our study was to evaluate the effect of REBOA on outcomes in severe TBI patients.

Methods

We performed a retrospective analysis of the 2016-2017 ACS-TQIP. We include adult (age ≥ 18 y) TBI (Head AIS ≥ 3) patients. Patients were stratified into those who underwent REBOA within 1 hour of presentation (REBOA group) and those who did not (No-REBOA group). Propensity score matching (1:3 ratio) was performed. Outcomes were the neurosurgical interventions (craniotomy/craniectomy), complications, length of stay (LOS), and mortality.

Results

A matched cohort of 576 patients (144 REBOA and 432 No-REBOA) was analyzed. The mean age was 41 ± 18 y, the head-AIS was 4 [3-5], and the ISS was 36 [26-47]. Patients in the REBOA group had higher rates of neurosurgical intervention within 1 to 12 hours of hospital admission (29% vs. 13%; $p < 0.01$). Patients in the REBOA group had a significantly longer hospital (19 vs. 13 d; $p = 0.01$) and ICU LOS (12 vs. 7 d; $p = 0.04$) among survivors. REBOA placement is also associated with a higher rate of acute kidney injury (5.6% vs. 2.1%; $p = 0.03$), lower extremity amputation (4% vs. 1.6%; $p = 0.04$), 24-hour mortality (29% vs. 13%; $p < 0.01$) and overall in hospital mortality (50% vs. 36%; $p < 0.01$).

Conclusion

REBOA in severe TBI patients was associated with worse outcomes compared to a similar cohort of patients who did not undergo REBOA. The decision to use REBOA should be carefully considered in the presence of a TBI. Future studies are required to clearly delineate the use of REBOA in this subgroup of trauma patients.