



Western Surgical Association 2020 Annual Meeting

Monday, November 9, 2020
4:00pm – 6:15pm Pacific Time
– Virtual Meeting --

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20. A LEG TO STAND ON: TRAUMA CENTER DESIGNATION IS ASSOCIATED WITH THE RATE OF LIMB SALVAGE IN PATIENTS SUFFERING SEVERE LOWER EXTREMITY INJURY

Presenter: Corinne Bunn MD | Loyola University Medical Center

C Bunn, S Kulshrestha, B DiChario, U Maduekwe, FA Luchette, MS Baker, SP Agnew

Background: One of the most difficult injuries for trauma surgeons to manage is the mangled extremity. The American College of Surgeons (ACS) require that specialty care at Level II Trauma Centers (TCs) are comparable to that at Level I TCs. However, recent studies demonstrate a significant survival advantage for patients with severe injury treated at Level I TCs. The purpose of this study was to compare salvage rates for a limb-threatening lower extremity injury managed at either a Level I or a Level II TC.

Methods: The ACS National Trauma Data Bank (NTDB) was used to identify adults who presented to an ACS verified Level I or II TCs with a limb-threatening injury and underwent either primary amputation or LS (defined as having no amputation during the index admission) between 2007-2017. Limb-threatening injuries were defined as an open tibial fracture with concurrent arterial injury (Gustilo Type III). Patients who had primary attempt at LS but later underwent amputation during the index admission were excluded.

Results: 712 patients met inclusion criteria. 391 (54.9%) underwent LS; 321 (45.1%) underwent amputation. On univariate analysis, patients having penetrating injuries (13% vs 9.5%, $p=0.046$) and those having either a tibial/peroneal artery injury (31% vs 59%, $p<0.001$) as opposed to a popliteal artery injury (69% vs 41%, $p<0.001$) were more likely to have LS. The rate of LS was statistically higher among patients treated at Level I TCs than those treated at Level II TCs (47.4% vs 34.8%, $p=0.01$). There were no statistical differences between patients having LS versus amputation with regards to the presence of a concurrent motor nerve injury, deep vein injury, soft tissue defect as captured by abbreviated injury score (AIS) or highest AIS by body region, including lower extremity. There were similarly no statistical differences in age, gender, race, ethnicity, insurance type, injury severity score (ISS), systolic blood pressure (SBP) and/or Glasgow Coma Scale (GCS) score on arrival, comorbid condition, facility teaching status and bed size. On multivariable regression adjusted for age, race, ethnicity, insurance, comorbid disease, ISS, presenting SBP < 90 mmHg, presenting GCS score < 8, facility type, transfer status and injury mechanism, type of arterial injury and concurrent deep vein and/or motor nerve injury, the risk adjusted odds of having LS for limb-threatening injuries when patients were treated at Level I TCs was 2.3 times that of having LS when patients were treated at Level II TCs (95% CI [1.24-4.46], $p=0.01$). On 1:1 propensity matching of patients treated at Level I TCs to those treated at Level II TCs for the variables listed



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above, those treated at Level I TCs had significantly higher rates of LS (53% vs 35%, $p=0.004$).

Conclusion: In spite of current ACS requirements, the rate of LS is associated with the ACS designation of the TC providing care. Patients receiving care at Level 1 TC are more than twice as likely to receive LS, while patients at Level 2 TC demonstrate higher rates of primary amputation, independent of injury severity.