

Increased Systemic Complications in Open Femoral Shaft Fractures Are Associated with the Degree of Soft-Tissue Injury Rather Than New Injury Severity Score (NISS) Values: A Nationwide Database Analysis

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Background/Purpose: In blunt high-energy trauma, the degree of soft-tissue injuries associated with femoral shaft fractures may vary. The objective of this study was to assess the impact of open versus closed soft-tissue injuries associated with femoral shaft fractures on major systemic complications and mortality after trauma.

Methods: In this prospective cohort study from a population-based trauma database, patients with femoral shaft fracture (AO/OTA-32) were divided into the following groups: closed femoral shaft fracture (CFSF) and open femoral shaft fracture (OFSF). Open soft-tissue injuries were classified according to the Tschernke classification. Data of demographic, injury, therapy, and outcome characteristics (eg, multiple organ failure [MOF], sepsis, mortality, length of stay [LOS]) were collected and analyzed using SPSS.

Results: Data from 32,582 trauma victims were documented in a nationwide trauma registry between January 1, 2002 and December 31, 2013. Among 5761 trauma patients (NISS 30 ± 14 points), 4423 belonged to the CFSF group (77%) and 1338 belonged to the OFSF group (23%). Open fractures were separated into I° (334, 28.1%), II° (526, 44.3%), III° (309, 26%), and IV° (19, 1.6%). OFSF are associated with an increased risk for hemorrhagic shock (HS), higher resuscitation requirements, and increased in-hospital and intensive care LOS, but not with increased injury severity according to NISS, sepsis, or mortality. The prevalence of MOF, sepsis and mortality increased with the degree of open soft-tissue injury.

Conclusion: Open femur fractures were not associated with higher injury severity scores (NISS), but with an increased risk for HS, higher resuscitation requirements, MOF, and increased length of stay (LOS). The incidence of sepsis and mortality increased with the degree of open soft-tissue injury. The treatment of OFSF seems to be more complex and time-consuming, but the risk for major clinical complications (eg, sepsis, mortality) seems to be comparable for both groups.

- The FDA has not cleared this drug and/or medical device for the use described in this presentation (i.e., the drug or medical device is being discussed for an "off label" use). For full information, refer to page 600.