

An Interobserver Agreement Study with a New Classification for Rib Fractures

Michael Bemelman¹, Mark van Baal², Claudia Raaijmakers¹, Koen Lansink¹, Luke Leenen², William Long³

¹Department of Surgery, Elisabeth-Tweesteden Hospital, Tilburg, The Netherlands

²Department of Surgery, University Medical Center Utrecht, Utrecht, The Netherlands

³Department of Surgery, Legacy Emanuel Medical Center, Portland, United States of America

Abstract

Background: No consensus exists about the indication for surgical rib fixation in patients with rib fractures. Comparison between studies is difficult since a classification system is lacking for rib fractures. We introduced the first classification system for rib fractures, analogue to the Müller AO classification system and tested the classification with an interobserver agreement study.

Methods: The classification is build up by four characters: the first one describes the rib number, the second character describes the location of the fracture in cranial-caudal fashion, the third character describes the fracture type and the fourth character described the subtype of the fracture. An interobserver agreement study was performed with the new classification.

Results: Twenty CT scans of patients with rib fractures were analyzed. A total of 197 unilateral and bilateral rib fractures were scored by four reviewers. The interobserver agreement was substantial [Fleiss κ of 0.62 (95% CI 0.59 – 0.65)].

Conclusion: This is the first classification for rib fractures worldwide. The interobserver agreement of the classification was substantial. This classification is the first step in identifying patients who would benefit from surgical rib fixation.

Key words: rib fracture, surgical rib fixation, classification, interobserver study