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Title of Presentation Chest wall stabilisation and rib fixation using a nitinol screwless system in selected patients after blunt trauma: long-term results in a single-centre experience

Background

First experiences with rib fixation using nitinol, in terms of reliability, morbidity, influence on pain control and quality of life, in a large series of selected patients after blunt chest trauma.

Methods

Data of all patients who had undergone rib fixation by use of nitinol were retrospectively analysed in terms of indications, morbidity, and in-hospital mortality. Pain status and health-related quality of life (HRQOL) were assessed preoperatively, when possible, at discharge and at 1, 3, 6, 12 months post-surgery using visual analogous scale (VAS) and short form 12 (SF-12) questionnaires.

Results

From September 2017 to April 2019, 70 patients underwent rib fixation using the nitinol device, of which 47 (67%) had dislocated, painful fractures, 6 (8.5%) had flail chest injuries, 6 (8.5%) were emergencies with haemodynamical instability, and 11 (16%) had pseudarthrosis. Morbidity was 21% without wound infection; in-hospital mortality was 3%. Fracture of the material occurred in 6% of the patients during the first year, but removal of the material was not required. Analysis of the pain score showed a statistically significant decrease in pain for both the whole collective and the group with a series of

dislocated and painful fractured ribs ($p < 0.001$, Tukey contrast on the linear mixed-effects models). Assessment of HRQOL revealed a significant improvement in the physical score for the mid- and long-term analysis.

Conclusion

Our results suggest that rib fixation using the nitinol device is reliable, associated with an acceptable morbidity, while significantly decreasing pain and improving health-related quality of life.