AB023. Thoracoscopic guided rib plating for multiple rib fracture with muscle sparing approach

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Background: Rib fractures are a frequent occurrence in trauma victims, seen in up to 39% of patients following blunt chest trauma and present in 10% of all trauma admissions. A recent study reported that fewer than 1% of patients with significant rib fractures underwent surgical stabilization, and that only 8% were treated with adequate pain control. Our aim of this study was to describe the technique of minimally invasive surgery of rib fixation by thoracoscopic localization and muscle-sparing thoracotomy approach. We also present the short-term clinical outcome and complications after the operation.

Methods: We performed video assisted thoracoscopic surgery (VATS) first to deal with intrathoracic pathological lesion. Then we use VATS to find out unstable broken ribs by stress test and we performed open reduction internal fixation (ORIF) for unstable broken ribs via muscle-sparing thoracotomy approach.

Results: From May 2016 to July 2017, 29 patients underwent VATS and ORIF and 61 ribs was fixed. The mean age was 52.5±11.8 years old. The interval from the injury to the surgery was 6.9±6.4 days. There was one major complication, that one patient with coronary arterial disease suffered a postoperative pulseless electric activity (PEA) and received cardiopulmonary resuscitation (CPR). Four out of 29 patients had minor complications. (2 cough, 2 postop sternocostal junctional pain). There is no delayed hemothorax nor pneumothorax following the procedure. There was no major hardware-related complication. All patients stopped prn opioid after the operation and 27/29 stopped all analgesics 1 month after the operation. Most patients' mechanical chest wall pain got improved. The visual analogue scale for pain (VAS) improved significantly from preop 5.1±1.8 to postop 1.5±0.5 (P<0.0001)

Conclusions: VATS assisted ORIF with muscle-sparing approach is effective in the surgical stabilization of rib fracture with minimal morbidity. We could localize the fracture area and check the stability by stress test. We also can check the screw prominence after ORIF and restore the arc-shaped pleural cavity. It makes the wound shorter and avoid delayed pneumohemothorax. The feasible technique provides safe and promising outcome with minimal morbidity. However, the indication and surgical protocol are still controversial. More high-quality studies are needed.

Keywords: Thoracoscopy; rib fracture; muscle sparing approach

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