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External Vacuum Dressing: Optimising Non-Operative Management of Flail Sternum Post CPR

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Abstract : Case Presentation: A 48-year-old male was brought in by ambulance after an out-of-hospital cardiac arrest, with 20 minutes of good-quality cardiopulmonary resuscitation in the community. Return of spontaneous circulation was achieved with defibrillation, revealing an inferior ST-elevation myocardial infarction. He was revascularized emergently in the cath lab and stabilised. Following the procedure, he was noted to have paradoxical respiratory movements of the sternum and high oxygen requirements. CT imaging demonstrated a flail chest with bilateral anterior rib 1-7 fractures as well as a large left-sided extra-pleural haematoma and small haemopneumothorax, secondary to CPR. The patient's ventilation was stabilised with oxygen via a high-flow humidifier. Pain relief was provided. The anatomy of his rib fractures was not easily amenable to operative fixation. In addition, he was considered to be a high-risk operative candidate due to his recent arrest. He was managed thus non-operatively with an external vacuum dressing applied to the anterior chest wall to minimise respiratory compromise and minimise pain from the motion around the rib fracture sites. Non-operative management was successful, and the patient was reviewed one month later. The paradoxical sternal movement had abated. Discussion: External vacuum dressing has been trialled for non-operative management of rib fractures with varying success. It provides an external brace to minimise fracture site movement during respiration and coughing, thus minimising pain. This modality should be considered a low-cost, high-reward adjunct to non-operative management of bony thoracic trauma.

Keywords : thoracic surgery, thoracic trauma, rib fractures, negative pressure dressing
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