A case of flail chest diagnosed by four-dimensional computed tomography and treated with mandible locking plates.

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Abstract

A 51-year-old man underwent surgery after being diagnosed with a flail chest by 4D-CT. 4D-CT adds a time axis to 3D-CT; hence, it can be performed in patients with a flail segment to aid in pre-operative evaluation of the most effective fixation site.

Title: A Case of Flail Chest Diagnosed by 4D-CT and Treated with Mandible Locking Plates

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Informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

Key Words: 4D-CT, flail chest, locking plates

Abstract

A 51-year-old man underwent surgery after being diagnosed with a flail chest by 4D-CT. 4D-CT adds a time axis to 3D-CT; hence, it can be performed in patients with a flail segment to aid in pre-operative evaluation of the most effective fixation site.

Key clinical message

4D-CT visualizes the movement of the thorax during inspiration and expiration and aids in flail chest diagnosis and enables preoperative evaluation of the most effective fixation site.

Flail chest is diagnosed by visual examination; however, the diagnosis can be challenging in post-intubation cases.[1] A 51-year-old man underwent surgery following a motor vehicular accident, after being diagnosed with a flail chest by four-dimensional computed tomography (4D-CT). CT revealed fractures of the right second-eighth ribs (second- fifth segment fracture) with right lung contusion (Figure A). His respiratory condition worsened after arrival, and we intubated and treated him with continuous positive pressure ventilation. 4D-CT taken on day 3 showed paradoxical movement, and he was diagnosed with flail chest (Figure B, inspiration; Figure C, expiration). We performed fixation of the third, fourth, fifth, and seventh ribs with a locking plate on the fifth day (Figure D). The patient was discharged after 17 days. 4D-CT is gaining popularity as a diagnostic tool alongside angiography. It uses the scan speed of a 320-detector row CT and adds time-axis to the conventional three-dimensional image, enabling evaluation of hemodynamics and

function.[2] It aids in flail chest diagnosis and enables preoperative evaluation of the most effective fixation site.

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Conflict of interst

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Ethics statement

Our institution does not insist on ethics committee approval for case reports.

Written Consent from the patient

Written consent was obtained from the patient.

Detailed author's contribution

I meet the current International Medical Journal Editorial Board (ICMJE) authorship criteria.

Data availability Statement

On reasonable request, derived data supporting the findings of this study are available from the corresponding author.

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