

Combined Intrathoracic and External Thoracic Rib Plating Using the RibFix Titan for Complex Traumatic Chest Wall Injuries



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Background

Patients presenting with multiple comminuted rib fractures pose a clinical challenge requiring complex fixation. Early and definitive fixation is associated with improved outcomes. Zimmer Biomet's RibFix Titan is a unique solution that allows for intrathoracic, extrathoracic, or combined fixation. This case series describes two patients treated with the RibFix Titan. Patient 1 had right 4-9 rib fractures and right anterior flail segment. Patient 2 had a large flail segment including left ribs 3-9 and multiple comminuted fractures.

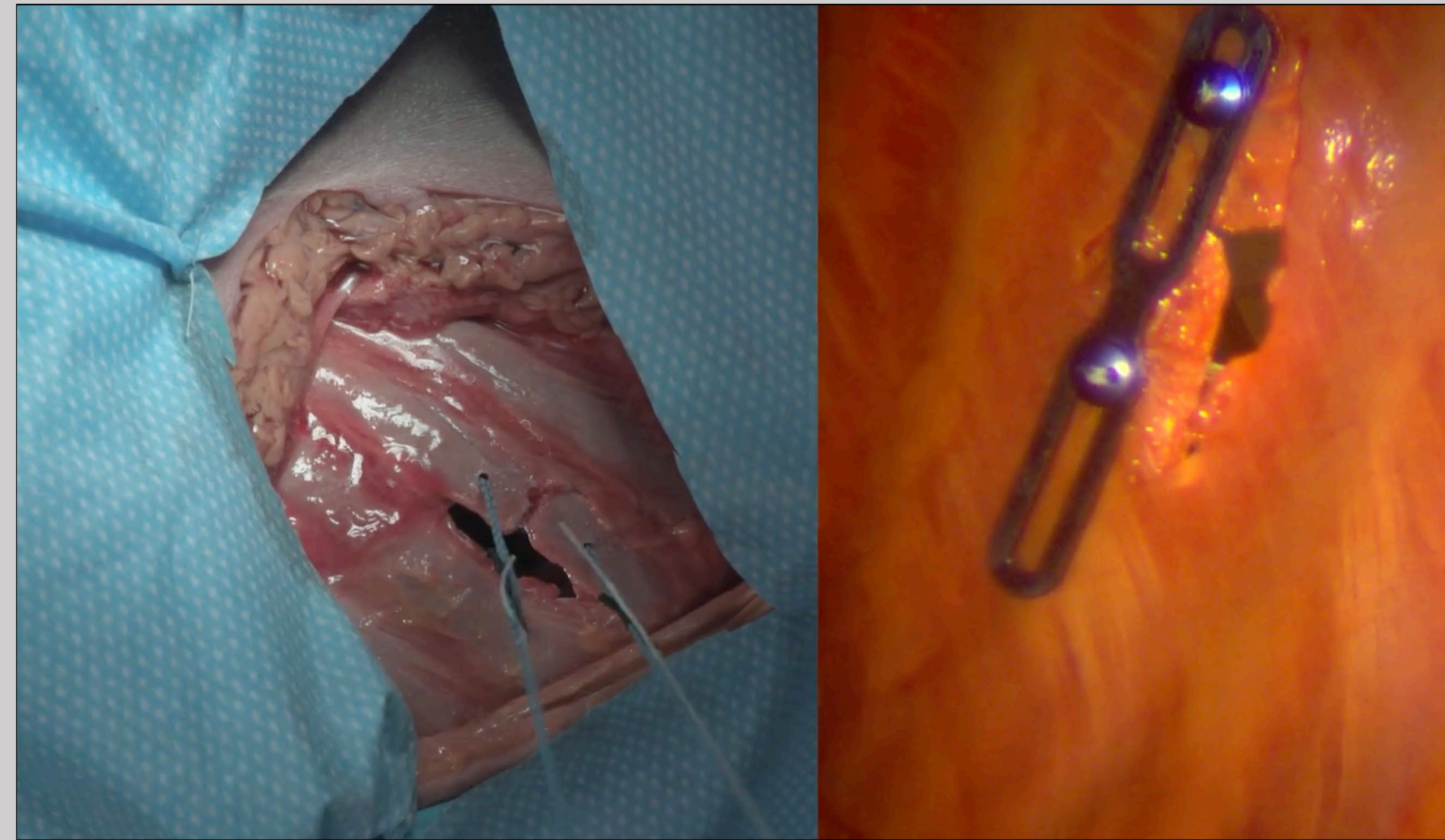


Figure 4 (above): Intrathoracic approach for RibFix Titan fixation system. (Zimmer Biomet, 2024)

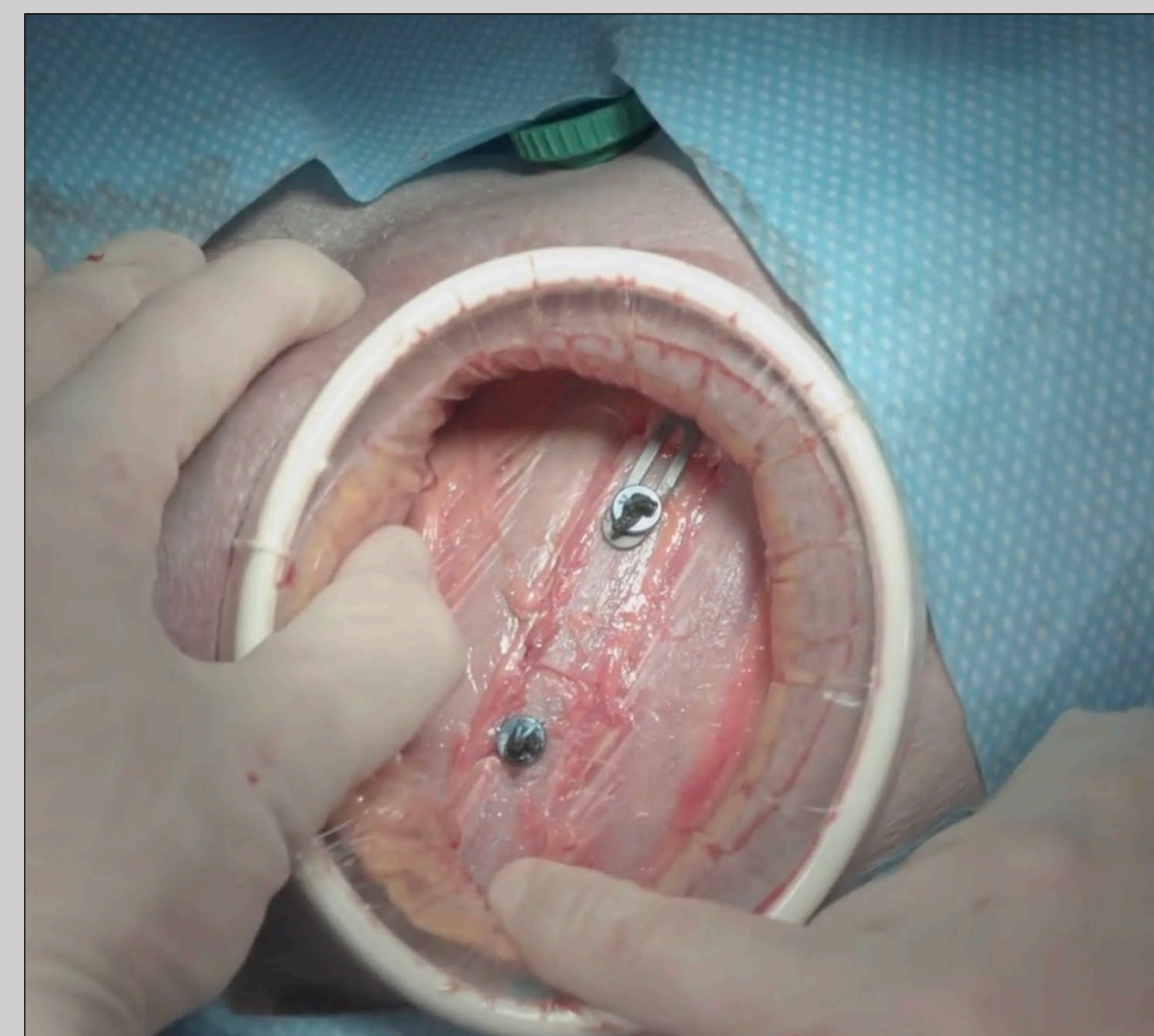


Figure 5 (left): External view of combined external and internal approaches to create "sandwich" fixation of segmental fracture using the RibFix Titan fixation system. (Zimmer Biomet, 2024)



Figure 1 (above): Diagram of combined external and internal approaches to create "sandwich" fixation using the RibFix Titan over a flail segment. (Zimmer Biomet, 2024)

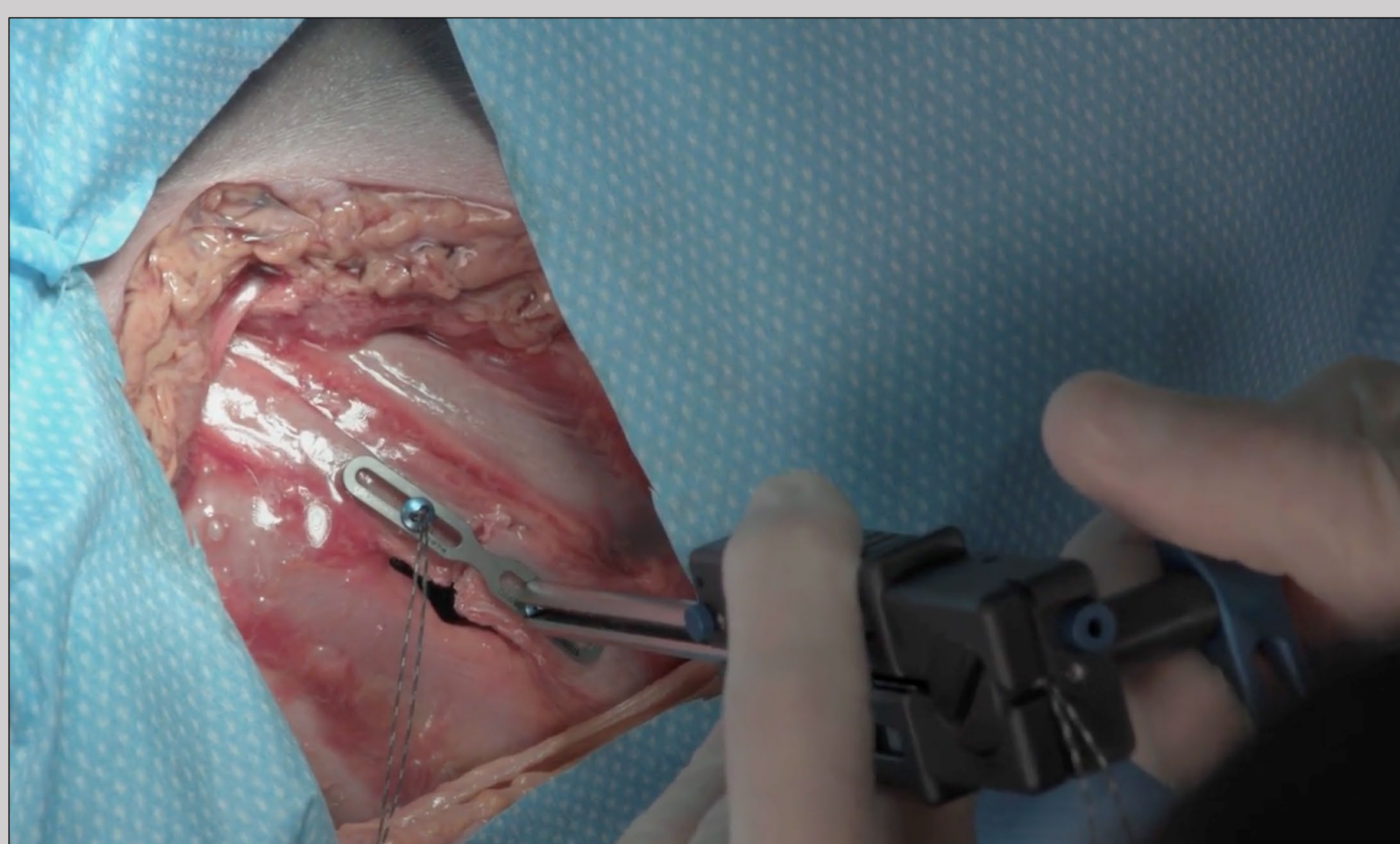


Figure 2 (right): External fixation using the RibFix Titan on a cadaver. (Zimmer Biomet, 2024)

Methods

- Patient 1 underwent external plate fixation of left ribs 4-8, combined external and internal "sandwich" fixation of rib 9, and external bridging of ribs 2-4 across the costal cartilages to the sternum for the anterior flail segment on the right.
- Patient 2 underwent intrathoracic fixation of left ribs 3-9 with "sandwich" fixation for ribs 4-6.

Results

- No complications were appreciated in relation to the procedure.
- Average time to complete the sequence of fixation from the time the rib was exposed for fixation to completion of the fixation was 3 minutes. This is an improvement of nearly 50% from prior internal fixation systems by Zimmer.
- Average OR time was 3.5 hours
- Previously described benefits of early fixation were appreciated in both patients (early freedom from the vent, no pneumonia, improved pain control).

Conclusions

The application of this RibFix Titan system proved to be an efficient and safe approach in both cases. This simplified rib plating system was noted to be agile and facile in the face of high complexity trauma to the chest wall allowing for both internal, external, and combined plating. Based on this experience, we plan to continue the use of Zimmer Biomet's RibFix Titan in our practice and highly recommend its use to for complex and simple rib fractures that would benefit from fixation.

References and Acknowledgements

1. Zimmer Biomet (2024). *RibFix Titan Thoracic Fixation System*. [video]. <https://app.looptxp.com/external-view/69ceb81a-0678-436f-89ff-08ebb0c2d994>

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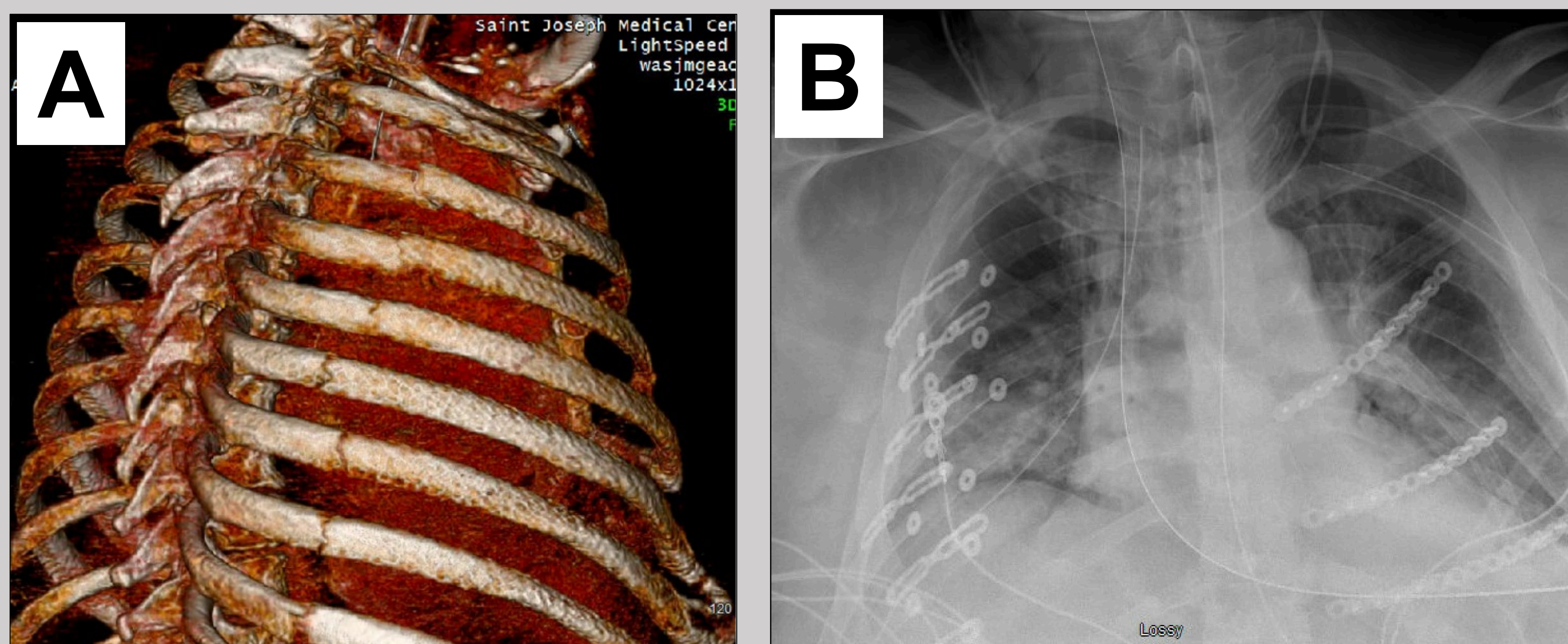


Figure 3: **A** Preoperative 3D reconstruction of right sided rib fractures of Patient 1. **B** Postoperative chest x-ray of Patient 1 after external and "sandwich" fixation. **C** Postoperative chest x-ray of Patient 2 after intrathoracic and "sandwich" fixation.

