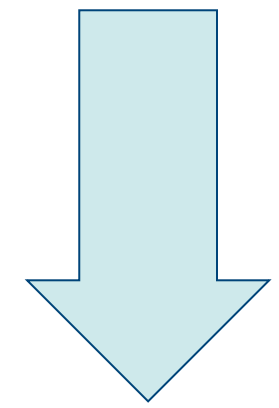


Frankenplating: Flail Chest following CPR

Alexander Hoey, MD, Evert Eriksson, MD, Carter Powell BS

Case

60 y.o. female suffered cardiac arrest at home, requiring CPR



Cardiogenic Shock

+

Bilateral 1-7 Rib Fractures

+

Posterior Displacement of Sternum

The Operation

- Vertical and inframammary incisions
- Raise pec majors
- Incise serratus anterior
- Thoracotomy and chest tubes
- ORIF of ribs 3-6 on right, 3-7 on left, sternal fractures
- Irrigation and hemostasis
- 3-layer closure

Pre-Op



Image 1. CXR on admission



Image 2. Sagittal CT displaying sternal fractures

Intra-Op



Image 3. ORIF of ribs and sternum

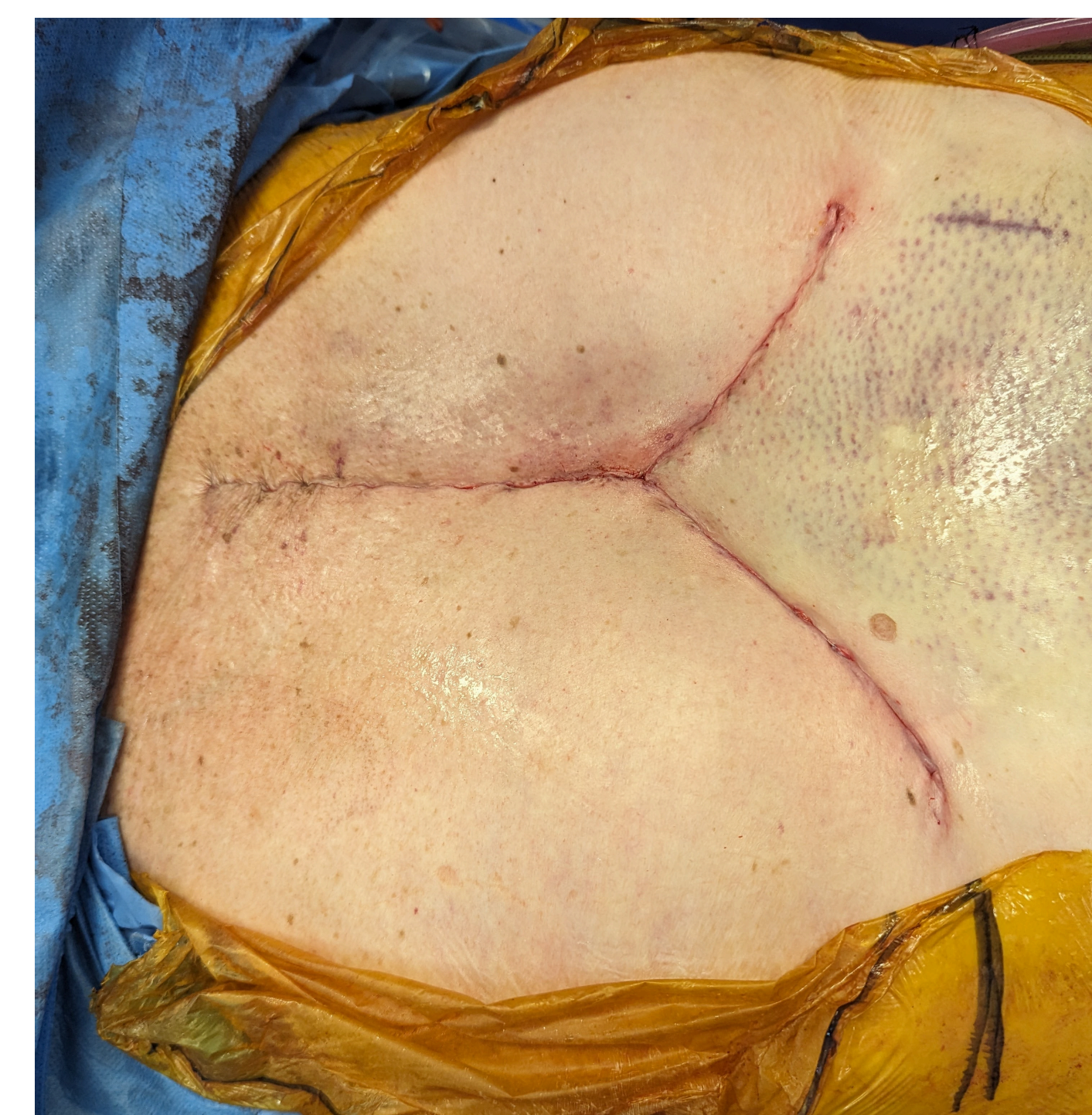


Image 4. Incisions

Post-Op



Image 5. Post-op chest x-ray

Recovery

- Extubated post-op day 1
- Left chest tube removed post-op day 2
- Moved to floor post-op day 3
- Weaned to room air post-op day 4
- Right chest tube removed post-op day 8
- Discharged home post-op day 13, JP drains removed

Importance

- Rib fractures occur in ~ 32% of CPR patients
- Up to 40% experience flail chest, increasing morbidity/mortality
- Varying data in SSRF with CPR patients → this case exemplified positive effects

References

- Miller AC, Rosati SF, Suffredini AF, Schrupp DS. A systematic review and pooled analysis of CPR-associated cardiovascular and thoracic injuries. *Resuscitation*. 2014 Jun 1;85(6):724-31.
- Bauer F, Haag S, Najafi K, Miller B, Kepros J. Surgical stabilization of rib fracture patients versus nonoperative controls treated by a multidisciplinary team in a single institution. *Heliyon*. 2023 Apr 1;9(4):e13482.
- Prins JT, Van Lieshout EM, Eriksson EA, Barnes M, Blokhuis TJ, Caragounis EC, Christie III DB, De Loos ER, DeVoe WB, Jonkers HA, Kiel B. Surgical stabilization of rib fractures versus nonoperative treatment in patients with multiple rib fractures following cardiopulmonary resuscitation: An international, retrospective matched case-control study. *Journal of Trauma and Acute Care Surgery*. 2022 Dec 1;93(6):727-35.
- DeVoe WB, Abourezk M, Goslin BJ, Saraswat N, Kiel B, Bach JA, Suh KI, Eriksson EA. Surgical stabilization of severe chest wall injury following cardiopulmonary resuscitation. *Journal of Trauma and Acute Care Surgery*. 2022 Jan 1;92(1):98-102.