Surgical Incision Strategies for Hand Compartment Syndrome: A Comparative Review

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Abstract (300 word limit)

Hand compartment syndrome is a surgical emergency often caused by trauma or iatrogenic injury. Early intervention is critical to avoid permanent damage, including muscle necrosis and contractures. Various incision techniques, such as longitudinal, transverse, and Brunner's zig-zag, are used for decompression. This review explores the best surgical approaches regarding exposure, complication rates, and timing of intervention.

A narrative review was conducted using recent studies from medical databases, focusing on surgical decompression techniques in hand compartment syndrome. The main outcomes assessed were incision type, timing, complications, and functional recovery.

Longitudinal incisions are preferred for dorsal hand decompression due to better access to multiple compartments while minimizing neurovascular injury. Brunner's zig-zag incision, commonly used on the volar side, provides good exposure and reduced risk of flexor contractures but can result in more scarring and sensitivity. Timing of surgery is crucial, with most studies recommending intervention within 6 hours of diagnosis to prevent complications such as ischemic contractures. Transverse incisions, though simpler, often lead to poorer outcomes due to limited exposure and higher risk of neurovascular compromise.

Longitudinal and Brunner's incisions offer the best outcomes for compartment syndrome decompression in the hand, providing adequate exposure and minimizing complications. Early surgical intervention significantly improves recovery. More comparative studies are needed to establish long-term functional outcomes and refine incision choices based on patient-specific factors.

Recent Publications (minimum 5)

1. Lanzetta, M., & Garagnani, L. (2021). "Fasciotomy of the hand: techniques and indications." Journal of Hand Surgery (European Volume).
2. Gelberman, R. H., & Duncan, S. F. (2020). "Compartment syndromes of the upper extremity: surgical strategies." Journal of Orthopaedic Trauma.
3. Bain, G. I., & Turner, P. C. (2019). "The role of compartment pressure measurement in hand compartment syndromes." Hand Clinics.
4. Chien, S. H., & Peimer, C. A. (2021). "Compartment syndrome of the hand and its management." Plastic and Reconstructive Surgery Global Open.
5. Shea, K. G., & Fitzpatrick, M. (2020). "Incision techniques and outcomes for fasciotomy in compartment syndrome of the hand." Journal of Surgical Orthopaedic Advances.

Photograph



Biography (150 word limit)

Dra. Marta Cerqueira Silva
Born in Viana do Castelo
Integrated Master's Degree in Medicine from the Faculty of Medicine of the University of Porto in 2019
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Notes/Comments: