

Beyond Fasciotomy: "Mannitol's Role in Managing Intracompartmental Pressure in Extremity Trauma. What We Know, A Systematic Review"

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Abstract : Acute compartment syndrome (ACS) is a well-known complication of trauma to the extremities and currently, surgical fasciotomy is the only effective treatment with all its associated secondary risks and sequels, which include limb loss and even death. The present study was conducted to analyze the therapeutic potential of mannitol as an alternative in the control of intracompartmental pressure. A review of the literature on the role of mannitol in compartment syndrome was carried out, investigating its pathophysiology and clinical outcomes, mechanism of action, and considerations at the time of its administration in the prevention and/or treatment of compartment syndrome and reperfusion damage. Methods: A comprehensive database search was conducted to analyze studies in which mannitol was used in the prevention and treatment of compartment syndrome and associated reperfusion damage, no timeline was established for the articles included in the search due to the lack of literature. Results: As mentioned above, there is a lack of literature on the effects of mannitol in intracompartmental pressure; the search only yielded 3 studies, all were very different regarding study design, methods, and sample evaluated, for which synthesizing results is hard as clinical contexts evaluated vary greatly. Nevertheless, all 3 studies found a relationship between mannitol and reduced compartment pressure. Two of the studies objectively evaluated the changes in the intracompartmental pressure. Furthermore, 2 of the 3 studies were able to demonstrate a statistically significant association, where mannitol accelerated the decompression of the muscle compartments susceptible to ischemia and even decreased the need for further treatment with surgical fasciotomy. Conclusion: This systematic review highlights the potential of mannitol in the management of compartment syndrome, however, due to the lack of exhaustive studies, it alludes to more detailed studies to consolidate the role that mannitol could have in clinical practice.

Keywords : reperfusion damage, mannitol's, acute compartment syndrome, intracompartmental pressure

Conference Title : ICSA 2024 : International Conference on Surgery and Anesthesia

Conference Location : Florence, Italy

Conference Dates : October 03-04, 2024