

Conservative Management of a rare clinical phenomenon: Paraspinal Compartment Syndrome, A Review of Existing Literature

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INTRODUCTION

- Paraspinal compartment syndrome arises from edema within the paravertebral myofascial compartment, often triggered by exertion or post-operative factors.
- Elevated intracompartmental pressure resulting from increased compartment volume can compromise the blood supply to the muscles, which may result in ischemia and subsequent muscle necrosis.
- There is limited data on the phenomenon, this systematic review attempts to breakdown the cases of conservatively treated paraspinal compartment syndrome.

METHODS

A systematic literature search utilizing PubMed, MEDLINE, and Cochrane Library databases. The search term "paraspinal compartment syndrome" was used and appeared in the title, abstract, or keyword fields. The original search yielded 56 results. Articles were then examined for inclusion of non-operative management. We reviewed the reference lists of previously conducted systematic reviews to identify additional pertinent literature. This systematic approach led to the identification of 22 non-operative cases from 16 studies, encompassing patient demographics, laboratory values, imaging findings, reasons for conservative treatment, and outcomes.

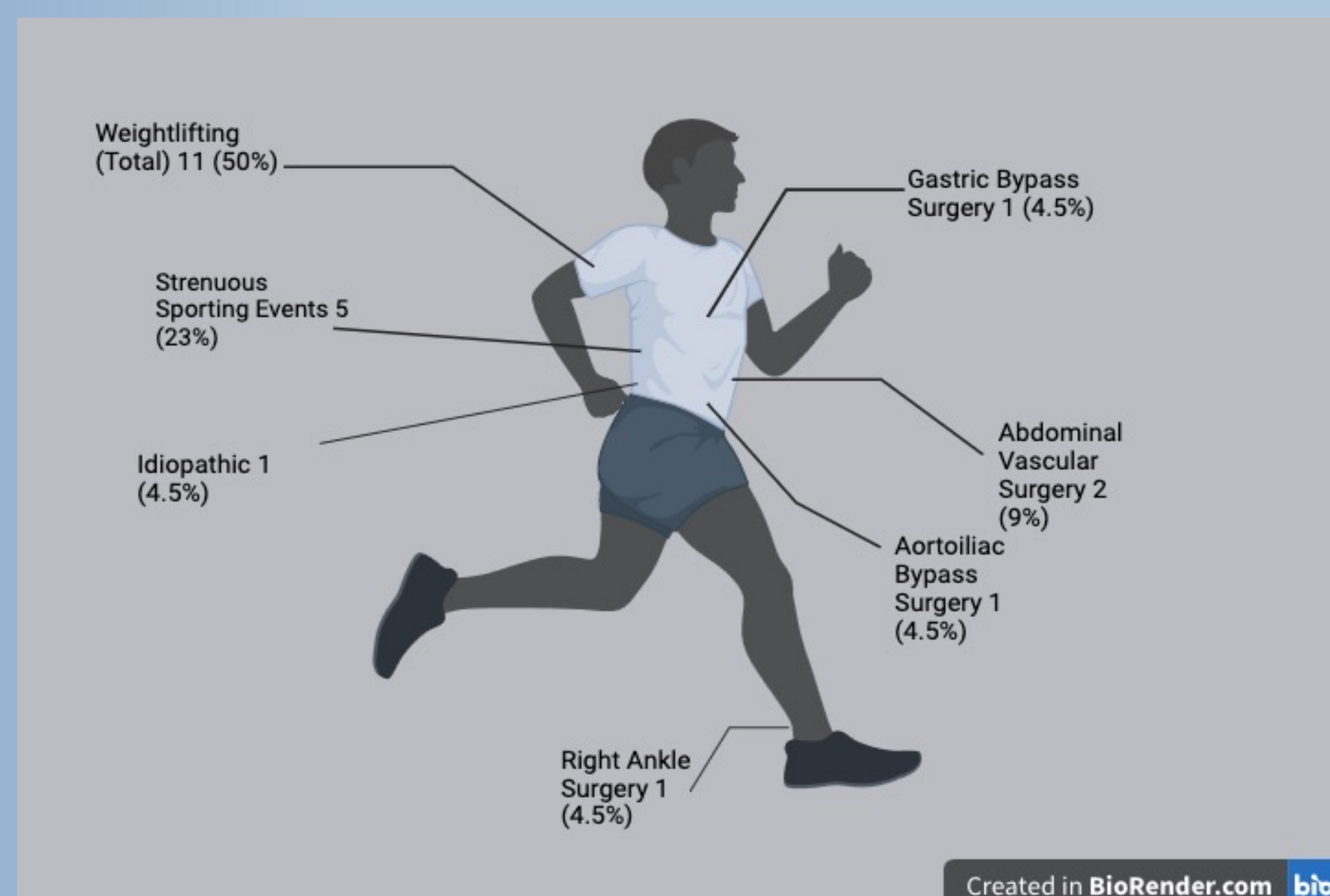


Figure 1: Mechanism of injury in paraspinal compartment syndrome (N=number of injuries included in the review; percentage of injuries)

RESULTS & DISCUSSION

- The causative etiology included:
 - Weightlifting in 12 out of 22 cases
 - Strenuous sporting events in 5 cases
 - Postsurgical situations in another 5 cases.
 - One case stemmed from acute lower back pain during sleep.
- All patients in the review were male, ranging from 18 to 61 years old.
- Symptoms include unrelenting back pain, rigid paraspinal musculature, and subjective paresthesias.
- Acute cases were often characterized by elevated levels of creatine phosphokinase, myoglobinuria, and abnormal liver enzyme levels.
- Magnetic resonance imaging consistently showed bilateral symmetric intramuscular edema affecting paraspinal muscles from T12 down to the sacrum.
- Treatment in the acute setting include intravenous fluids and analgesics.
- Non-operative management was chosen due to:
 - Delayed presentation and diagnosis
 - Infection risk
 - Low measured compartment pressure
- Outcomes:
 - Eight reported a return to normal function
 - Eight continued to experience symptoms related to the initial injury.
 - Six unreported
- Alternative therapies such as hyperbaric oxygen therapy show promise but are limited

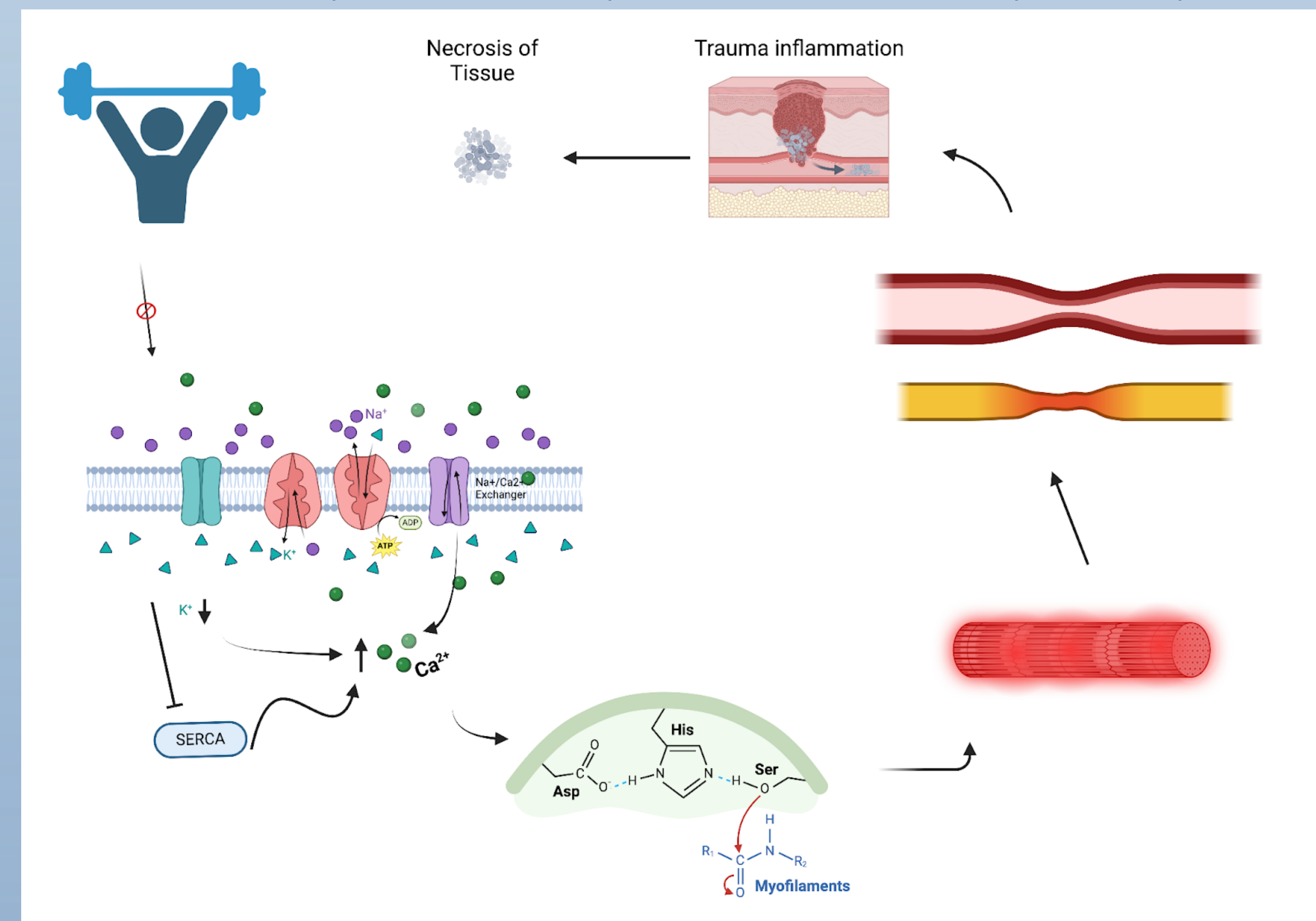


Figure 2: Mechanisms of Muscle Damage During Exertional Rhabdomyolysis

CONCLUSION

- Conservative management of paraspinal compartment syndrome demonstrates potential for patients to regain baseline function, yet residual weakness or dysfunction during exertion may persist.
- Future studies should focus on evaluating and treating paraspinal compartment syndrome patients using established treatment methods, such as fasciotomies, to ensure optimal outcomes and alleviate long-term sequela.

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