

Contemporary management of pediatric lower extremity vascular injuries

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To cite: Crapps JL, Teixeira PG. Contemporary management of pediatric lower extremity vascular injuries. *Trauma Surg Acute Care Open* 2024;**9**:e001340. doi:10.1136/tsaco-2023-001340

Pediatric lower extremity vascular injuries are rare but carry significant morbidity and potential life-altering implications. Although conservative management had been considered the optimal approach in the absence of uncontrolled hemorrhage, operative exploration based on the presence of hard signs of vascular injury has become more commonplace in contemporary pediatric vascular trauma care.¹

In a 20-year retrospective review of pediatric trauma care at a tertiary institution, Lyons *et al*² summarized their experience caring for pediatric patients sustaining lower extremity vascular injuries. Most of their patients (87%) required an operative intervention, with arterial reconstruction using reversed saphenous vein or polytetrafluoroethylene graft being required in over two-thirds of these patients. Like in the adult population, the use of systemic anticoagulation was variable. Most patients undergoing arterial repair received systemic anticoagulation, but in a subset of patients (17%) who were considered unstable due to bleeding from associated injuries, anticoagulation was limited to local heparinized saline solution flushing.

The amputation rate was 6%. Although limb salvage remains the goal for most patients, amputation at the most distal functional level remains a viable option to prioritize life over limb, in select cases of polytrauma, mangled extremities, or severe postoperative complications.³

An interesting finding of this study, which contrasts the documented increase in utilization of endovascular techniques in the adult population,⁴ is that none of their pediatric patients was primarily treated with an endovascular approach. One patient, however, had a stent graft used as part of a staged treatment approach to a vascular reconstruction complication (anastomotic pseudoaneurysm).

The authors highlight the idiosyncrasies of vascular injury care in children, commenting on the challenging technical aspects of operative repair and the potential for delayed complications that may result in unequal limb growth. Unfortunately, as commonly seen in the adult trauma population, long-term follow-up is limited. The overall median follow-up in the series was 8 years, with a quarter of the patients lost to follow-up in less than 1 year. Favorable long-term outcomes for pediatric

peripheral vascular injuries have been reported, however, with no severe disability or limb asymmetry noted up to 52 months postoperatively.^{5,6}

Finally, the findings that three-quarters of the patients who were seen in long-term follow-up had been incarcerated and the remaining quarter were readmitted with a violence-related injury, most commonly gunshot wounds, suggest that vascular injuries in pediatric patients may be associated with future risk of violence exposure.

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Contributors Both authors contributed to the drafting of the article and literature review.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Not required.

Provenance and peer review Commissioned; internally peer reviewed.

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