Popliteal Vessel Injuries in Middle-Aged Adolescents

Zachery Neil, MS, Dustin Hanos, MD, Kevin Chow, MD, Randi N. Smith, MD, MPH,
Christopher R. Ramos, MD, Elizabeth R. Benjamin, MD, PhD, S. Rob Todd, MD, Jason D. Sciarretta, MD

Introduction

- The incidence of peripheral vascular injury in pediatrics is 0.6-1.6%.[1]
- In the US, southern regions observed the highest increase in Popliteal Vessel Injuries (PVIs).[2]
- ACS Verified Level I Adult Trauma Centers exhibit increased rates of limb salvage; however, they are often faced with increased morbidity.[2,3]

Purpose: to provide further insight and overall outcomes pertaining to popliteal vessel injuries (PVIs) in middle-aged adolescents, from an adult level 1 ACS-verified trauma center.

Methods

1,881 pediatric traumas retrospectively reviewed. All middle-aged adolescents (14-17 years) with PVI admitted to Grady Memorial Hospital (2014-2022) were analyzed. Demographics, mechanism, signs of vascular injury, imaging, surgical interventions included.

Results

- 12 patients included: 19 PVIs (artery=10, vein=9), median age 16.4±0.8 years, male (83%). All GSWs. Mean ischemic time 113±112 min
- Hard signs (66.7%) all required emergent OR, the remaining underwent CTA imaging. No deaths occurred. All with follow-up at 30-days.

Table 1:

Techniques	Artery	Vein	%
Primary Repair	3	4	58.30%
RSVG	7	0	
PTFE	0	2	16.70%
Ligation	0	3	
Shunt	2	0	
Thrombectomy	0	1	
Thoracotomy	1		8%
Fasciotomy	8		66%

Table 2:

Injuries	#	%
Fractures	7	58.30%
Nerve Injury	1	8%
Popliteal		
Artery	10	83.30%
Vein	9	75%
Types		
Partial Transection	12	63.20%
Complete Transection	6	31.60%
Pseudoaneurysm	1	5.30%

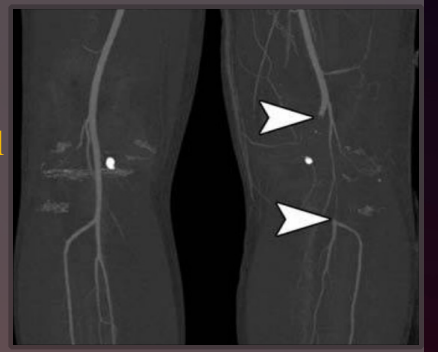

Figure 1: CTA exhibiting segmental occlusion of Popliteal artery.[4]

Conclusion

PVIs in middle-aged adolescents are rare with comparable morbidity to the adults. Long-term follow-up remains challenging, but it is necessary to better understand patency rates & any additional sequelae.