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Isolated superficial femoral artery transection following blunt trauma without fracture: A rare case report

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Abstract

Background: Vascular injuries to the Superficial Femoral Artery (SFA) typically occur due to penetrating trauma or are associated with fractures. Complete transection of the SFA from blunt trauma in the absence of bone injury or skin penetration is exceedingly rare.

Case presentation: We report a case of a 67-year-old Libyan male who sustained blunt trauma after being struck by a vehicle. He presented 72 hours later with right lower limb swelling, coldness, and absent distal pulses. Imaging revealed complete transection of the distal SFA with thrombosis of both ends and distal reformation of the popliteal artery. Notably, there were no associated femoral fractures. The patient underwent emergency fasciotomy followed by surgical repair with a 7 mm PTFE interposition graft. He recovered well with restoration of distal pulses and good limb viability.

Conclusion: This case highlights the importance of maintaining a high index of suspicion for arterial injury following blunt trauma, even in the absence of fractures. Timely imaging and surgical intervention are crucial to prevent limb-threatening complications. To our knowledge, this is among the few reported cases of isolated SFA transection from blunt trauma without skeletal injury.

Keywords: Superficial femoral artery; Blunt trauma; Vascular injury; PTFE graft; Limb salvage; Trauma without fracture.

Abbreviations: SFA: Superficial Femoral Artery; PTFE: Polytetrafluoroethylene; ATA: Anterior Tibial Artery; PTA: Posterior Tibial Artery; CT: Computed Tomography; ICU: Intensive Care Unit; BP: Blood Pressure; bpm: Beats Per Minute; USG: Ultrasound Guidance.

Introduction

Injury to the femoral artery usually occurs either in open penetrating injuries or in association with fractures, but is unlikely with closed blunt trauma without fracture. In this presented case, the distal super-

ficial femoral artery was completely transected due to blunt trauma from a car accident. To the best of our knowledge, there is no case reported in the literature of a complete transection of the femoral artery caused by blunt trauma from a car accident without evidence of fracture or wound penetration. Patient consent was obtained for publication.

Case Report

A 67-year-old Libyan male patient was brought from outside Benghazi to a private clinic with multiple traumas to the chest and upper and lower limbs. He had been hit by a car two days earlier. The patient was admitted to the ICU with blood pressure 120/80 mmHg and heart rate 90 bpm. He had bilateral chest tubes, a fractured left humerus, and swelling and tenderness of the right thigh and leg without evidence of fracture. The foot was cold, with no dorsiflexion or plantar flexion, and both Anterior Tibial Artery (ATA) and Posterior Tibial Artery (PTA) pulses were absent.

Investigations showed elevated renal parameters (creatinine 2.1 mg/dL, urea 107 mg/dL) and hemoglobin 8.9 g/dL. Duplex arterial scan showed monophasic flow in the right ATA and PTA. A Computed Tomography (CT) angiogram showed non-opacification of the right distal Superficial Femoral Artery (SFA) over a 6 cm segment, with popliteal artery reformation and distal opacification of the ATA, PTA, and peroneal artery.

The patient underwent fasciotomy on the ICU bed under sedation and local anesthesia for all four compartments, performed by the general surgery team. After completing dialysis, 7 hours later, the patient was taken for exploration of the distal superficial femoral artery. We found a complete transection with thrombosed proximal and distal ends. Both ends were refreshed, embolectomy was performed, and repair was done with a 7 mm PTFE interposition graft. The outcome was successful, and the patient was discharged after one week with good distal ATA and PTA pulses. The fasciotomy wound was closed before discharge.

Ten days after surgery, full-dose anticoagulation was stopped, and rivaroxaban (2.5 mg twice daily) and aspirin (100 mg) were started. On follow-up one month later, the patient was walking with a walker. There was evidence of foot drop, but distal pulses remained strong.

Discussion/Conclusion

Femoral artery injury is a rare clinical scenario. It is commonly seen in association with open injuries, penetrating trauma, or femoral bone fractures. Isolated femoral artery injury without associated bone injury is very rare. In 1968, “motor scooter handlebar syndrome” was described, involving injury to the common femoral artery without pelvic or femoral fractures, believed to result from compression of the artery by the inguinal ligament [1].The superficial femoral artery, especially after passing through Hunter’s canal, becomes relatively superficial, making it vulnerable to injury from blunt trauma [2].

Superficial femoral artery injuries following closed blunt trauma without bone injury have been summarized in the table below:

Table 1:

Author	Mechanism of trauma	Duration of presentation	Injury to SFA	Procedure	Outcome	Contributing factor	Associated injuries
Norris et al., [3]	Hit by basketball	6 months	Pseudo-aneurysm	Direct repair	-	Femur exostosis	-
Ramakantan et al., [4	Hit by cricketball	2 months	Pseudo- aneurysm	Steel coil embolisation	No recurrence	-	-
Davis et al., [5]	Vehicle collison	1 month	Pseudo- aneurysm	Usg guided thrombin injection	No recurrence	Diabetes and hypertension	Ribs#, Ankle#, Sternal#
Angiletta et al., [6]	Fell on water tap	3 Hrs	Occlusion	Endovascular stenting	Viable limb	-	-
Kumar D et al. (7)	Run-over by vehicle	5 Hrs	Rupture	Reverse saphenous vein graft	Viable limb	-	Left Femur#
Our case	Car collison	72 Hrs	complete cut	PTEF graft repair	Viable limb	hypertension	Ribs # humerus #

Even in the absence of fractures. Early recognition and prompt intervention are essential to avoid complications and preserve limb function.

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