



Contents lists available at ScienceDirect

Acta Orthopaedica et Traumatologica Turcica

journal homepage: <https://www.elsevier.com/locate/aott>

Compound posterior cruciate ligament and popliteal artery injury due to dog bite: A case report

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ARTICLE INFO

Article history:

Received 12 July 2015

Received in revised form

28 September 2015

Accepted 11 November 2015

Available online xxx

Keywords:

Dog bite

PCL injury

Popliteal artery injury

ABSTRACT

Injuries due to dog bites are a common occurrence and are mostly trivial. Severe dog bite injuries requiring hospitalization and complex reconstructive procedures are more common in children. We present the case of a five year old child with popliteal artery thrombosis and compound Posterior Cruciate ligament injury due to a dog bite. The child was managed by immediate thrombectomy, meticulous debridement and knee spanning external fixation followed by Skin Grafting. At one year post surgery range of motion was 10–110°, with no distal neurovascular deficit and no sign of instability.

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Introduction

Humans and dogs have been associated historically. However a dog is a formal wild animal and sometimes due to its retained instincts, may lead to attacks on humans.¹ According to some reports, in a lifetime, at least 50% of the population will sustain a dog bite.² Incidence is especially high in children.³ In younger children most common areas involved are head, neck and face while in older children extremities are involved more often.⁴

Vascular injuries from large-dog bite injuries present with a combination of crush and lacerating injury to the vessel. There is significant adjacent soft tissue injury and a high potential of infection. These injuries can be repaired primarily and a good outcome can be expected provided strict cleaning, debridement, meticulous wound repair, adequate antibiotic and immunization cover is given.

PCL (Posterior Cruciate ligament) injuries are rare in children probably because of elasticity of the ligament. In contrast to PCL injuries in adults where mid-substance tears are more common, paediatric PCL injuries more commonly involve an osteochondral avulsion due to relative weakness of the adjacent physis.⁵ Subtle

signs of injury to the PCL can be easily be missed on plain radiographs in skeletally immature patients, therefore a high index of suspicion is necessary to diagnose them. Isolated PCL injuries when confirmed on Magnetic Resonance Imaging are usually managed conservatively with a predictable outcome.

We present the case of a 5 year old female child who sustained a compound PCL injury and popliteal artery thrombosis due to a dog bite. To the best of our knowledge this is the first case report of a compound PCL injury leading to knee subluxation in a child.

Case report

A 5 years old female child presented to the emergency department with history of pet dog bite. Most of the dog bites occur from animals known to the victim and in this case it was no different. On examination there were multiple lacerated wounds over right ear lobe, right thigh, left thigh, left leg and ankle region, and right arm (Fig. 1). The most grievous wound was over the right popliteal fossa measuring around 8 cm in length and 4 cm in breadth (Fig. 2).

Neurovascular examination revealed absence of posterior tibial and dorsalis pedis pulses distally; distal perfusion was diminished and capillary refill was sluggish. Limb was cold suggesting vascular insult to the limb. Peroneal nerve functions were intact. Urgent Doppler study of the limb was done which suggested blockage of the popliteal artery in popliteal fossa region. Deformity was present at the knee joint suggesting posterior subluxation of the knee. Antitetanus and antirabies prophylaxis (both human

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Peer review under responsibility of Turkish Association of Orthopaedics and Traumatology.

<http://dx.doi.org/10.1016/j.aott.2017.03.018>

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Fig. 1. Showing multiple lacerated wounds over right ear lobe, right thigh, left thigh, left leg and ankle region, and right arm.



Fig. 2. Showing a large lacerated wound over the right popliteal fossa.

immunoglobulin and vaccine) were given to the patient and broad spectrum intravenous antibiotics in the form of Amoxycillin and Clavulanate combination was given for 5 days.

Patient was immediately taken to the operative room after basic preliminary investigations and vascular surgeons were informed. On exploration the underlying muscles and soft tissue including the PCL tibial attachment site were found to be lacerated and the tibial plateau was exposed. Meticulous debridement of the wound was done. Popliteal artery was found to be intact but was contused and thrombosed (Fig. 3). Arteriotomy was done and a large intramural thrombus was seen. Fogarty's catheter was passed distally, balloon was inflated and the thrombus was removed, adequate back flow

was achieved. Arteriotomy was closed with 5-0 nylon suture. Knee was unstable and posterior Drawer test was positive (Fig. 4). There were no other associated ligamentous injuries including the postero-lateral corner and ACL. Knee was stabilised with external fixator in 30 degrees of flexion to avoid stress on the repaired vascular segment. Wounds were again debrided and lavaged with copious amount of saline. All the wounds were closed primarily except the popliteal one. Since the limb was revascularized within 4 h of the injury, it was decided not to perform prophylactic fasciotomy. Anticoagulant therapy in the form of low molecular weight heparin 15 mg twice daily subcutaneously was started and continued for two weeks. Postoperatively limb remained warm and

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