

Traumatic Dislocation of Bilateral Knee Joints with Injury of the Popliteal Arteries - A Case Report

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Abstract: Introduction: Bilateral knee joint dislocation associated with injury of bilateral popliteal arteries is an extremely rare condition. Rapid diagnosis and treatment are essential for limb salvage and function. **Case report:** We reported a 25-year-old girl who suffered traumatic open displacement of bilateral knee joints and contusion of bilateral popliteal arteries during a vehicle accident. The diagnosis was confirmed by X-ray examination and physical examination. The urgent surgical procedure was performed. The dislocations were reduced immediately and the original opening and the posterior approach to the popliteal artery were used. During the surgical exploration, rupture of the bilateral anterior and posterior cruciate ligaments associated with bilateral thrombosed popliteal arteries was found. The damaged popliteal arteries were resected and replaced with autologous saphenous vein graft. The anterior and posterior cruciate ligaments were repaired at the first stage. A 1 year follow-up after the surgery demonstrated intact arterial perfusion and acceptable good function of the knee joints. **Conclusion:** Bilateral knee joints dislocation associated with injury of bilateral popliteal arteries are very rare, which require combined treatment.

Keywords: Knee Injuries, Dislocation, Popliteal Artery, Blood Vessels, Transplants

Introduction

The injury of popliteal artery is the most severe complication of knee joint dislocation. Early diagnosis, timely and properly treatment can save the injured limb. Recently, 1 patient was treated in our hospital who suffered bilateral knee joints dislocation associated with injury of bilateral popliteal arteries, and the clinical effect was good. Now we presented the case.

Case report

A 25-year-old girl was admitted urgently after a vehicle accident. Half an hour ago, when she got things from her car trunk, she was hit from behind by another car. Physical examination revealed the open injuries in the popliteal fossa associated with bilateral knee deformity. The pedal pulses were absent. Emergency X-ray examination showed dislocation of bilateral knee joints and the left proximal fibular fracture (Figure 1). The urgent surgical procedure under general anesthesia was performed about 2 hours after injury by two surgery groups. The dislocated knee joints were repositioned by manipulative reduction (Figure 2,3).

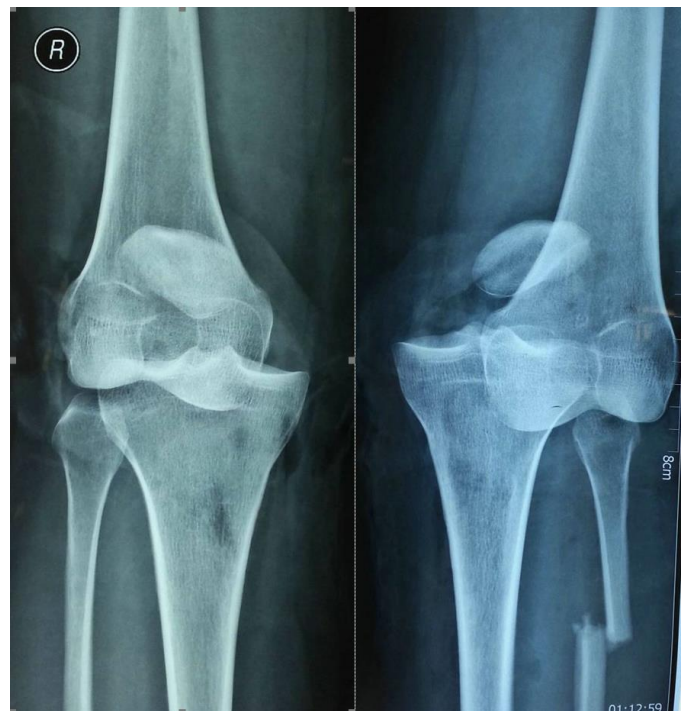


Figure 1





Figure 2



Figure 3

The original opening and the dorsal approach to the popliteal artery revealed the rupture of bilateral anterior and posterior cruciate ligaments associated with advential hemorrhage and thrombosis through a 3.0cm and 4.0cm segment of popliteal artery in the left side and the right side respectively. The thrombosed segments of the popliteal arteries were resected and replaced with saphenous vein grafts. The two resected parts of the popliteal arteries showed complete intimal disruption with secondary thrombosis. Surgical exploration showed bilateral anterior and posterior cruciate ligaments broken near the femoral insertion point and parts of insertion point left. The ruptured cruciate ligaments were sutured directly. To prevent compartment syndrome, fasciotomy was performed and the VSD was used. The pulsation of grafted venous were good and the pedal pulse could be touched. Postoperatively the patient was placed in long leg fiberglass casts with the knee in 15° flexion position. After 1 week, suture of reducing tension incisions and skin grafting in part of wounds were performed. The fiberglass casts were removed and the physiotherapy started with partial weight-bearing six weeks postoperatively. Nine weeks later the patient started with full weight bearing. After 1 year, a follow-up revealed that the bilateral limbs had palpable pedal pulses and the bilateral knee joints had an acceptable good function, extension: 0° in the two sides, flexion: 130° in left side, 120° in right side, and the two knee joints were comparatively stable

Discussion

Knee joint dislocation often resulted from very large trauma, the main reasons for which were traffic accidents such as motor vehicle and motorcycle accidents, and some sports activities such as skiing, football. Another most common cause of knee dislocations was falls from height [1-4]. However, such trauma as the case we presented here were not reported in literatures, and this injury resulted in bilateral knee joint dislocation associated with injury of bilateral popliteal arteries was also extremely rare.

The reason of popliteal artery injury lies in the neurovascular anatomy of the knee. The popliteal vessels, run posteriorly within the popliteal fossa. The popliteal artery is fixed proximally at the adductor magnus hiatus, and distally at the fibrous arch of the soleus and interosseus membrane. Because of its "fixed" anatomical position, popliteal artery is predisposed to injury with dislocation [3, 4]. When knee dislocation occurs, the popliteal artery can be stretched, lacerated, kinked, contused (followed by secondary arterial thrombosis) and even, transected [1, 3, 5-8]. Therefore, how to recognize and avoid missing a popliteal artery injury in such cases is most important.

The diagnosis of knee joint dislocation is easy to make according to a detailed understanding of the

mechanism of injury, combined with X-ray examination. Physical examination, especially the absent pedal pulses and the low temperature of the distal limb, can indicate arterial flow disturbance [6, 8-9], and judge the possible injury of popliteal artery. Doppler ultrasound examination can show distal ischemia of popliteal artery. If the conditions permit, arteriography would be a better choice.

Emergency operation to restore the injured limb blood supply as soon as possible, is key to limb salvage and function recovery. The two limbs treated interdisciplinary by the well trained vascular surgeon and orthopedist at the same time was very important. Autologous saphenous vein is the material of choice for arterial reconstruction of the injured artery. Pay attention to the quality of debridement. Inadequate debridement of contused popliteal artery is always results in arterial thrombosis in the early postoperative period [10]. The anterior and posterior cruciate ligaments were repaired at the same time in operation, so as to preserve function of the injured limbs as far as possible. If the function were limited after wound healing, the arthroscopic treatment at second stage would be also a kind of choice.

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