

## Traumatic Dislocation of the Knee Associated With an Interruption of the Popliteal Artery: A Case Report

Issa Fathi\*, El mehdi Ouissaden, Ahmed El Bardouni, Mustapha Mahfoud, et Mohamed Saleh Berrada

Department of Orthopedic Surgery, Ibn Sina Hospital, University Mohamed V, Rabat, Morocco

DOI: [10.36347/sjams.2019.v07i08.041](https://doi.org/10.36347/sjams.2019.v07i08.041)

| Received: 15.08.2019 | Accepted: 26.08.2019 | Published: 30.08.2019

\*Corresponding author: Issa FATHI

### Abstract

### Case Report

The case of a young patient of 20 years. Victim of a road accident. Clinical examination revealed knee deformity with loss of anatomical landmarks and a shortened limb. The neurovascular examination revealed the abolition of the pedal and posterior tibial pulse without motor sensitive deficit. X-ray confirmed the posterior dislocation of the knee. The reduction of the dislocation was performed under general anesthesia at four hours of the accident; stabilized by an external fixation. After reduction of the dislocation, the popliteal and tibial postural pulse remained abolished. CT angiography confirmed the anatomic interruption of the popliteal artery. The repair consisted of femoral and popliteal bypass grafting of saphenous vein autograft. Later the patient had a ligamentoplasty of the knee with a satisfactory functional result.

Keywords: Knee dislocation, popliteal artery, peroneal nerve.

**Copyright © 2019:** This is an open-access article distributed under the terms of the Creative Commons Attribution license which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use (NonCommercial, or CC-BY-NC) provided the original author and source are credited.

## INTRODUCTION

Complex femoral tibial dislocation of the knee joint usually results from high-energy trauma caused by a traffic accident or contact sport. In addition to the rupture of the cruciate ligaments, and the concomitant paralysis of the common peroneal nerve, the rupture of the popliteal artery is a rather formidable complication.

The latter involves the vital prognosis of member state and, by imposing a restoration of continuity vascular emergency, changes the therapeutic behavior immediate and secondary.

## CASE REPORT

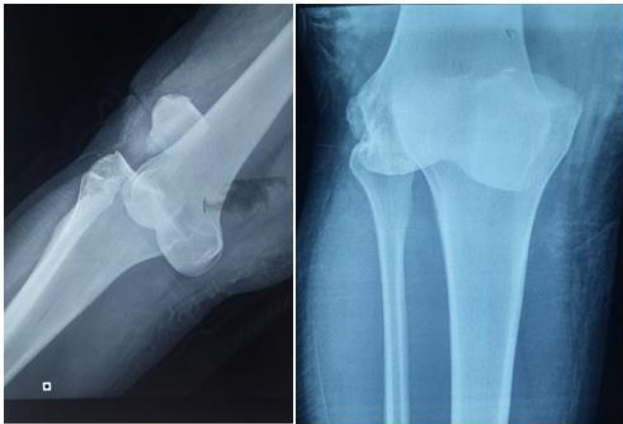
We report the case of a young patient of 20 years, without significant pathological antecedents. Victim of a road accident, motorcyclist struck by a car with an imprecise point of impact causing total functional impotence with pain. The patient was haemodynamically and respiratory stable. Clinical examination revealed knee deformity with loss of anatomical landmarks and a shortened limb (figure 1). The neurovascular examination objectified an abolition of the pedal and posterior tibial pulse without motor sensitive deficit of the internal or external popliteal sciatic nerves. An X-ray of the knee showed anterior femoro tibial dislocation without associated fracture

(figure 2). The reduction of the dislocation was performed under general anesthesia at h5 stabilized by a cruro-pédieux plaster (figure 3). After reduction of dislocation, the popliteal and tibial postural pulse remained abolished. CT angiography confirmed the anatomic interruption of the popliteal artery (figure 4). The repair consisted of femoro-popliteal bypass grafting by saphenous vein autograph.

Revascularization of the limb was a success with the recovery of arterial circulation proven by the reappearance immediate and definitive pulse for our patient. No arteriography or Doppler control was performed. During the wearing of the external fixation, the patient presented flows on the cards processed by local care. The results were appreciated with a decline of 6 months. A ligamentoplasty was performed for our patient allowing him to have a stable and painless knee with resumption of work. The knee had maintained active flexion greater than 90° and complete extension.



**Fig-1: Clinical image of knee dislocation**



**Fig-2: Radiography of knee dislocation**



**Fig-3: Radiological control after reduction of dislocation**



**Fig-4: CT angiography shows the interruption of the popliteal artery**

## DISCUSSION

The popliteal arterial axis is close to the osteo-articular elements and relatively fixed to them by its passage under the adductor ring and the soleus arch. In dislocations, he undergoes major torsion, hyper extension or abduction, beyond the limits of his elasticity [1]. The arterial complications make all the gravity of dislocations. Frequent (11% to 88%), they have an amputation rate very variable, depending on the revascularization delay and associated lesions (0% to 66%) [2, 3]. Frequency and severity of arterial lesions impose their search face to any lesion bicroized by the clinic (signs of Griffith's tetrad or Bloom's pulsatile hematoma) but also systematically by arteriography because lesions by intimal flap with perceived pulse can be revealed late (10% to 30% of popliteal attack with perceived pulses) [4, 5]. The angio-MRI allows the assessment lesionnel and the exploration of the axis popliteal. In case of proven ischemia, arteriography is considered on the operating table in order to reduce the wasted time. Once the reduction is assured, the pulse should appear immediately, frankly and permanently [6].

In the absence of any of these characteristics, arteriography is indicated. The repair of the vascular axis imposes a venous bypass between the high popliteal and the tibio-fibular trunk because the arterial walls are contused and torn several centimeters [7].

The orthopedic reduction of dislocation general no difficulty but the interposition of a ligament broken can be source of irreducibility. Anatomical lesions are complex and polymorphous cruciate ligaments and at least one collateral ligamentous plane [8]. Healing of collateral structures is possible albeit random by strict immobilization but is almost impossible for the central pivot. In emergency, the Vascular repair puts the gestures in the background ligament repair, making them more delicate by the presence of venous bypass and posteromedial incision first of the popliteal fossa. The obtained results after early surgical repair of ligamentous structures is indisputably better this all the more that it is about patient under 40 years and having benefited intense and immediate reeducation [9].

External fixation has broad indications in such multi-tissue, open traumas requiring rapid stabilization prior to vascular action. In dislocations, its advantages are multiple: stability of the femoro-tibial reduction, simplicity of the surveillance of the frontal alignment and sagittal of the articular surfaces, facilitation of skin care [10].

## CONCLUSION

After the tibial skeleton, the knee is one of the preferential sites of vascular rupture caused by osteoarticular trauma Anatomical interruption of the popliteal artery leads to distal ischemia which must be urgently lifted at the same time as is realized the treatment of bone lesion or femoro-tibial dislocation.

Doubtful cases will be explored by an arteriography of which the indication must be broad. The femoro-tibial external fixator quickly and effectively stabilizes dislocation while facilitating vascular action and fasciotomy.

## Conflicts of interest

The authors do not declare any conflict of interest.

## Contributions of the authors

All authors have read and approved the final version of the manuscript.

## REFERENCES

1. Kennedy JC. Complete dislocation of the knee joint. *JBJS*. 1963 Jul 1;45(5):889-904.
2. Schenck Jr RC. The dislocated knee. *Instr Course Lect*. 1994;43:127-36.
3. Yu JS, Goodwin D, Salonen D, Pathria MN, Resnick D, Dardani M, Schweitzer M. Complete dislocation of the knee: spectrum of associated soft-tissue injuries depicted by MR imaging. *AJR. American journal of roentgenology*. 1995 Jan;164(1):135-9.
4. Martinez D, Sweatman K, Thompson EC. Popliteal artery injury associated with knee dislocations. *The American surgeon*. 2001 Feb 1;67(2):165.
5. Wright DG, Covey DC, Born CT, Sadasivan KK. Open dislocation of the knee. *Journal of orthopaedic trauma*. 1995 Apr;9(2):135-40.
6. Honton JL, Le Rebeller A, Legroux P, Ragni R, Tramond P. Luxations traumatiques du genou. Traitement chirurgical précoce: à propos de 12 cas. *Rev chir orthop*. 1978;64:213-9.
7. Loubignac F, Giugliano V, Boespflug MD, Praud Y, Pinon P, Moumas G. Luxation du genou avec rupture isolée du ligament croisé postérieur. 2001.
8. Chirpaz-Cerbat JM, Rossi J, Mèlère G, Martinez T. Luxation irréductible du genou par incarceration du plan capsulo-ligamentaire médial: À propos de quatre cas. *Revue de chirurgie orthopédique et réparatrice de l'appareil moteur*. 2004 Sep 1;90(5):449-55.
9. Di Christina DG, Riemer BL, Butterfield SL, Herron MK, Phillips DJ. Femur fractures with femoral or popliteal artery injuries in blunt trauma. *Journal of orthopaedic trauma*. 1994 Dec;8(6):494-503.
10. Starr AJ, Hunt JL, Reinert CM. Treatment of femur fracture with associated vascular injury. *Journal of Trauma and Acute Care Surgery*. 1996 Jan 1;40(1):17-21.