

Lesions of the Popliteal Artery in the Context of Knee Dislocation in 12 Cases and Review of the Literature

Omar Ben Hazim*, Abdelkrim Lagdid, Tarik Bakkali, Moncef Boufettal, Reda-Allah Bassir, Molay Omar Lamrani, Mohamed Kharmaz, Mohamed Ouadghiri, Ahmed El Bardouni, Mustapha Mahfoud, et Mohamed Saleh Berrada

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

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*Corresponding author

Omar Ben Hazim

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Abstract: Acute injury ischemia of the popliteal artery is the most serious and most common immediate complication of knee dislocations with an average rate of 30%. We report here a retrospective study of twelve patients spread over four years from January 2014 to December 2017. CT angiography was the key examination to confirm the diagnosis. Each patient received a surgical repair of the arterial lesion more or less associated with a ligamentous plasty later. The evolution was favorable in ten patients. Amputation has been reported in two patients following failure of surgical repair. Five patients subsequently benefited from ligament repair. In the literature and for most authors the absence of initial vascular clinical abnormality does not exclude a vascular lesion, since the coexistence of initially preserved pulse and popliteal artery lesions varies from 18 to 52% depending on the series with an average of 30%. Surgical repair of the vascular lesion with or without the intervention of a venous graft is the emergency rescue procedure to avoid progression to amputation of the limb

Keywords: Popliteal artery, Lesions, knee dislocation, Orthopedics.

INTRODUCTION

Knee dislocation is defined as permanent displacement of the tibial plateau relative to the femoral condyles [1]. Acute ischemia by lesion of the popliteal artery represents the most dreadful and frequent immediate complication with an average rate of 30%. This lesion comes in two forms [2]

- Complete rupture of the arterial wall
- The rupture of the tunica interna of the arterial wall (intima)

Emergency surgical repair of arterial lesions after reduction of dislocation is essential, if not progression to amputation [1, 3, 4].

MATERIALS AND METHODS

This is a retrospective study of twelve patients done over four years from January 2014 to December 2017. The inclusion criterion was a dislocation of the knee associated with a lesion of the popliteal artery. CT angiography was the key examination to confirm the diagnosis. Each patient received a surgical repair of the arterial lesion more or less associated with a ligamentous plasty later. The stabilization of the joint

by an external fixator was systematic in all the patients of our series all patients were male with an average age of 31 years. The average time to reduce dislocation was 3 hours and 40 minutes (maximum 8 hours). The admission examination revealed peripheral pulse abnormalities in eight patients. There were seven cases of complete rupture of the arterial wall (42%) and five cases of isolated intimal injury (58%). The evolution was favorable in ten patients. Amputation has been reported in two patients following failure of surgical repair. Five patients subsequently benefited from ligament repair.



Fig-1: X-rays of the face and profile of a dislocated knee



Fig-2: X-rays of the same knee after reduction of dislocation



Fig-3: Angioscanner of lower limbs objectifying an occlusion of the right popliteal artery



Fig-4: Intraoperative view showing the intimal lesion of the popliteal artery



Fig-5: Repair of the lesion by interposition of a venous graft

DISCUSSION

The initial management of knee dislocation must systematically include a search for peripheral pulses [2, 5, 6, 7]. In case of ischemic syndrome, revascularization becomes essential. In case of non-ischemic pulse abnormalities, arteriography or CT angiography is essential [8, 9]. The absence of initial vascular clinical abnormality does not exclude a vascular lesion because the coexistence of initially preserved pulse and popliteal artery lesions varies from 18 to 52% depending on the series with an average of 30% [6, 10, 11].

For some authors, the absence of abnormalities on clinical examination is sufficient to exclude a vascular lesion requiring surgical treatment [12]. However it seems lawful to propose systematically, even in the absence of clinical abnormalities, an arteriography or an angioscanner. This is justified, on the one hand, by the impossibility of ensuring the strict conditions of surveillance and, on the other hand, by the risk of aggravation of clinically asymptomatic intimal lesions during the surgical treatment of ligamentous lesions [2, 13, 14].

Although angio-MRI has a good diagnostic value, it remains difficult common practice in emergency. For us the angioscanner, easily accessible in emergency and without risk of local complications of the arteriography remains the reference examination.

Surgical repair of the vascular lesion with or without the intervention of a venous graft is the emergency rescue procedure to avoid progression to amputation of the limb [3, 15, 16]

Localization in relation to the flexion fold theoretically contrasts stent placement during vascular repair for increased risk of plication and stent fracture [7, 17, 18]. However, cases of popliteal dissection treated with simple balloon angioplasty have been reported in the literature with good results [19].

CONCLUSION

The assessment of vascular lesions during dislocation of the knee is initially based on clinical examination and pulse palpation [20]. In case of ischemia, vascular advice is essential. In case of pulse abnormalities without ischemia, an arteriography or better angioscanner must be requested urgently, it can be either an arteriography or an angioscanner. In the absence of abnormal pulse, the risk of vascular injury is low, but does not justify non-monitoring of the patient [21]

CONFLICTS OF INTEREST

The authors do not declare any conflict of interest.

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