



Peroneal artery pseudoaneurysm due to leg fracture among children

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Resume

La lésion de l'artère fibulaire après une fracture des deux os de la jambe chez l'enfant est une complication rare, souvent c'est une complication vasculaire immédiate. Nous présentons un cas inhabituel de pseudo anévrysme de l'artère fibulaire chez un enfant de 8 ans, découverte 1 an après une fracture des deux os de la jambe traitée orthopédiquement.

L'anévrysme a été traité avec succès en utilisant une technique endovasculaire consistant en un cathétérisme sélectif et embolisation.

Abstract

Peroneal artery damage after a leg bones fracture among children is a rare complication, often, it is an immediate complication. We present an unusual pseudoaneurysm of the peroneal artery of a 8 year-old patient discovered one year after a leg bone fracture which had been treated orthopedically.

That aneurysm was successfully treated using an endovascular technique consisting of selective catheterization and embolization.

I- Introduction

During leg trauma among children, it is usual to observe fracture of both bones of the leg or a

proximal or distal epiphyseal detachment. Vascular damages are rare and generally represent an early

complication and therefore a therapeutic emergency. The formation of a pseudo aneurysm of the

fibular artery is very rare and should not be overlooked due to long-term vascular and nervous risk.

Analysis of the literature did not find any reported cases among children due to the rarity of fibular

artery aneurysms on the one hand, and on the other hand by scarcity of vascular lesions associated with leg bones fractures. Consequently, the formation of a pseudo aneurysm is exceptional.

We report this case to emphasize the need for vigilant monitoring of these children in the short and long term.

II- Case report

A 8-year-old boy with no specific history presented to the emergency room for trauma of the right leg

in a recreational accident, without skin complications or neurovascular complications.

The radiographic features demonstrated a diaphyseal fracture of the two bones of the leg (figure 1). The patient underwent orthopedic treatment and reduction was considered sufficient (Figure 2).



Figure 1: Right leg X-ray showing fracture of the two leg bones
Radiographie de la jambe droite montrant la fracture des deux os de la jambe



Figure 2: Right leg X-ray after orthopedic treatment
Radiographie de la jambe droite après traitement orthopédique

The follow-up x-ray after 3 months showed a delayed consolidation (figure 3), which indicates further leg brace by a Sarmiento. A leg X-ray 6 months after (figure 4), showed perfect consolidation of the tibia but a well-limited osteolytic image next to the initial fibular fracture site was noticed, this lesion becomes with a soap bubble aspect seen at the 1-year post-traumatic x-ray (figure 5). Therefore, the decision was made to complete the exploration of the lesion with an MRI of the leg (Figure 6) which showed a vascularized image at the expense of the peroneal artery. Despite the absence of symptoms, a further study by angiography of the leg (figure 7) was performed and revealed an aneurysm of the fibular artery which erodes the fibula.



Figure 3: Right leg X-ray 3 months post-traumatic
Radiographie de la jambe droite après 3 mois du traumatisme

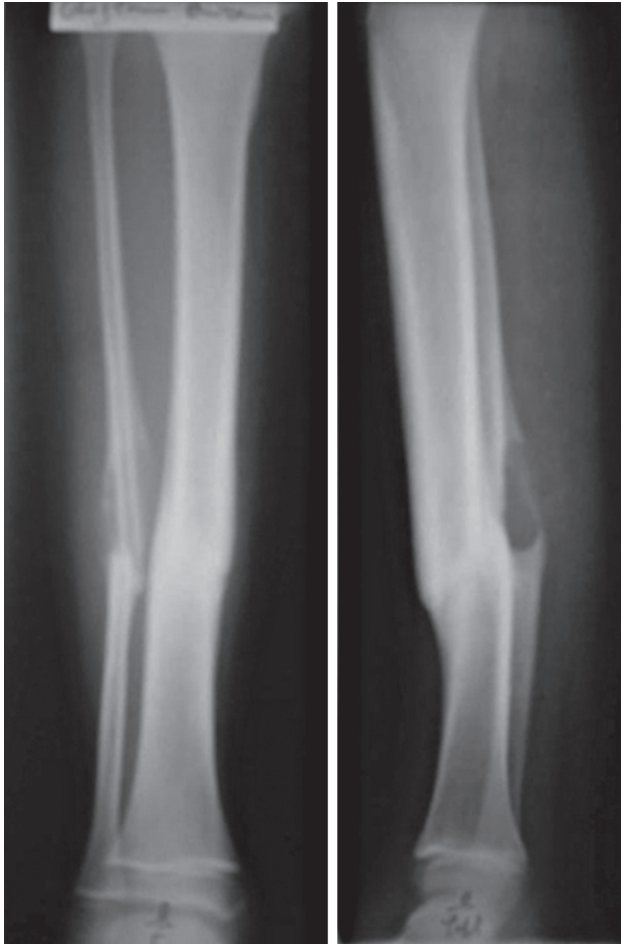


Figure 4: Right leg X-ray showing fibular lacunae
Radiographie de la jambe montrant la lacune fibulaire

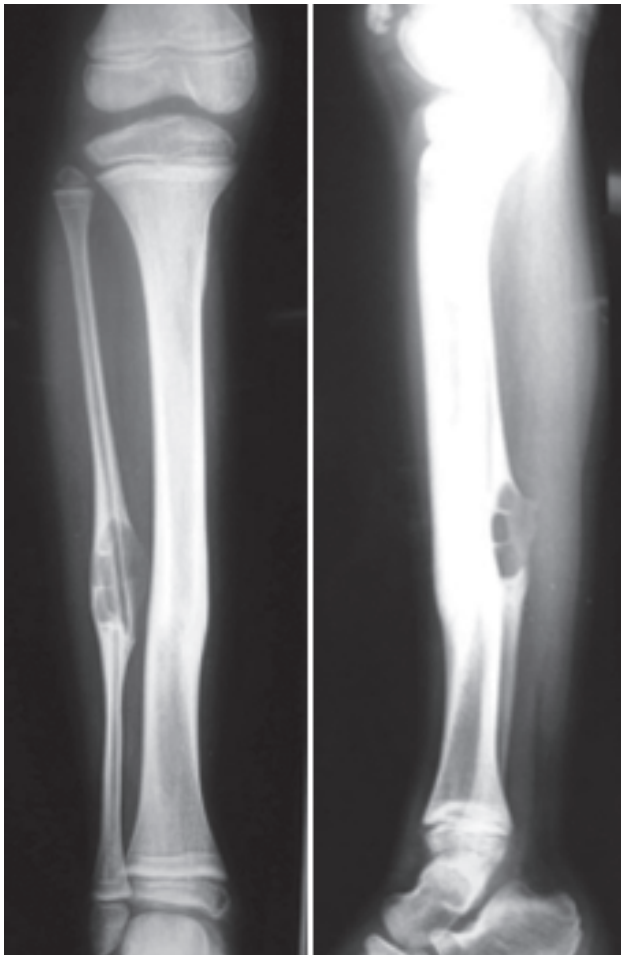


Figure 5: Right leg X-ray showing the compartmentalization of the lacuna
Radiographie de la jambe montrant l'aspect cloisonné de la lacune fibulaire

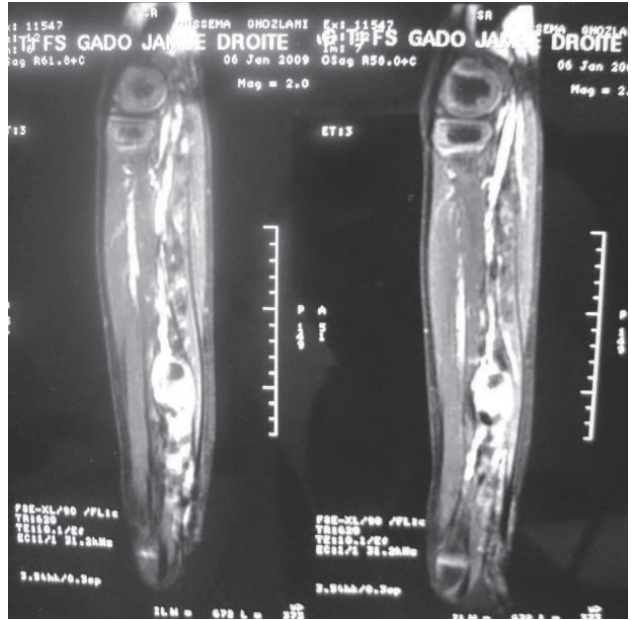


Figure 6: Peroneal artery pseudoaneurysm MRI aspect
Aspect IRM du pseudoanévrisme de l'artère fibulaire

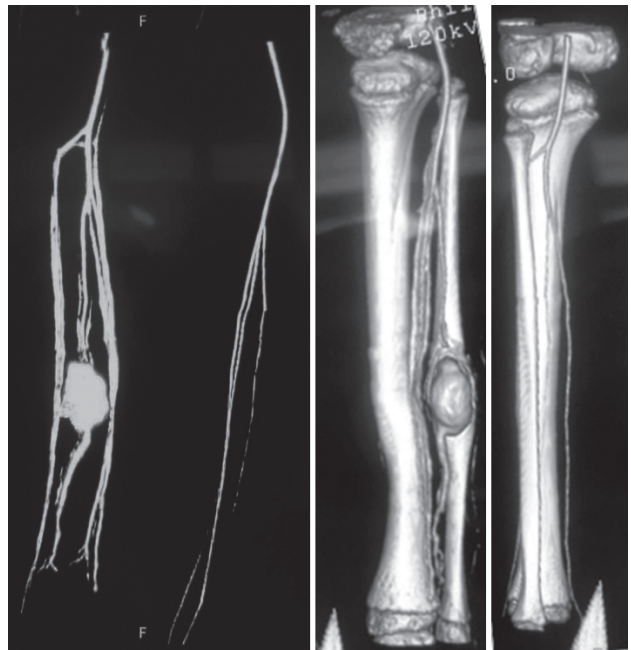


Figure 7: Peroneal Pseudoaneurysm Angiography aspect
Aspect angiographique du pseudo anévrisme de l'artère fibulaire

We have proceeded to a radiological embolization of this false aneurysm (figure 8) without complications. The child was seen regularly in consultation at 3 months (figure 9) and 6 months post operatively (figure 10), with clinical and radiological check-up which showed disappearance of the lesion.

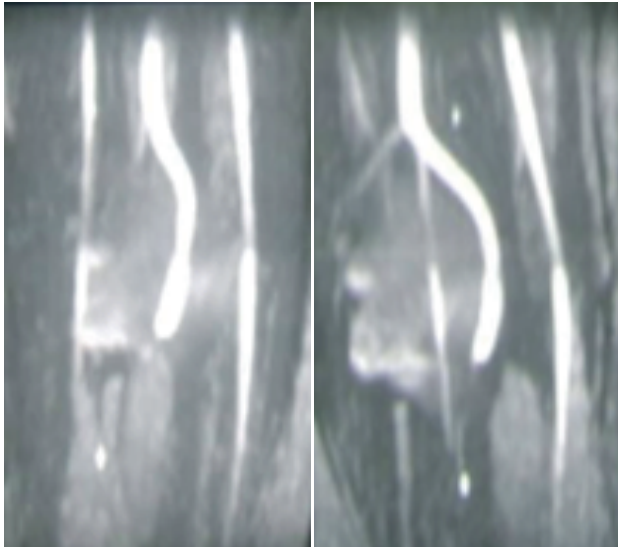


Figure 8: Radiological embolization image
Image de l'embolisation radiologique

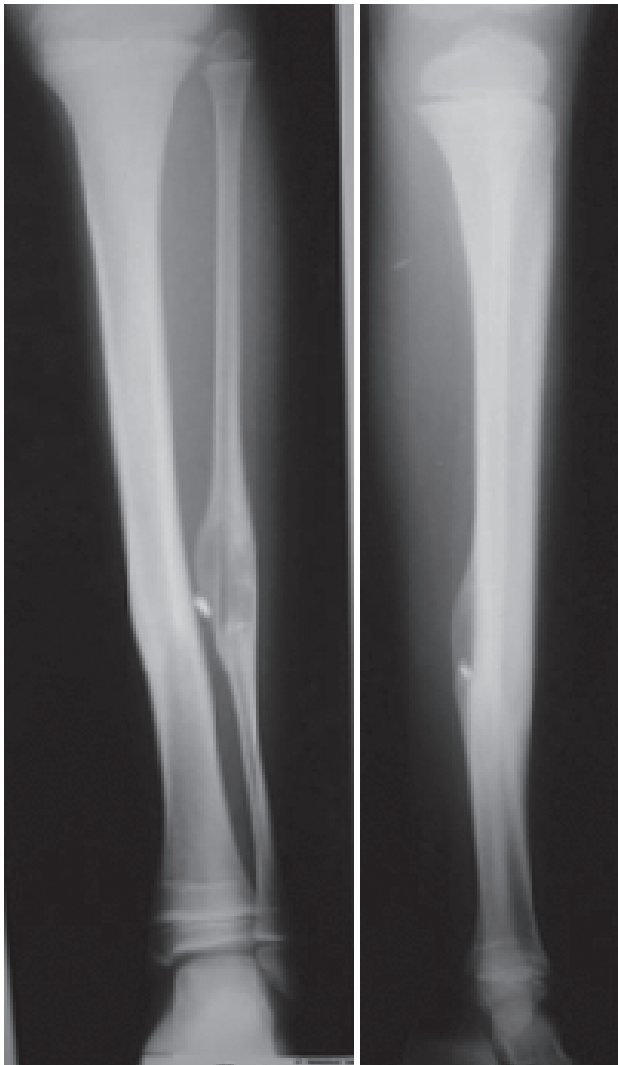


Figure 9: Right leg X-ray 3 months post-operative
Radiographie de la jambe droite à 3 mois postopératoire

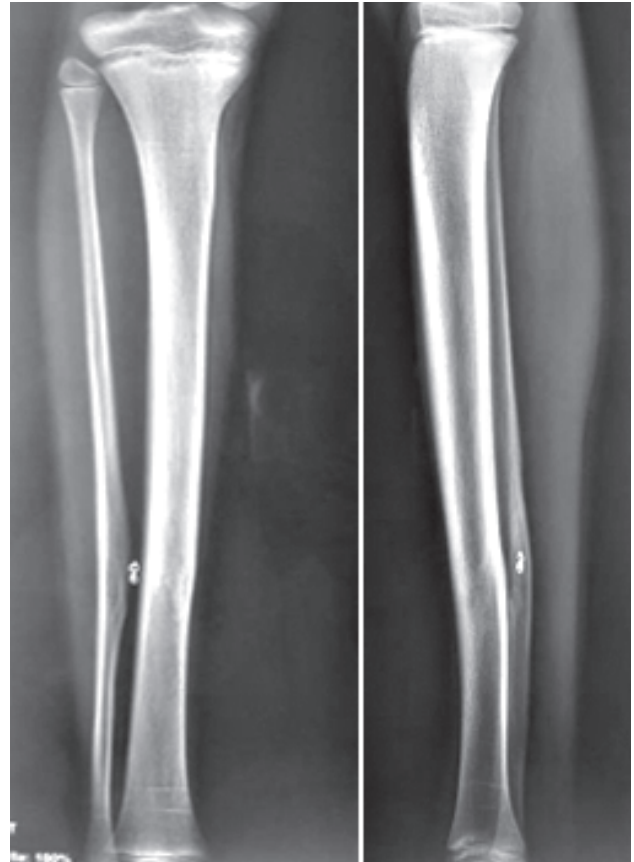


Figure 10: Right leg X-ray 6 months post-operative showing disappearance of the lacuna after 6 months
Radiographie de la jambe droite à 6 mois postopératoire montrant la disparition de la lacune

III- Discussion:

Aneurysms of the peroneal artery are infrequent and consist mainly of pseudoaneurysms.

It has been documented in literature that the main causes are thrombo-embolism using a Fogarty balloon catheter [1] and leg trauma (ankle sprain [2], penetrating or blunt injury [3,4], bimalleolar fracture of the ankle [5]), besides mycotic [6] or connective tissue disorders such as Behcet's disease [7].

The pathogenesis of pseudoaneurysms is characterized by localized disruption of the arterial wall leading to the extravasation of the blood into surrounding tissue that becomes walled off by the local layers of connective tissue. However they have a persistent channel communicating with the artery making them pulsatile. These can be asymptomatic or may present with leg swelling, bruising and pain or neurological signs due to nerve compression (more common in popliteal aneurysms), or rupture. This case may be an important factor in understanding the pathogenesis of aneurysmal bone cyst, as they share similarities in radiographic features. Vascular malformation is common in both cases and embolization is also shared in therapeutic procedure.

The management of pseudoaneurysms is varied. It can thrombose without any intervention as reported by Kocakoc and coll [8]. However most are treated with radiological or surgical intervention. Endovascular options include coil embolization [1], thrombin injection [9] or stent insertion [10].

Another option is proximal balloon occlusion to allow the pseudoaneurysm to thrombose.

Surgical management involves the evacuation of the haematoma after achieving proximal and distal vascular control. The defect in the arterial wall can either be repaired by primary closure or by insertion of a vein patch. Vein interposition graft or prosthetic graft can also be used if the segment of the disrupted artery cannot be primarily repaired.

In our case the probable explanation is a pseudoaneurysm related to the fracture of the fibula.

The fracture site injured the fibular artery leading to the constitution of a pseudo aneurysm which developed under the periosteum and then into the canal. Consequently, the fracture callus encompassed it. The embolization allowed the bone-forming cells to restore their function and the canal was subsequently reshaped.

IV- Conclusion:

Kid member blood vessels damages are uncommon and represent generally an early complication

thus a therapeutic emergency. However, blood vessels abnormalities may have late manifestations. Therefore, a regular follow-up should be done.

V- VI- References:

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