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Case Series

Ultrasound and Surgical Features of Morel-Lavallee Syndrome: Four Cases Reported in Yaounde

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Abstract

We report four (04) cases of Morel-Lavallée Syndrome received at the Surgery Unit of the National Social Insurance Fund Hospital Yaoundé from 2019 to 2022. They came on consultation for painful swelling of the thigh or gluteal region on the long run after trauma. Ultrasound imaging of the swelling revealed the diagnosis of Morel-Lavallée syndrome. Surgical management was successful.

Keywords: *Morel-Lavalée; Ultrasound; Surgical; Yaoundé*

Introduction

First described by the French Maurice Morel-Lavallée in 1863 in a patient who fell from a moving train, Morel-Lavallée syndrome is secondary to tangential trauma to a richly vascularized area [1]. It is most often mistakenly considered to be, depending on the location as a hematoma, a bursitis or a soft tissue tumor owing to its chronicity [2,3]. Its lesions are rare and its diagnosis often missed or delayed.

Background

Morel-Lavallée lesions are closed degloving lesions sustained during violent shearing of the soft tissues, which separate the subdermal fat from its underlying resistant fascia [4]. Morel-Lavallée syndrome is a rare pathology [5]. The clinical presentation is similar to that of a hematoma [5]. The diagnosis is based on the clinical presentation (hence the importance of history taking and looking for shear forces) and imaging, but it still underdiagnosed [6]. Management is either non-operative, minimally invasive or invasive surgery. It is often secondary to a tangential shock facing highly vascularized tissue. The skin and subcutaneous tissue peel away from the underlying

muscular aponeurosis and a tangential section of the lymphatics makes lymphostasis impossible. The local inflammatory reaction can lead to the formation of a fibrinous capsule (pseudo-cyst) perpetuating the effusion [7]. Diagnosis is based on clinical presentation and imaging. The clinical presentation finds a history of violent trauma with shearing forces, swelling of variable size, often close to a liter. It can be hard in consistency but most at times, it is fluctuating [8]. The time between swelling and trauma is very variable, from a few hours to several months [9]. Imaging features which can help in diagnosis include CT scan, ultrasound, and magnetic resonance imaging [10]. The differential diagnoses are abscess; bruise; hematoma; bursitis; adipose tissue necrosis; a soft tissue tumor because of its often chronic nature [2,3,11,12]. Treatment can be conservative by early compression of the traumatized area [6]. It can also be minimally invasive by blind or ultrasound-guided punctures or injection of sclerosing products [6]. Invasive procedures are essentially by surgery [2]. It will be done in this case to ensure complete excision of the pseudo-cyst. The areas mostly affected by the lesion are respectively in descending order the hip, the thigh, the pelvis, the knee, the gluteal area, the lumbosacral area, the abdominal wall, the lower limb, the head; there are also unspecific areas [11]. Without treatment, the lesion can progress to a superinfection of the liquid. Conservative and minimally invasive treatments are more prone to recurrences than surgery provided it is done early enough [13].

We report below, four (04) cases of Morel-Lavallée Syndrome received at the Surgery unit of the National Social Insurance Fund Hospital of Yaoundé between 2019 and 2022 with an ultrasound examination.

Case Reports

Case No. 1

55-year-old woman, with no significant past history, who was a pedestrian when struck on the left lower limb by a truck traveling at low speed 2 years earlier. She landed on her right lower limb and dragged on the ground over some meters. She felt severe pain in the lower limbs and presented with a deteriorating wound on the left thigh and tearing of the right calf as well as dermabrasion of the lateral face of the right thigh with swelling. X-rays of the leg and thigh did not show any bone lesions. The initial treatment received was soft tissue reconstruction. Lateral swelling of the right thigh was managed by iterative punctures (04) and oral treatments. The evolution will be marked by the reconstruction of the swelling and pain on mobilization of the limb and on palpation. She came to us two years later for a consultation for pain in the lateral aspect of the right thigh. Examination of the patient found on admission a painful and fluctuating swelling of the lateral face of the right thigh for which we performed a soft tissue ultrasound which identified a heterogeneous extra-aponeurotic anechoic collection of the lateral face of the thigh estimated to about 115 cc (Figure 1). The diagnosis of Morel-Lavallée syndrome was retained. The management consisted of open drainage of the collection. After installation in the supine position washing and painting a longitudinal incision of the skin next to the swelling was made. The incision of the subcutaneous fatty tissue revealed a pseudo-cyst (Figure 1) of approximately 1000cc of volume of fairly solid in consistency (Figure 2) containing a sero-hematic fluid of approximately 250 cc. The dissection was made with a curved chisel and a cold scalpel (Figure 3) until the fascia was exposed. A negative suction drain was placed, a suture in two planes and a pressure dressing applied (Figure 4). The procedure was well tolerated with an estimated blood loss of approximately 400 cc which adds to the content of the pseudocyst. The drain removal was done 09 days post operatively with an output of less than 30 ml. The control ultrasound performed on day 16 postoperatively revealed a collection of approximately 850 cc which required drainage by a low incision of approximately 4 cm. The follow-up period was notable on D33 for a persistent fluid leakage from the operatory site (approximately 425 cc) with signs of infection. A sample of liquid sent on analysis showed evidence of *Citrobacter koseri* infection, the ultrasound found an image of several compartments and persistent Morel-Lavallée syndrome. A targeted antibiotic regimen (from antibiogram) was introduced, debridement of the wound performed, deep suture and a negative suction drain placed (Figure 6). The patient was discharged on day 62 post operatively.

Figure 1: *Ultrasound left lateral thigh.*

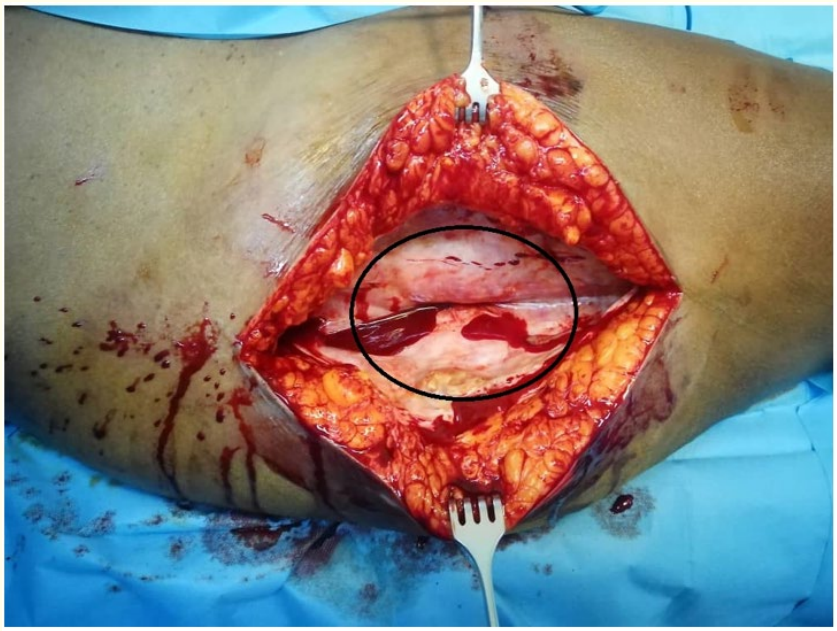

Figure 2: *Exposure of the peudo-cyst (cream white colour).*

Figure 3: *Resected pseudo-cyst.*

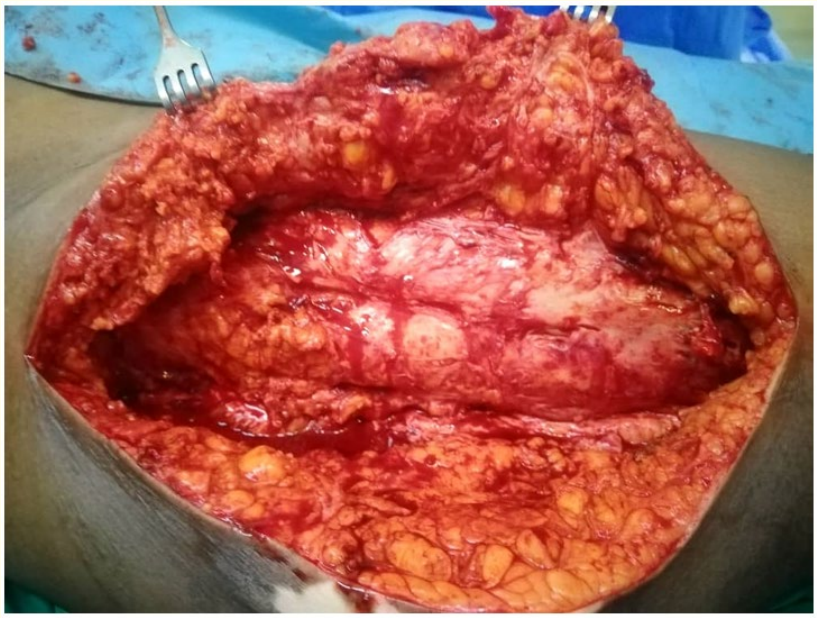

Figure 4: *Clean margins after peuso-cyst removal.*

Figure 5: *Double tubed suction drain and compressive dressing.*

Figure 6: *Negative presure suction drain.*

Case No. 2

A 20-year-old young woman, who came consulting for painful swelling of the left thigh following a road traffic accident which happened one month earlier; she sustained a pelvis fracture in the course of the accident and was managed by surgery. She declares to have taken analgesics without relief. The soft tissues ultrasound on the left thigh performed three weeks after trauma showed a transonic collection within the aponeurosis of the left vastus lateralis muscle, which measured 74 mm in height, 31 mm in width and 8 mm in thickness, i.e. a volume of 9.6 cc compatible with Morel-Lavallée syndrome. We received her on consultation a week after these findings were made. She had a good general condition, with marked swelling on the lateral face of the left thigh ranging from the greater trochanter to the proximal third of the thigh measuring approximately 20 cm x 15 cm and tender on palpation. Distal pulses were present and normal. There was no murmur or thrill on auscultation. This was managed by surgical evacuation and placement of a negative suction drain. The drain was removed on day 2 postoperatively and the patient discharged on day 5.

Case No. 3

A 52-year-old woman, with no known medical condition or surgical history who was a pedestrian when struck two months earlier by a car at medium speed. She ended up stuck in between 02 vehicles and experienced; a sharp pain in the lower limbs, a wound on the left leg and swelling of the right thigh. The ultrasound performed on entry revealed a subcutaneous hematoma suggesting a Morel-Lavallée lesion. Surgical drainage was performed and the drain removed three days post operatively. We saw her in consultation one month after the surgery for painful swelling in the same area. The physical examination found a good general condition, swelling of the lateral face of the right thigh having the size of a grapefruit without inflammatory signs, a wound in the process of healing on the lower third of the right thigh. Ultrasound examination found a homogeneous anechoic extra aponeurotic fluid collection on the lateral side of the right thigh (Figure 7). Treatment consisted of a second surgical drainage and removal of a remnant of pseudo membrane under spinal anesthesia.

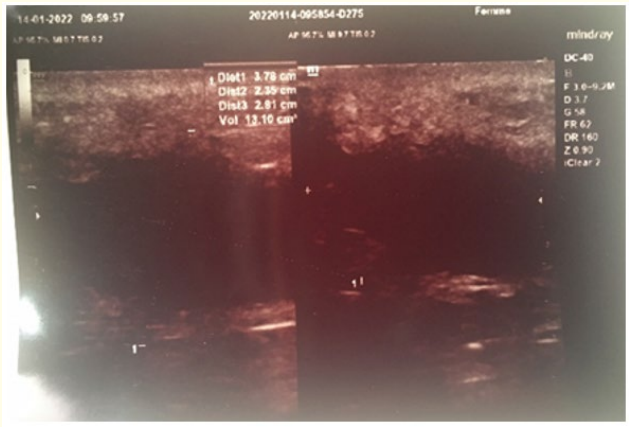

Figure 7: *Homogenous anechoic subcataneous collection.*

Case No. 4

35-year-old woman, with no relevant history, came to consult for painful swelling of the left buttock. The patient was reportedly hit by a motorbike traveling at high speed while she was on foot. The occurrence of swelling of the buttock 4 weeks later on and the persistence of the pain motivated the consultation. On examination, the general condition is satisfactory, swelling of the anterolateral aspect of the thigh and the left buttock with tenderness on palpation. The ultrasound reveals an extra aponeurotic subcutaneous collection of moderate abundance. Management consisted of open drainage of the hematoma with removal of a pseudo membrane highly suggestive of Morrel-Lavallée lesion with placement a negative suction drain which was removed one week later.

Discussion

Revision surgery was performed in two patients, the first for rapid reconstitution of the collection (more than 500 cc) after removal of the drain on day 07 post op. The purpose of the latter is to avoid the formation of a collection of liquid and to allow the joining of the subcutaneous planes. This failure could be due to the type of drain used. The reconstitution was observed with manual vacuum drains for volumes of medium to high abundance. Concerning the second revision, the failure could be due to the incomplete removal of the pseudomembrane. Indeed, after removal of this one, a recurrence was no longer observed.

Conclusion

Morel-Lavallée syndrome is a serious lesion of the soft tissues, whose diagnosis associating the clinical and ultrasonographic findings, is often missed. This calls attention on the need to think about this diagnosis in in front of a violent trauma. The usual management consists

of a complete resection of the pseudomembrane and suction drainage (the choice of material being essential). The main complications are the infection of the operative wound in front of the large collections requiring a large incision and the recurrence.

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