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CASE REPORT

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Dislocation of a bipolar hemiarthroplasty by a false aneurysm of the deep femoral artery

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Abstract Dislocation of hip arthroplasty due to false aneurysm formation is a rarity. Here, we report a case with false aneurysm of the deep femoral artery causing dislocation of bipolar hemiarthroplasty. The patient was first thought to have an infection but the diagnosis of false aneurysm was made during surgery and repaired.

Key words False aneurysm • Dislocation • Deep femoral artery • Intertrochanteric fracture • Hemiarthroplasty

Introduction

Dislocation following hip arthroplasty is estimated to occur in 3% of cases; malalignment of the prosthesis and epidemiologic factors are among the common etiologies. But, dislocation due to false aneursym formation has been reported in only two cases [1, 2]. False aneurysm formation is seldom seen after hip surgery and is caused by fracture fragments, surgical instruments, implants and power drills. Persistent hip pain, proximal thigh swelling and progressive anaemia in the postoperative period should raise suspicion. Here, we report a case with a dislocation of bipolar hemiarthroplasty caused by false aneurysm formation in the deep femoral artery subsequent to damage from the lesser trochanter. It was first thought to be caused by infection.

Case report

An 80-year-old woman had sustained a left-sided unstable intertrochanteric fracture with avulsed lesser trochanter due to a fall at home. She had diabetes mellitus and hypertension. She had undergone bipolar cemented hemiarthroplasty through a posterior approach in another institution. Her postoperative course was uneventful and she was discharged 7 days after surgery. The preoperative and postoperative hemoglobin levels were 11.8 and 11.3 g/dL, respectively.

Three months later, she was admitted to our emergency room with pain in her thigh due to a fall at home. The distal pulses were palpable. An anteroposterior radiograph of the left hip showed separation of the greater trochanter

Fig. 1 Anteroposterior radiograph of the left hip after second fall shows separated greater and medially migrated lesser trochanter. Lesser trochanter with a sharp margin in the wall of the deep femoral artery and soft-tissue mass are seen

Fig. 2 Anteroposterior radiograph of the left hip shows dislocation of hip joint and increased size of soft-tissue mass

and medial migration of the lesser trochanter (Fig. 1). She declined surgical management of the greater trochanter.

After 14 days, she was readmitted to the emergency room with pain, swelling and inability to ambulate. Her thigh seemed to be shortened and positioned in adduction and internal rotation. Distal pulses were palpable. Radiologic examination showed dislocation which could not be reduced with closed manipulation (Fig. 2). The hemoglobin level was 4.7 g/dL. Erythrocyte sedimentation rate (ESR) was 42 mm/h and C-reactive protein (CRP) was 121 mg/L. She was hospitalized and transfused with 4 U packed red blood cells and 3 U fresh frosen plasma over 2 days. On the basis these laboratory data, she was suspected of having an infection at the prosthesis. She accepted to undergo revision.

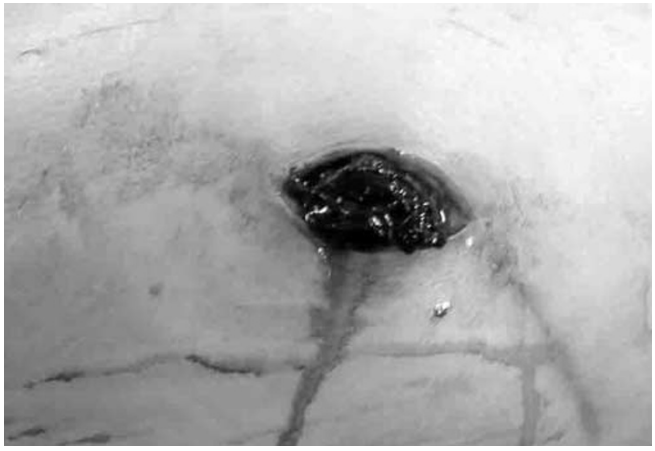

Fig. 3 Photograph taken just after incision shows evacuation of a huge, organized hematoma

Three days after admission, she was operated. After incision, a huge, organised hematoma more than 1 kg was evacuated (Fig. 3). The lesser trochanter had made a hole in the wall of the deep femoral artery. The diagnosis of false aneurysm was established with the help of the vascular team. The wound was repaired with 4/0 Prolene stitches. The bone fragment was resected. No excessive drainage was noticed from the drain, which was withdrawn on the second postoperative day. The postoperative period was uneventful and no complication was recorded over 1 year of follow-up.

Discussion

In spite of the high incidence of intertrochanteric fractures, false aneurysms of the deep femoral artery and its branches occur very rarely [3]. They may occur at the time of index injury or surgical intervention or during the postoperative period [4, 5]. Although power drills and screws are common causes of false aneurysms, reports on injuries due to hip fracture fragments are limited [3, 4, 6–10]. Bernstein et al. [7] found a false aneurysm of the deep femoral artery in a 92-year-old woman with an unstable pertrochanteric hip fracture with avulsion of the

lesser trochanter operated with gliding nail. Thirty days after the operation, a sudden swelling in the operated leg occurred and intraoperatively a false aneurysm of the deep femoral artery caused by the lesser trochanter was identified. Keel and Eyres [4], in their report of an 81-year-old woman with an unstable intertrochanteric fracture, found a false aneurysm of the deep femoral artery caused by the lesser trochanter early after mobilization. Murphy et al. [8] diagnosed false aneurysm of the deep femoral artery 4 weeks after surgery in a 70-year-old woman with an unstable intertrochanteric fracture. The lesser trochanteric fragment was the causative agent in their case. All the cases with false aneurysm of the deep femoral artery after intertrochantric fracture are patients treated with osteosynthesis. Similarly, the lesser trochanter with a sharp edge migrated medially and made a hole in the wall of the deep femoral artery after a second fall in our case. Regarding the lack of abnormality in hemoglobin level, the symptomless period of three months after application of the endoprosthesis and the low hemoglobin level at last admittance, we think that the false aneurysm began to form with the medial migration of the lesser trochanter, when she had pain in her thigh. The increased size of the false aneurysm made the joint dislocate after 14 days.

Dislocation of total hip arthroplasty due to false aneurysm formation has been reported two times [1, 2]. Lacroix et al. [1] reported a 64-year-old woman with false aneurysm of the common femoral artery caused by anterior protrusion of the cemented cup; they concluded that the increasing size of the aneurysm caused dislocation of the femoral component. Mariconda et al. [2] reported a 67-year-old man with false aneurysm of the medial circumflex femoral artery injured at the time of surgery; the aneurysm caused temporary dislocation of his right cementless total hip prosthesis. Also in this case, the increased size of the false aneurysm caused dislocation. But, we found no report implicating bipolar hemiarthroplasty in causing false aneurysm.

Diagnosis of false aneurysm is especially dependent upon suspicion because the symptoms and signs and complaints of patients are nonspecific and easily confused with deep vein thrombosis, implant failure and infection, as in our case [6, 11]. Duplex ultrasound, arteriography and computed tomography can help [4, 7, 8]. In this case, we faced a patient with dislocated bipolar hemiarthroplasty and elevated ESR and CRP. At first, infection was thought to be present and she was prepared for revision. If we had carefully examined the radiograph from the first admission to emergency room, we would have seen the edge of the lesser trochanter in the wall of the deep femoral artery and an opacity around it. With the help of duplex ultrasound, arteriography or computed tomography, the diagnosis would have been made easily.

Unstable intertrochanteric fractures carry a risk of false aneurysm formation due to bony spikes. Based on our experience, we recommend that great suspicion is very important in the diagnosis of false aneurysms.

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