



# Low Impact Injury Leading to Gluteus Maximus Hematoma in a Nonagenarian: A Symptomatic Discovery

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## Abstract

The hematoma in the soft tissue of the gluteal region is a rare occurrence and usually seen in patients taking an oral anticoagulant, having obesity, and facing falls. In this case, we present a 91-year-old male who came after falling at home. He did not have any head injury. His only complaint was a constant, non-radiating, dull pain in the left hip. The pain was aggravated by movement and relieved by rest. The patient had a history of a trial fibrillation (for which he was taking rivaroxaban), depression, dyslipidemia, essential hypertension, osteoarthritis, pulmonary embolism, and Transient Ischemic Attack (TIA). The patient's vitals were stable, and the examination showed no bruises or ecchymosis at the time of admission. The X-ray of the hip and pelvis did not show any fracture. The patient was started on analgesics, which provided minimal relief initially. The patient's blood workup was conducted, which showed Hemoglobin (Hb) was declining (120 gm/L at admission to 111 gm/L after 12 h). This, along with unremitting hip pain, led to further investigation. There was a hematoma on Computed Tomography (CT) scan of the pelvis. To ascertain the course of hematoma, we followed Hb and anticoagulant (rivaroxaban) was withdrawn. After providing pain relief, the patient was able to ambulate with support. The soft tissue hematoma can be fatal if not dealt with in time. By presenting this case, we would like to expand the existing literature on low impact trauma, causing hematoma of gluteus maximus, to make an early diagnosis and provide immediate treatment.

**Keywords:** Gluteal hematoma; Anticoagulant; Low impact injury; CT

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## Introduction

The gluteus maximus hematoma is a rare condition as muscular structure cushions blood vessels from injuring. Uncovering the presence of it is essential, as delay in diagnosis and treatment can have detrimental effects such as muscle injury, acute kidney injury, neurological damage, and eventually death [1]. Few common causes such as obesity, anticoagulation, malposition during urologic or orthopedic surgeries having prolonged operative duration, and epidural anesthesia can lead to hematoma. However, gluteus maximus hematoma secondary to blunt, low impact trauma has rarely been reported [2]. Sharp injury can also cause gluteal hemorrhage leading to massive blood loss due to delayed diagnosis [3,4]. The clinical findings are similar to those of compartment syndrome, including disproportionate pain to injury, paresthesia, and tightening of the compartment. Other likely findings vary from rhabdomyolysis, acute kidney injury, multi-organ failure, sciatic nerve palsy, and eventual death. The best way to evaluate the patient is clinically by performing a thorough examination. The imaging studies, such as Magnetic Resonance Imaging (MRI), Computed Tomography (CT) scan, and ultrasound, are usually omitted to hasten towards treatment [5].

## Case Presentation

We present a rare case of gluteus maximus hematoma in a 91-year-old male, who came to the Family Medicine Unit at the University of Alberta Hospital, Canada, after trauma due to fall at home. He tripped over the stool and landed on his left hip. He did not have any head injury or loss of consciousness. Immediately after the fall, he felt severe pain in his left hip. The pain was constant, non-localized, and dull in nature, non-radiating, 8/10 in intensity, aggravated by movement, and relieved by rest. X-Ray of pelvis and hip was done, which did not show any fracture (Figure 1). The patient denied any chest pain, shortness of breath, abdominal pain, nausea, vomiting, diarrhea,



Figure 1: X-ray pelvis showing no fracture.



Figure 2: CT scan of pelvis showing gluteus maximus hematoma on left hip.

headache, confusion, blurring of vision, weakness, or tingling in limbs. He had a history of a trial fibrillation, depression, dyslipidemia, essential hypertension, osteoarthritis, prostate cancer, pulmonary embolism, Transient Ischemic Attack (TIA), and left total knee arthroplasty. On examination, the patient was alert, awake, and oriented  $\times 3$ . On vital assessment, he had a blood pressure of 112/72 mmHg, pulse was 80 beats per minute, the temperature was 36.3°C, and respiration was 18 breaths per minute. His cardiopulmonary examination was unremarkable. The abdomen was soft and non-tender. The central nervous examination showed no gross motor or sensory deficit. Musculoskeletal examination showed mildly tender left hip with no localized swelling or erythema, Range of Motion (ROM) in left hip was decreased (mainly hip abduction and external rotation) due to pain. There was no pedal edema bilaterally with any leg shortening or rotation. Distal pulses were palpable bilaterally. Complete Blood Count (CBC) showed Hemoglobin (Hb) of 120 gm/L and White Blood Cell count (WBC) of  $15.1 \times 10^9/L$ . The echo in 2016 showed an ejection fraction of 55% to 60%. Echo was done again as a part of falls workup and was unremarkable. CT scans of hip and pelvis were negative for fracture, but it showed acute hematoma in left gluteus maximus along with bilateral hip osteoarthritis (Figure 2). Urinalysis and culture were done as a part of leukocytosis workup to rule out Urinary Tract Infection (UTI). The lumbar spine X-ray was normal, with no vertebral fracture. CT scan of the head showed no acute stroke or intracranial hemorrhage. After 12 h, Hb dropped from 120 to 111 gm/L. Because of anemia, we held the anticoagulant (rivaroxaban). The patient was given pneumatic stocking for Deep Vein Thrombosis (DVT) prophylaxis. The next day, the patient had persistent left hip pain with no back pain, neck pain or lower limb weakness, and no saddle area numbness. Pulse was on an



Figure 3: Left hip showing ecchymosis by 5<sup>th</sup> day of admission.

increasing trend likely due to hypovolemia. From the second day of his admission, there was a gradual increase in diffuse ecchymosis in the left gluteal region (Figure 3). The rest of the systemic examination was normal. Hb dropped from 99 gm/L to 88 gm/L in two days. WBC was  $11.3 \times 10^9/L$ , which later returned to normal. Urine culture and sensitivity (urine c/s) showed no urine contamination, and therefore no antibiotic was started. Perindopril was held, because of acute and orthostatic hypotension and, and Tamsulosin dose was also decreased. Transfusion medicine was consulted and advised not to reverse the effect of rivaroxaban (due to high chances of thrombosis in this patient because of his strong history of pulmonary embolism and a trial fibrillation), close monitoring of Hb and transfusion of Packed Red Blood Cells (PRBC) if needed. Weight-bearing was advised and to begin ambulating as tolerated by him. On the third day, the patient was able to walk in the unit with the support of physical therapy. His left hip pain improved with analgesics. Hemoglobin gradually increased from 88 gm/L to 110 gm/L in the next few days. After 10 days the oral anticoagulant was restarted. The patient was discharged home after improvement in his presenting complaints and blood workup. He was followed in the outpatient department to monitor his further course, which showed improvement.

## Discussion

Soft tissue compartments are the most affected region by hemorrhage related to coagulation defects [6]. The coagulopathy-associated hemorrhage is presumed to be due to disruption in the coagulation pathway physiology that can lead to bleeding [7]. One of the most used anticoagulants in medical practice is warfarin that requires frequent monitoring of International Normalized Ratio (INR), dose adjustments, diet restrictions, and drug-drug interactions, which makes it challenging to use in medical practice [8]. In our case, the patient was on rivaroxaban, and hence INR monitoring was not required. This case highlights that anticoagulants other than warfarin can also cause hematoma in muscle. In a case report of a 72-year-old woman who had a history of hypertension, diabetes mellitus type 2, hyperlipidemia, Parkinson's disease, a trial fibrillation and was taking warfarin and metformin had a fall from chair and examination showed a huge ecchymosis involving the sacral and right gluteal region extending till the posterolateral aspect of the upper thigh [9]. There is a similar case of a 63-year-old man who was taking antiplatelet therapy with complementary alternative Chinese herb for the past year for cerebral infarction and had a fall on the road and was brought to the emergency department with painful swelling in the right buttock [10]. There is a case report of a 50-year-old male who had met road traffic accident and on examination had bruises with few abrasions and expanding swelling in the right gluteal region without any bony injury [11]. In our case, the patient had a fall in home and presented

with gluteal region pain but no obvious skin findings of ecchymosis or abrasion, making the case less suspicious for gluteal hematoma. The index of suspicion should be high for soft tissue hemorrhage in patients having a history of anticoagulant usage. These medicines are the most important risk factor for tissue hemorrhage. A drop in hemoglobin levels and coagulation profile abnormalities should raise the suspicion of soft tissue hemorrhage. Diagnostic imaging such as ultrasound and Computed Tomography (CT) scan should be done promptly to make a definitive diagnosis [12]. In our case, the patient was investigated due to dropping hemoglobin levels, which prompted further imaging aiding in definitive diagnosis, early treatment to aid recovery and prevent adverse events due to delay in diagnosis. Our patient was managed conservatively with analgesic and stopping anticoagulants. The treatment modality consists of conservative management for stable hemorrhage; angiography and embolization of bleeding vessel or surgical evacuation of hematoma in case of active bleeding [13]. Conservative management consists of analgesia and reversing anticoagulation therapy [12]. This case emphasizes the importance of prompt diagnosis and treatment of patients receiving any kind of anticoagulant, despite being hemodynamically stable at the presentation. There should be serial monitoring of blood counts in undiagnosed cases to come to a diagnosis rapidly to provide appropriate treatment and prevent the life-threatening sequela of this preventable condition.

## Conclusion

Though falls are quite common in the elderly age group, one should not do only falls workup, and rely completely on initial imaging studies. In our case, the patient's initial X-ray of the hip was unremarkable, but the positive clinical finding of persistent hip tenderness and limited range of motion led to a CT scan of the pelvis to rule out an occult fracture but found deep hematoma. Later, a drop in hemoglobin also pointed towards some internal bleeding. We took the right step and stopped his oral anticoagulant; did not order any anticoagulant for deep vein thrombosis prophylaxis and closely monitored hemoglobin. All these steps prevented from an acute drop in hemoglobin and possible future hypovolemic shock.

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