

Bilateral Simultaneous Rupture of the Quadriceps Tendon in a Healthy Elderly Woman: A Case Report

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ABSTRACT

Background: Quadriceps tendon ruptures are uncommon injury that affects middle-aged women, predominantly it affects middle aged men. However, the bilateral quadriceps tendon rupture is extremely rare in the absence of systemic disease.

Subjects and Method: We reported a case of bilateral quadriceps tendon rupture in a healthy 65 year old female. She felt pain in both knees since 4 months before entering the hospital. Local physical examination on both knees reveal the loss of normal contour of rectus femoris, tenderness at superior pole patella the ruptur site, and palpable defect within 2 cm of superior pole patella. Patient unable to extend knee against resistance, and unable to perform straight leg raise. The patient was carried out a surgical repair with consent.

Results: After the surgery both knees were immobilized with knee extension splint for 6 weeks. Patient evaluation revealed no pain and progressive recovery of muscular strength after four months and could be able to walk and returned to normal activity.

Conclusion: Surgery is needed to repair quadriceps rupture.

Keywords: Quadriceps tendon, quadriceps rupture, repair tendon.

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BACKGROUND

Quadriceps tendon ruptures are uncommon injury that affect middle-aged women, predominantly it affects middle aged men (Clayton and Court-Brown, 2008). However, the bilateral quadriceps tendon rupture is extremely rare in the absence of systemic disease (Senevirathna et al., 2011; Ellanti et al., 2012). The rupture occurs from a powerful contraction of the quadriceps muscle in partially flexed knee with the foot on the ground. Mechanism of injury is most frequently caused by fall and direct trauma (Ellanti et al., 2016). In elderly, the degenerative changes associated with ageing and calcific tendinopathy have been shown to be a cause of quadriceps tendon ruptures (Maffulli et al., 2012; Oliva et al.,

2012). Diabetes, chronic renal failures, gout, pseudogout, obesity, hyperparathyroidism, systemic lupus erythematosus, steroid use, and antibiotic quinolone use have been shown to be related with quadriceps tendon rupture (Shah, 2002; Levy et al., 1971; Preston, 1972; Tedd et al., 2000; Khaliq and Zhanel, 2005; Zribi et al., 2018). This injury are uncommon and there are only 103 literatures reporting simultaneous bilateral quadriceps tendon rupture in PubMed search engine. In this literature we reported a case of bilateral quadriceps tendon rupture in a healthy elderly woman.

CASE REPORT

The patient is a 65-year-old female lives in Central Java. The patient is a housewife.

The patient came to Hospital with chief complain pain in both knees since 4months before entering the hospital. Initially the patient was slipped and fell with her both knees hit the ground four months ago.She complained the pain was getting worse and after that she could not be able to walk. Her

ambulation was with wheel chair, there is no history of fever, no weight loss, normal appetite. The patient has no history of other diseases such as diabetes, hypertension, and other metabolic diseases. The patient does not have a history of the same disease on his family.



Figure 1. Physical Examination

On physical examination the patient could not be able to walk, in general condition, the patient was not obese and there is no obvious abnormality. Local physical examination on both knees reveal the loss of normal contour of rectus femoris, tenderness at superior pole patella the ruptur site, palpable defect within 2 cm of superior pole patella. Patient unable to extend knee against resistance, and unable to perform straight leg raise.

From radiograph examination the AP and lateral knee view shows patella Baja. The patient was carried out a surgical repair with consent. Patient in general anesthesia in supine position, incision was carried out

about 7 cm long midline to knee. The incision is layer by layer up to the quadricep tendon, then the total quadricep tendon rupture was identified. Drill holes in patella, then used non absorbable sutures in tendon in a running locking fashion with ends free to be passed through osseous drill holes until the gap decrease. Retinaculum is repaired too. After that we checked the knee could flex to 90 degrees. The same procedure was done on the contralateral site. The same defect was identified and the same procedure was done to decrease the gap, repair the defect and the knee could flex to 90 degree after repair. After the surgery

both knees were immobilized with knee extension splint for 6 weeks.

Patients was treated in ward and were given antibiotics, analgesics, and wound care regularly. The patient underwent immobilization with non weight-bearing and extension of the knee for three weeks.

After six weeks, patient started physiotherapy to improve range of motion with passive and active movement. Patient evaluation revealed no pain and progressive recovery of muscular strength after four months and could be able to walk and returned to normal activity.



Figure 2. Intra operative

DISCUSSION

Bilateral rupture of quadriceps tendon is a rare injury. Some literatures have been describe the predisposing factors such diabetes, chronic renal failures, gout, pseudo-gout, obesity, hyperparathyroidism, systemic lupus erythematosus, steroid use, and antibiotic quinolone use have been shown to be related with quadrieps tendon rupture (Shah, 2002; Levy et al., 1971; Preston, 1972; Tedd et al., 2000; Khaliq and Zhanel, 2005; Zribi et al., 2018). Patient usually

come to hospital with complain of severe knee pain or in neglected case they complain about functional disability of lower limbs. In our case with simultaneous bilateral rupture, the patient could not be able to walk. The mechanism injury usually direct or indirect trauma with knee flexes and foot is planted on the ground, or explosive contraction of quadriceps tendon. In younger patients, sometimes major trauma by direct shock or blunt object are more common in athletes. However, in

elderly patient, the reduce of tendon elasticity will cause the tendon rupture. In previous case reports, weakening tendon were caused by bone resorption at tendon insertion sites due to hyperparathyroidism (Preston, 1972; Zribi et al., 2018). Collagen was replaced by elastin during chronic metabolic acidosis in chronic renal failure and weakened the tendon and caused rupture (Zribi et al., 2018). In other study, many cases in athletes consuming anabolic agents such as steroid are reported related to increased risk of tendon rupture (Lewis et al., 2005). However in our study, the patient was in healthy condition, no history of trauma, history of steroid injection or fluoroquinolone use, no history of kidney failure, and no history of hyperparathyroidism.

The diagnosis of quadriceps tendon rupture had been based primarily on history taking and clinical examination (Ziribi et al., 2018). Clinical examination is crucial and allows for rapid diagnosis. In clinical examination, patient could not be able to perform full active extension of knee (Ramsey and Muller, 1970). When quadricep tendon is torn but the retinaculum intact patient are able to achieve active assisted extension, but not full. In palpation there was a gap about two centimeters above patella in myotendineous junction. However, swelling and hematome will make the gap disappear in acute condition (Ilan et al., 2003). The same as in our case, the gap was felt because the onset was about one month ago, so the swelling and hematoma were already subsided. The gap was about two centimeters above superior pole patella.

Other diagnostic modality are ultrasonography, it is minimal invasive, but the results was by examiner. MRI is another sensitive diagnostic tool that can locate the rupture/tear. As such in our case, we did

not use MRI as a diagnostic tool prior to surgery. Various surgical technique have been developed such as Krackow procedure, Lighthead procedure. After the operation, walking was permitted, splint was applied for 3-6 weeks to protect the suturing. Early mobilization was performed with splint (Ennaciri et al., 2015). A missed diagnosis may lead to delayed repair, which could be problematic due to significant quadriceps retraction. As a result, end-to-end tendon suturing becomes difficult. Early diagnosis and treatment are therefore essential for good healing and functional recovery.

Simultaneous ruptures of the quadriceps tendon bilateral are rare, which result in disability of both lower limbs. Early diagnosis allows for rapid surgical management and thus optimal functional recovery, careful investigation of such ruptures through clinical examination, plain radiographs, and MRI is therefore necessary for better analysis.

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