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## Bilateral Quadriceps Tendon Rupture and Avulsion Fracture of Patella: A Rare Experience.

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### ABSTRACT

Quadriceps rupture is a rare phenomenon. It may occur with rapid quadriceps contraction with the knee flexed and very low percent of the rupture happens bilaterally. It usually requires surgery to regain full knee function. We are reporting a 32 year old gentleman with underlying end stage renal failure on regular dialysis presented with bilateral knee pain after two episode of fall. However he was still able to walk with bearable pain but developed instability of both lower limb. Examination only revealed painful at suprapatellar region with near normal range of knee motion. MRI showed grade 3 complete tear of the bilateral quadriceps tendon. Hence reconstruction was performed and post operatively, cylinder cast was applied. He was discharged with full weight bearing after seen by physiotherapist. At three month follow up, he was pain free and able to ambulate without any walking support. Both knee range of movement was full.

**Keywords:** quadriceps tendon, bilaterally, end stage renal failure, reconstruction

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## INTRODUCTION

Quadriceps rupture is a rare phenomenon. However it is understood commonly occur in middle-aged people who play running or jumping sports and where the men more common affected than the woman. It may occur with rapid quadriceps contraction with the knee flexed and very low percent of the rupture happens bilaterally. A complete tear of the quadriceps tendon is a disabling injury. It usually requires surgery to regain full knee function.

## CASE/MATERIAL

A 32 year old Malay gentle man, underlying end stage renal failure on regular dialysis and past medical history of burst fracture of T12 in which posterior instrumentation of T10, T11, L1 to L2 was done. He presented with bilateral knee pain where first he had an alleged fall over the right side and heard a 'pop' sound. However he was still able to walk and the pain was bearable. Subsequently after two weeks he had another fall and this time was on his left side. Ever since then he has frequent episodes of fall during walking and instability of lower limb.

On physical examination, the joints were deformed bilaterally, not inflamed or swollen, patellar tap was negative and able to fully flexed and extend his knee. Anterior drawer and posterior drawer test was negative; subsequently Lachman's test was also negative. He underwent a magnetic resonance imaging (MRI) for both the knees (Figure 1 & 2) and finding was near complete tear (grade 3) of the bilateral quadriceps tendon.



Figure 1: MRI of right knee



Figure 2: MRI of left knee

## RESULTS

He was then planned for reconstruction of the quadriceps tendon. Intra operative findings were bilateral avulsion of tendon over the medial side - about 60%, which was reconstructed to patella using circlage wire (Figure 3 & 4). Post operational diagnosis was avulsion fracture superior pole of bilateral patella with total quadriceps tendon rupture. Rehabilitation and physiotherapy team saw him after the operation. He was able to return home with immobilization cylinders cast for about six weeks before being mobilised. At the time of his last follow up, he was pain free and able to ambulate without any walking support. Both knee range of movement was full.



Figure 3: Post-operative xray of right knee



Figure 4: Post-operative xray of left knee

## DISCUSSION

Simultaneous bilateral quadriceps tendon rupture is a rare injury that represents <5% of all quadriceps tendon ruptures [4]. This is our first patient who sustained bilateral quadriceps tendon rupture as well as avulsion fracture superior pole of both patellas. It is generally associated with chronic metabolic disorders and is seen in patients with uraemia undergoing maintenance haemodialysis. Chronic renal failure, gout and hyperparathyroidism are implicated in younger patients, with diabetes and obesity in the older [1,2]. The commonest cause of bilateral rupture appears to be sudden violent contraction of the quadriceps mechanism with the knees slightly flexed and the feet fixed<sup>3</sup>. Although there are numerous causes that lead to tendon weakness and rupture, most authors agree that secondary hyperparathyroidism plays a major role in the pathogenesis of tendon rupture [4]. The cardinal features are diffuse swelling around the knee, a visible or palpable suprapatellar defect and the inability to lift the straight leg despite a functioning quadriceps and



normal activity in all other muscle groups in the leg [3]. However, our patient was still able to walk even unsteady gait. This was very 'unique' which couldn't be explained anatomically. Timely diagnosis and operative management followed by physiotherapy produced a good anatomical and functional result.

#### **CONCLUSION**

It appears reasonable to suggest, from our experience, the attempt of primarily direct repair of complete rupture of quadriceps tendon is adequate and well secured. It was anchored by circlage wiring which attach the tendon to fracture of patella.

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#### **REFERENCES**

- [1] R Y Liow and S Tavares. Br J Sports Med 1995 29: 77-79
- [2] Ribbans WJ, Angus PD. Br J Clin Prac 1989 3: 122-5
- [3] AG MacEachem and JL Plewes. J Bone Joint Surg Br 1984;66-B (1): 81-83
- [4] Gao MF, Yang HL and Shi WD. J Int Med Res 2013;41(4):1378-1383