

## CASE REPORT

# Bilateral patellar tendon rupture associated with statin use

Marie C. Kearns\* and Vinay K. Singh

Orthopaedic Department, Monklands Hospital, Airdrie, North Lanarkshire, UK

\*Correspondence address. 0/2, 100 Crown Road North, Glasgow G12 9HS, UK. Tel: +44-7749-101658; Fax: +01236 760 015; E-mail: mkearns@nhs.net

## Abstract

Patellar tendon rupture is an uncommon clinical presentation, which generally affects the under 40s who are active in sport. Bilateral rupture of both tendons is much rarer. It occurs most frequently in patients with predisposing factors such as corticosteroid use or systemic diseases. The authors present the case of a 56-year-old male on long-term statin therapy who sustained this injury following a fall on ice. He had no known risk factors for tendon rupture. Surgical treatment involved tendon repair using Krakow suture via bony tunnels in the patella. Statins have previously been associated with tendon ruptures at other sites but there have been no published cases of bilateral patellar tendon rupture linked to statin use. We review the literature regarding the association between statins and tendon rupture.

## INTRODUCTION

Patella tendon rupture is extremely rare in patients over the age of 40 years and bilateral patella tendon rupture is even rarer [1]. When it does happen there, it is generally associated with systemic diseases such as rheumatoid arthritis or with corticosteroid use [2]. Statins have been described as a risk factor for tendinopathy and tendon ruptures at various sites in the body with the achilles tendon being the most commonly reported site [2]. They have not previously been associated with bilateral rupture of the patellar tendon. Authors would like to report a case of bilateral patellar tendon rupture in a 56-year-old gentlemen associated with statin use.

## CASE REPORT

A 56-year-old male presented with bilateral knee pain following a fall on ice. He slipped landing on his right knee. When helped up by a passer-by, he fell again injuring his left knee. He subsequently developed bilateral knee swelling and was unable to weight bear.

He had a history of ischaemic heart disease was taking simvastatin (40 mg), bisoprolol, eplerenone, ramipril and aspirin. He had no other systemic disease and had not taken steroids or fluoroquinolones previously. He had a 20 pack-year history of smoking and at the time of presentation was smoking four cigarettes per day. There was a history of previous alcohol excess. He had stopped weight lifting 10 years previously due to lower back pain.

When examined in casualty, he had a graze over his left knee, bilateral effusions and high-riding patellae (Fig. 1). He was unable to actively extend both knees. Flexion was preserved and neurovascular examination was normal. There were palpable gap in both patellar tendons. X-ray of his knees showed bilateral patella alta (Fig. 2). His full blood count, biochemistry, C-reactive protein and coagulation screen were all within the normal ranges.

At open repair, 48 hours later, he had bilateral complete disruption of the patellar tendon at its attachment at inferior pole of the patella with associated complete medial and lateral retinaculum tears (Fig. 3). Two Krakow sutures were placed in the patellar tendon, passed through three drill holes in the patella and secured in the quadriceps tendon (Fig. 4). The surface of

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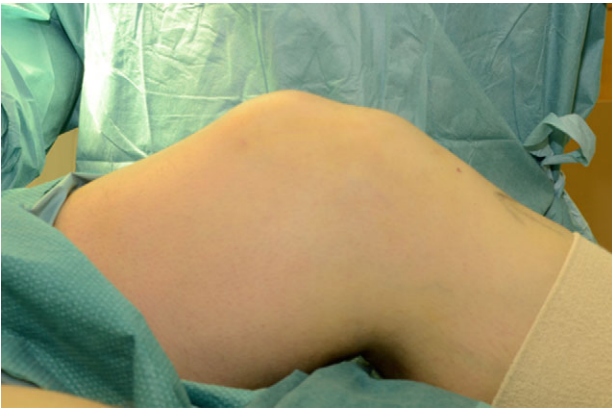


Figure 1: Left knee showing obvious step and high-riding patella.



Figure 2: Lateral X-ray left knee showing high-riding patella.

the tendon was smoothed using a 1'0 vicryl suture and the retinacula were repaired using No. 2 vicryl.

He was placed in knee immobilizer braces and kept non-weight bearing for 4 weeks. He was discharged home 10 days post-operatively with a 4-week supply of subcutaneous low molecular weight heparin. Range of motion exercises was commenced after 4 weeks. He was advised to increase his knee flexion in 30° increments every 3 weeks. Six months down the line he had knee range of movement of 0°–120° of flexion and he is mobilizing independently. Post-operative X-rays show restored patellar height (Fig. 5).

## DISCUSSION

Patellar tendon rupture occurs when there is an overloading of the extensor apparatus of the knee joint. This extensor



Figure 3: Operative findings showing complete tendon rupture at the inferior patella pol.

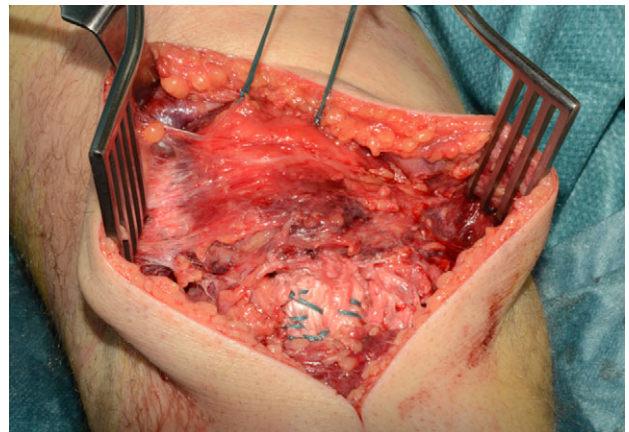


Figure 4: Krakow suture repair to patellar tendon.



Figure 5: Post-operative lateral left knee X-ray showing restored patellar height.

mechanism consists of the quadriceps muscle, which inserts onto the patella as a central tendon and continues as the patellar tendon, which inserts onto the tibial tuberosity. Of these components, the patella is most prone to injury and patella fracture is reported to be six times more likely to occur compared to rupture of the quadriceps or patellar tendons [1]. Quadriceps tendon ruptures are typically refined to the over

40s age group whilst patellar tendon ruptures are less common and tend to affect the younger age group [1].

Tendons subject to repetitive microtrauma in sports such as basketball and weightlifting or weakened by local steroid injections are more vulnerable to rupture of the patellar tendon and it is generally accepted that rupture does not occur in normal healthy tendons. Patellar tendon ruptures occur when the quadriceps muscle eccentrically contracts against a flexed knee, for example when jumping [1, 3].

A literature search found 14 case reports of bilateral patellar tendon ruptures in patients over 40 years. There is a male preponderance with a male to female ratio of 9:5. Eight of these had known risk factors such as steroid injections, obesity or systemic disease. The six patients without risk factors ranged in age from 41 to 75 years with the majority aged over 60 years. No patients were known to be taking statins.

Statins (HMG-CoA reductase inhibitors) are widely prescribed for primary and secondary prevention of cardiovascular disease. They are generally well tolerated but are associated with a number of infrequent musculoskeletal complications including myopathy, rhabdomyolysis, tendinopathy and tendon rupture [3]. Atrovastatin and simvastatin are the most frequently prescribed and are most commonly associated with tendon complications [2].

Marie *et al.* [3] studied 96 case reports of tendonitis and tendon rupture associated with statin use. They found that the majority of cases was in males and the median age was 56 years. Most tendon complications occurred within the first year of treatment [3]. The vast majority of cases involved the achilles tendon and there were no cases of bilateral patella tendon rupture. Beri *et al.* [2] found that chronic statin use was a significant risk factor for tendon rupture in females only.

The effects of statin on the structure of the achilles tendon have been studied in detail in animal models. De Oliveira *et al.* [4] found gross changes in the organization of collagen fibres and thinning of the epitendon in rats treated with atorvastatin and simvastatin. Overall, the tendons had reduced biomechanical strength and were more prone to rupture [4]. They also reported changes in the extracellular matrix of the tendon, which may reflect microdamage [5].

This is a case of provoked bilateral patella tendon rupture in a middle-aged man on statin therapy. This particular injury is very rare in this age group with a quadriceps tendon rupture being a more likely result of such an injury. Statins have been associated with tendinopathy and tendon rupture but have not yet been proven to be a significant risk factor. A link between statin use and bilateral patella tendon rupture has not previously been described.

## CONFLICT OF INTEREST STATEMENT

None declared.

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