**Patellar Tendon Ossification or Reformation of Patella after Partial Patellectomy? A Case Report**

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**Abstract**

We present a curious case of spontaneous reformation of patella/patellar tendon ossification after partial patellectomy. This is a very rare pathology that has been reported as a complication after sleeve fractures of the tibial tuberosity, total patellectomy during total knee arthroplasty, intramedullary nailing of tibial fractures, anterior cruciate ligament reconstruction with patellar tendon autograft and knee injury without fracture. Patellar tendon ossification after partial patellectomy has been reported just once in literature. We present the second one of this nature. The patellar tendon ossification resembled a reformation of the patella and could easily be mistaken for an inadequate removal of the patellar remnant.

**Keywords:** partial patellectomy, patellar tendon, ossification, reformation


1. **Background**

Ectopic ossification of the patellar tendon is rarely observed. Patellar tendon ossification has been reported in conditions like conservatively managed sleeve fractures of tibial tuberosity [1], total patellectomy during total knee arthroplasty [2], intramedullary nailing of tibial fractures in patients with concomitant head injury and long-term hypoxemia [3], anterior cruciate ligament reconstruction done using patellar tendon autograft [4], and old knee injury without fracture [5]. We report a curious case of patellar tendon ossification resembling reformation of the patella following partial patellectomy in a comminuted patellar fracture. There is just one similar reported case in literature [6]. The bony regrowth was not seen in the immediate post operative period but developed slowly over a period of 4 months. This was associated with gradual loss of motion of the knee. The etiology of ossification is a mystery since the patellar tendon was properly cleared of all bony fragments and the ossification developed after surgery. It is possible that continual traction along the line of the patellar tendon may have accelerated calcification due to some unknown underlying predisposition.

2. **Case Presentation**

A 42 year old male was admitted to this hospital with a history of fall and trauma to his right knee. He was unable to lift his leg and had swelling of the knee with minor superficial abrasions. There was no history of any previous trauma or surgery and he was not on any medication. Radiographs revealed a comminuted lower pole fracture of the patella. The patient was put on a splint and operated three days later. Partial patellectomy with lower pole excision was done. The patellar tendon was fixed to the patellar remnant with 1-0 vicryl and a cylindrical cast was applied. The post operative period was uneventful and the cast was removed at three weeks and the patient was put on range of motion exercises. Three weeks later, his range of motion was 0-1000 and he also had pain on moving the knee. The patient was put on indomethacin and advised to use a knee brace. Four weeks later, the patient reported with exaggeration of his symptoms. His range of movement was 5-350 and had a bony hard feel of the patellar tendon near the patellar remnant. Radiographs revealed extensive ossification at the resected portion of the patella and flecks of calcification in the patellar tendon. The initial radiographs were again reviewed to confirm that the initial post operative images were showing a proper lower pole excision which was indeed the case. Amazingly, the excised patellar remnant seemed to have reformed with only flecks of calcification seen in the patellar tendon. The patient was advised to go for a repeat surgery to excise this mass and subsequent range of knee motion rehabilitation but the patient, citing some domestic problems, declined a second surgery. He was put on NSAIDS and asked to visit regularly for supervised physiotherapy but he stopped visiting the hospital after 1 year at which time his flexion was 0-400 and painful.
3. Discussion

The ideal treatment of lower pole fractures of the patella remains a controversy. The options include internal fixation of the pole fragment and resection of the avulsed fragment with repair of the patellar tendon to the patella [7]. Patellectomy reduces quadriceps strength permanently by one-third and reduces joint stability in half the cases with complaints of giving way [8]. With partial patellectomy, however, the continued presence of the pay rope or pulley mechanism and repair of the quadriceps help in good quadriceps function. However, the feeling of subjective weakness though there is no appreciable decrease in quadriceps strength is a well known sequel of patellectomy, partial or total [9]. In experimental studies [10,11], enlargement of the remaining patella and patellar tendon calcification after partial patellectomy were demonstrated in rabbits at about 24 weeks after surgeries were performed on them. They postulated that the remaining patella might be enlarged in length after partial patellectomy because of trabecular bone outgrowth and metaplasia with healing over a period of time. However, in many clinical studies on the results of partial patellectomy, incidences of extensive patellar tendon ossification were not detected [12,13]. Saltzman et al. [12] found that the patellar length and area of retained fragment were enlarged in varying degrees in some patients. They concluded that this was different from the calcification or ossification phenomenon that could be seen at the extensor mechanism after a total patellectomy or the development of an osseous spur where the patellar tendon was reattached. Cakici et al [6] reported a similar case of patellar tendon ossification after partial patellectomy. In their case, the ossification proceeded along the length of the patellar tendon concomitant with the circlage wire used for augmentation. However, in our case the ossification was seen predominantly in the region of the resected lower pole of patella and only flecks of calcification were seen in the patellar tendon. The ossified bone resembled a malunited patellar fracture and a thorough perusal of the records was needed to confirm that a proper lower pole excision had been done initially.

4. Conclusions

We need to be aware that such ossification can occur in partial patellectomy. This may closely resemble the complete patella and confuse the patient as well as the surgeon about the thoroughness of the initial procedure. We are not able to delineate the mechanism of ossification. Intraoperatively, the patellar tendon was properly cleared of all bony fragments. The immediate post operative radiograph showed no evidence of any iatrogenic inadequacy and the ossification developed a month after surgery. We postulate that continued traction along the line of the patellar tendon may have accelerated calcification due to some unknown underlying predisposition for heterotrophic ossification.

Consent: Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Competing Interests

The author(s) declare that they have no competing interests.

Authors’ Contributions

NM was involved in concept and drafting of the manuscript, RB was involved in acquisition and interpretation of data and MY/MM were involved in drafting and revising the manuscript.

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Figures

Figure 1. AP and lateral radiographs of the knee in the immediate post operative period showing proper excision of the lower pole of patella

Figure 2. Lateral radiograph of the knee at 30 weeks showing ossification of the patellar remnant

References


