



Bipartite Patella Associated with Tophaceous Invasion: A Rare Case Report

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We report the case of 32-year-old male who had a painful knee due to tophus formation in the interosseous area of the bipartite patella. There was neither a history of previous trauma to his patella nor a family history of gouty arthritis. Intraoperatively, we found chalky white-yellow material deposited at the bipartite space and it was curetted. The second part of the patella was fixed by a screw for functional preservation. In addition, hyperuricemia was also noted and controlled by uricosuric agents postoperatively. Gout should be included in the differential diagnosis of painful bipartite patella, and we suggest surgical intervention in combination with antihyperuricemic therapy for tophaceous deposits of the bipartite patella.

Key words: Bipartite patella, Gout, tophaceous invasion

INTRODUCTION

Bipartite patella with an accessory ossification center at the superolateral pole, the insertion site of the vastus lateralis, is a rare congenital anomaly. Kanbe *et al.* was the first to report in the English literature a case of tophaceous gout of patella partita due to a previous patellar injury.¹ In our hospital, this is the first case of gout tophus, we have encountered in a bipartite patella without a history of previous patella trauma. We removed the crystal deposits and preserved the bipartite patella by internal fixation.

CASE REPORT

A 32-year-old male soldier presented with a 3-month history of persistent anterior left knee pain after exercise, especially when squatting. He had no previous history of trauma or gout attack. He first visited local medical doctor, where a local injection was performed and a nonsteroidal anti-inflammatory drug was prescribed. Pain was relieved but occurred again for 2 weeks before he came to our outpatient department. Physical examination revealed swelling, local heat, and marked local tenderness over the superolateral aspect of the patella and difficulty performing a straight leg raise. The ballottement

test of the left patella was positive. Blood tests revealed that the white blood cell count and erythrocyte sedimentation rate were within normal limits. Other laboratory findings were also normal except for a slightly increased serum uric acid value of 7.2 mg/dl. Plain radiographs revealed a Saupe type III bipartite patella (fragment at the superolateral pole) and a radiolucent change at the junction of the two fragments in the affected knee [Figure 1]. To ameliorate the symptoms and to diagnose the bone erosion pathologically, we scheduled an open surgery. Intraoperatively, a chalky white-yellow material deposited at the bipartite space was noted [Figure 2]. Extensive curettage of the white precipitate [Figure 2a and b] was performed, and we fixed the bony fragment to the main patella with two cannulated screws and an artificial bone graft for functional preservation [Figure 3]. On microscopic evaluation of the specimen, the sections stained with hematoxylin and eosin demonstrated degenerative osteochondrotic tissue and some amorphous material surrounded by multinucleated giant cells compatible with tophi in the soft tissue [Figure 4]. Three days after surgery, he could perform a straight leg raise. Two weeks later, full range of motion of the left knee and full weight bearing were restored. We prescribed benzbromarone, a potent uricosuric drug, to treat his gouty arthritis. At his 1-year

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Figure 1: Preoperative plain radiographs (a: Anteroposterior; b: Lateral) revealed a radiolucent lesion at the junction of the bipartite portion and the adjacent patella (arrow) and (c: Sunrise view) incongruity of the patellofemoral joint



Figure 3: Postoperative anteroposterior view (a) and lateral view (b) reveals fixation with two cannulated screws

follow-up visit, he had no recurrence of symptoms, and his serum uric acid level was in the normal range.

DISCUSSION

Most bipartite patellae are asymptomatic and are observed only as an incidental finding when the knee is radiographed for other reasons. Symptomatic congenital bipartite patellae

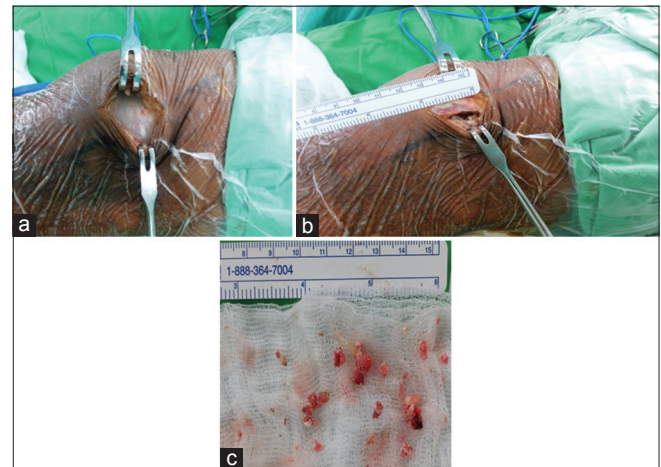


Figure 2: (a and b) Arthrotomy through the superolateral aspect of the patella exposed abundant chalky white-yellow material deposited at the bipartite space; (c) abundant chalky white-yellow material

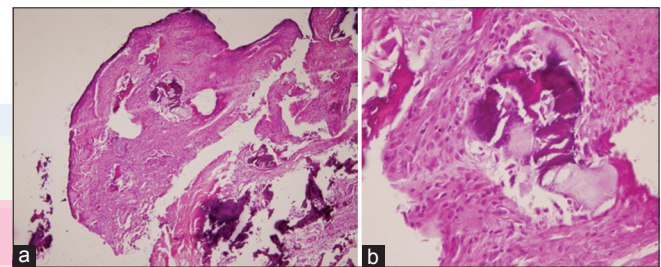


Figure 4: Pathologic findings. Degenerative osteochondrotic tissue and some amorphous material surrounded by multinucleated giant cells compatible with tophi in the soft tissue (a) H and E, $\times 100$ and (b) H and E, $\times 400$

are uncommon. The patella is the largest sesamoid bone which ossifies from one center in 77% and from two or three centers in 23% of children.² Most of these ossification centers mutually fuse, but approximately 2% of them remain dissociated.³ Although bipartite patella is usually asymptomatic, it can become painful following overuse or injury. Only 2% of bipartite patellae become symptomatic. Symptoms are more common in men, adolescent, and young athletes but rarely occur in adults, and less than one-half of symptomatic cases are bilateral.⁴

Most patients with symptomatic bipartite patella respond well to conservative treatment (nonsteroidal anti-inflammatory drugs, bracing, and physiotherapy to strengthen the quadriceps and hamstring muscles). Surgical treatments include arthroscopic excision of the painful fragment,⁵ lateral retinacular release, vastus lateralis release, and internal fixation with or without bone grafting.⁶ Excision of a large fragment may lead to incongruity of the patellofemoral joint and subsequent arthritis. Nonetheless, the ossicle should be excised in cases of severe cartilage lesions (Grade 4), irrespective of the fragment size.⁷ The degree of mobility at the

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separation and the condition of the articular cartilage should also be taken into consideration.

Painful bipartite patella secondary to a gouty tophus was first reported by Hiroyuki Enomoto in 2006. This case clearly demonstrated massive bone erosions and kinked alignment at the junction of the accessory bone and the patella by multiplanar reconstruction with computed tomography.⁸

The classic history and examination findings of gout include previous attacks of gouty arthritis, tophaceous deposits, joint swelling, and occasional pain. Our patient did not have any history of gout but presented with a 3-month history of pain and swelling involving the knee.⁹

Gout in a 32-year-old patient is unusual and may be associated with obesity, high blood pressure, high cholesterol levels, or alcohol abuse,¹⁰ but none of these predisposing factors were present. Although his serum urate level was slightly elevated, a biopsy for differential diagnosis was important in view of the patient's relatively young age.

In this case, we removed the crystal deposits and restored the integrality of the patella so that the range of motion will not be limited. In addition, combination of anti-hyperuricemia therapy can prevent recurrence of gouty attacks.

Our treatment resulted in immediate pain relief, and there had been no recurrence of symptoms at the 1-year follow-up.

We concluded that tophi around the bipartite patella should be treated by a combination of surgical excision and uricosuric agents to prevent deposition causing recurrence of gouty attacks and to preserve the second part of patella as much as possible.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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