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Arthroscopic Resection of Symptomatic Avulsioned Type III Bipartite Patella: A Case Report

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Abstract

Although Bipartite Patella is usually asymptomatic, it may become symptomatic after repeated traumas. The treatment of avulsed and painful bipartite patella consists conservative treatments including, rest and physiotherapy but surgical treatment can be required in inconclusive cases. Surgical treatment consists, open or arthroscopic excision of the painful fragment and release of the lateral retinaculum. In this case report, we present 19-year-old male patient who underwent arthroscopic resection of his type III avulsioned bipartite patella. While we were performing the arthroscopic surgery for the treatment, we minimized the problems related to open surgery.

Keywords: Arthroscopic resection; Avulsiones; Bipartit patella

Introduction

Patella embryologically develops at week 8, under the quadriceps sketch before knee cavity and muscle sketch development. According to researches, patella generally develops from a single ossification center (75%) [1]. However, in some cases, in bone formation there is a second or even third ossification center involves. Saupe, described 3 types of bipartite patella according to location; Type I: Inferior pole, Type II: Lateral margin, Type III: Superolateral margin [2]. If these two ossification centers do not merge, there will be an additional accessory bone that attaches to the patella through fibrocartilage tissue at the outside of the main bone. Patella bipartita, which often develops in the upper outer part of the patella, may seem like patella fractures and leads to confusion in the future life [3]. In this article, we described the arthroscopic resection of a post-traumatic avulsioned symptomatic type III bipartite patella.

Case Study

A 19-year-old male patient presented to a clinic with the complaints of palpable swollen knee and difficulty in flexion of the knee. His complaints were started 2 years ago after motorcycle accident and he presented to different clinics, but he did not receive any benefits for his complaints, despite of the conservative treatments. In his exam, a hard, fixed mass was detected under the skin in the 2.5 cm proximal part of the left patella. There was not patellar instability. The patient's knee flexion was 90 degrees and painful, and he had full extension.

Initially he was evaluated with antero-posterior (AP) and lateral X-ray. In the radiographs, 2 × 1.5 cm bone density was detected in the superolateral side of the patella (Figure 1). Three-dimensional (3D) Computed Tomography (CT) revealed a bone fragment which resembling a fracture in the superolateral patellar pole (Figure 2).

This fragment gave an impression of the avulsed bipartite bone fragment. MRI was performed for evaluation of the soft tissues and no rupture was seen at the quadriceps. Therefore, arthroscopy was planned and performed. Intraoperative arthroscopic evaluation revealed an avulsed fragment in the superolateral patella. It was covered with fibrous tissue and it was seen that there was an articular cartilage. Arthroscopically, surrounding fibrous and synovial tissues were excised via shaver (Figures 3 and 4). Fragment was released and lowered into the joint. Fragment was removed from anteromedial portal by mini incision. Pathologic investigations revealed an osteochondral section (Figure 5). Knee range of motion exercises and mobilization were started post-operative first day. On post- operative third day, the patient

Figure 1: There is a bone fragment 2.5 cm proximal part of the left patella in this anteroposterior X-ray view.

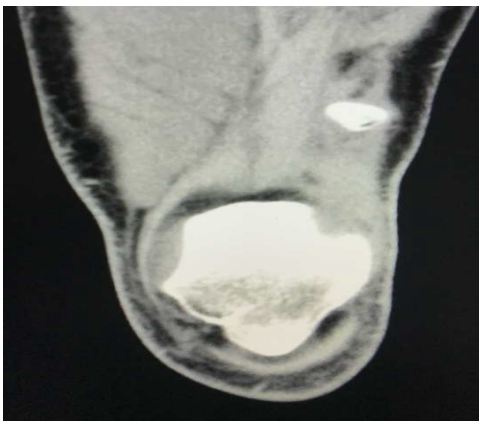

Figure 2: Bone fragment is seen on coronally CT section.

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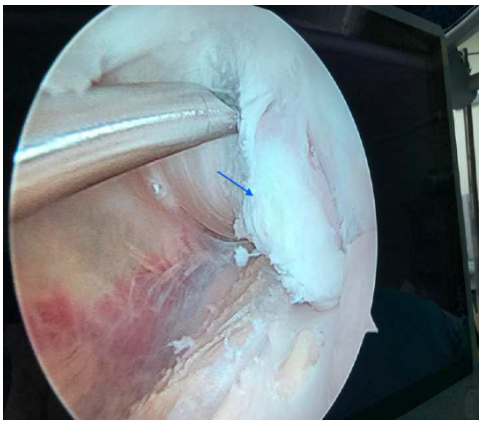

Figure 3: Arthroscopic view of the fragment (blue arrow).

Figure 4: After arthroscopic resection we sent the fragment for pathological examination.

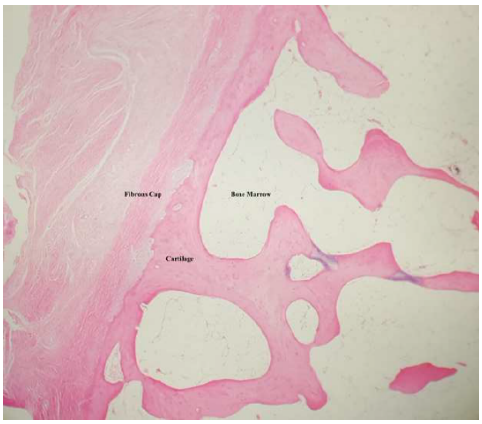

Figure 5: Microscopic examination revealed fibrous, cartilage and bone marrow.

was able to perform full flexion of the knee. On post-operative second week, examination revealed that his all complaints were decreased.

Discussion

Bipartite Patellar avulsions are rare injuries that are often misdiagnosed as patellar avulsion fractures [4]. The frequency of bipartite patella is 2-6% and it is seen more common in men [5]. Saupe has identified three ossification centers and the most commonly seen is, located in the superolateral (75%). There is a fibrocartilage tissue between the accessory bone and patella. Anterior knee pain may result due to the deterioration of this fibrocartilage tissue as a result of repeated stress. Direct trauma damages the synchondrosis and leads to irritation and inflammation such as fracture. The onset is either slow or occurs suddenly after direct trauma. In traumatic bipartite patellar avulsion, we may observe symptoms such as anterior knee pain, edema and decreased range of motion.

Bipartite patella fractures can be excised if there are extra articular parts. There are contradictory results related with open reduction internal fixation (ORIF) technique and it has been reported that ORIF is more suitable to perform in the presence of very large accessory fragments [6]. Various imaging methods can be use in the diagnosis. The type III displaced bipartite patellar fragment can be easily detected by X-ray and CT. Cast and conservative treatment can be applied to non-displaced bipartite fragments [7-10].

Conclusion

There are studies on arthroscopic excision in the treatment of symptomatic bipartite patella. Patient follow-up varies between 6 weeks and 31 months in the case reports. Arthroscopic excision with lateral retinaculum preservation in symptomatic and chronic bipartite patellar fractures is an excellent surgical method. In our patient arthroscopic excision was preferred because of potential more rapid recovery, less pain and rapid return to daily-routine life, rather than open excision. With the help of an aggressive physical rehabilitation protocol, the pain was reduced more quickly, and the patient rapidly returned to his daily-routine life.

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