



## Conservative treatment of a 55 year old lady with bipartite patella: A Case report

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### Abstract :

#### Background and purpose:

The knee joint is one of the most important weight bearing joints of the bony. Each knee joint bears 50% of the body weight. The knee joint comprises of the Femur, the Tibia and the Patella as its parts. The Patella plays a significant role in the knee biomechanics by smoothly gliding over the anterior aspect of the knee. In some rare cases it is observed that patients report with a congenital defect of the patella called as bipartite patella. The incidence of this congenital abnormality is only 1 – 2%. Even though the incidence of such defect is very rare but it becomes a cause of disability for the person with the defect. The purpose of this case report is to present such a rare congenital defect of Patella and to suggest a protocol of conservative treatment which is proven beneficial for the patient.

#### Study design: Case report

**Description of the case :** A female aged 55 years reported to the clinic with history of severe right anterior knee pain, swelling and inability to walk properly since last 1 month. There was no complaint with the left knee. The patient had a history of fall. The radiographic studies reveal that there is a Bipartite Patella. Patient was treated with medication including Non-steroidal anti-inflammatory drugs and antacids along with Physiotherapy treatment. The Physiotherapy treatment included ice packs, Ultrasound therapy, Interferential therapy, Active assisted ROM exercises and Progressive resisted exercises.

**Outcome :** The Pre treatment VAS score and Lysholm Knee scoring scale are noted . The patient was treated for a total period of 4 weeks with a frequency of 6 days in a week. It was observed that after treatment VAS grades decreased from 9 to 3 in the right knee. The Lysholm Knee Score scale grading improved from 63 to 82 . Following completion of 4 weeks the subject returned to complete functional activity with almost no pain and limitation.

## Discussion

The present case is a rare disorder of Patella which is found in only 1 % of population . The condition is common in males then in females. As the defect is a rarer entity a proper understanding of the clinical presentation and the absolute way to manage the defect was the intention behind this study. In the study the patient presented with a unilateral anterior knee pain which was diagnosed as Bipartite patella. The problem was successfully managed with medication and physiotherapy as a conservative treatment. So it is evident that these defects can be well managed with conservative management.

**Keywords:** Anterior knee pain, Bipartite patella, Lysholm Knee Scoring Scale, C T Scan

## Introduction :

Patella is the largest of all the sesamoid bones and is situated in front of the knee joint in the tendon of the Quadriceps femoris muscle. It is flattened and is triangular in shape. It has an anterior and posterior surface , three borders and an apex.<sup>1</sup> Patella is primarily an anatomic eccentric pulley and a mechanism to reduce friction between quadriceps tendon and femoral condyle .<sup>1</sup>

The movements in the Patella are Patellar flexion , extension , medial rotation , lateral rotation and Patellar shift. The Patella contributes in improving torque production by quadriceps and it varies with joint range of motion. The absence of Patella is most evident when the tibia is the moving segment and the quadriceps muscle work against the resistance of gravity.<sup>2</sup>

Bipartite Patella is very rare defect of the Patella that is characterised by an accessory ossification center which does not fuse to the primary Patella. <sup>3</sup> Bipartite Patella represents an accessory ossicle which may be present along its superolateral , inferior or medial border.<sup>4</sup> It is usually an asymptomatic, incidental finding. However, in adolescents, it may be a cause of anterior knee pain following trauma or a result of overuse or strenuous sports activity. Although nonsurgical treatment is the initial treatment, surgery is considered when nonsurgical treatment fails. Excision of the fragment is the most popular surgical option, with good results. However, when the fragment is large and has an articular surface, excision may lead to patellofemoral incongruity. Lateral retinacular release and detachment of the vastus lateralis muscle insertion are other surgical options and are reported to produce good pain relief and union in some patients. <sup>5</sup> Saupe classified bipartite patella into three types according to anatomical variations depending on the localization of the unfused fragment of patella . In Type I, present in 5% of people with anatomical abnormalities of the patella, the fragment is localized in the inferior pole. A more common variation present in 20% is Type II, where the fragment is localized at the lateral margin, while in 75% of the cases the bony fragment is localized at the supero-lateral portion of patella, and is described by Saupe as Type III.<sup>6</sup>

Although Bipartite Patella is usually asymptomatic but the symptoms can get exacerbated on overuse or microtrauma requiring treatment or management of the disability. The conservative treatment is always the initial line of management if it fails the surgical treatment comes into play. To the current author there has been very rare review establishing the fruitful outcome following conservative treatment in Bipartite Patella.

### Case presentation:

The subject is a 55 years aged lady reported to the Authentic Physiotherapy Clinic, Survey Guwahati with complains of pain around the Right knee joint. There was associated complains of difficulty to walk with limp since last 1 months 15 days back. The lady gives a history of fall while walking in the market. Walking in the market initiated the pain. Subject complains of feeling of giving way while climbing down the stairs. Immediately after the fall the subject consulted an Orthopaedic surgeon. The consultant advised her for an X-ray and some test. On examining the X ray no fracture was found, but the knee was swollen and movements were painful. The patient was advised medication with rest. After continuing the medication for 20 days the symptoms did not improve. As the symptoms were not improving the subject consulted another senior Orthopaedic surgeon as there was no reduction in pain. After examining the knee joint the consultant advised her for an CT scan. On evaluation of the CT scan report the Orthopaedic surgeon diagnosed it as Bipartite Patella and further advised some Non-steroidal anti-inflammatory drugs (NSAIDs) and some antacid. The subject was advised with regular physiotherapy for 15 days. The subject is undergoing physiotherapy treatment since last 15 days.

**On examination:** Marked swelling was present over the superior and inferior pole of the patella. There was filling of the medial and lateral aspect of the patella due to induration. There was warmth felt over the knee on palpation with tenderness over the lateral aspect and inferior pole of the Patella. On evaluation the Knee range of movements were restricted due to apprehension and pain. Special tests like Patellar compression test was performed which was positive, Crepitus cannot be elicited due to inability of the knee to be moved. Both Valgus and Varus stress test was positive may be due to pain.



FIG 1 . XRAY OF RIGHT KNEE JOINT (AP&LAT)

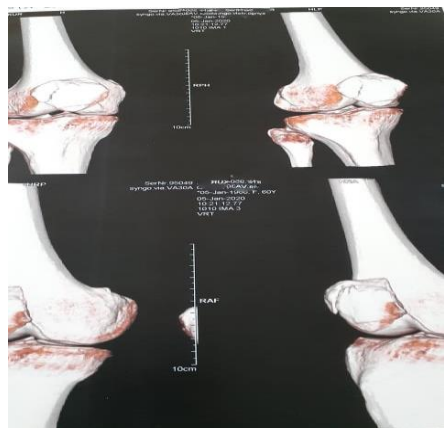


FIG 2. MDCT SCAN OF RIGHT KNEE JOINT

**Intervention :** The subject is advised for rest to the part and medication : Non-steroidal anti-inflammatory drugs, Anabolic steroids, and Antacid. The subject was also continuing Physiotherapy treatment in which the following modalities along with manual therapy is given :

Physiotherapy protocol –

Interferential therapy – 12 mins , Prog no- 14, Electrode placement : Quadripolar around the knee joint. Cryotherapy – Ice compression for 10 mins , over the anterior aspect of right knee.

Manual therapy – Active assisted exercises involving toe drag , Graduated exercises for the knee extensors involving SLR , weight cuffs and resistance band as per subjects comfort , Isometrics for the Quadriceps / hamstrings / abductors/ adductors of the hip . Stretching of Plantar flexors , Myofascial release of the IT band and hip abductors.

Treatment duration : 1 time / day , 6 days / week , 45 mins session

**Discussion:** Knee pain is a common complain given by elderly population and even by middle aged. Most of the time the cause of the knee pain is unknown. Peoples with knee pathology often complain of anterior knee pain. There is multiple cause of this knee pain. The present case study is on a very rare cause of knee pain. This knee pathology is termed as Bipartite Patella. The rare incidence of this knee pathology of 1 – 2% amongst normal population makes this disorder a very rare entity. The signs and symptoms of this disorder is similar to knee arthritis and traumatic injury so frequently this disorder is wrongly diagnosed. There are studies which states that similar defects are caused by fracture or separation of, synchondrosis between the accessory fragment and Patella.<sup>7</sup>

For a proper diagnosis a detail history, with effective examination and screening with C T scan can only detect the pathology. Bipartite patella is a congenital disorder of the Patella where the Patella fails to fuse properly due to a malformation of the ossification center. This pathology can be very well addressed with conservative treatment if accurate diagnosis is done. In our present study the patient was treated with Cryotherapy, Interferential therapy to reduce the pain and inflammation. Further the subject was addressed with manual therapy including stretching, myofascial release and graduated strengthening exercises. The result of our study is similar to the outcome of another study where rest and anti-inflammatory medication were used for 2 weeks, after 2 years of follow up the patient was found to be asymptomatic.<sup>8</sup>

The symptoms of this disorder remains asymptomatic in most of the patients throughout the life unless the area is exerted due to trauma or injury or overuse stress. Clinically differentiating the patient to finally come to the diagnose is the main aim of rehabilitation. A wrong diagnosis of the disorder can lead to further physical disability by dealing the process of rehabilitation. So the findings of this case study indicate that every patient with a knee pain should be ruled out of congenital deformities of patella including Bipartite Patella.

**Conclusion :** The present study concludes that clinician should be careful in dealing with patients having knee pains. The outcome of this case study shows that if diagnosed properly a patient with Bipartite Patella can be well managed with conservative treatment only , to gain the complete functional activity . So further it should be a protocol to rule out disorders like Bipartite Patella before starting the treatment of a painful knee.

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