

# INFRAPATELLAR FAT PAD CAUSING ANTERIOR KNEE PAIN

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## **ABSTRACT :**

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From June 1990 to March 1993. There were 30 patients came to Nakornpathom hospital with anterior knee pain symptom. These patients had no abnormal physical finding, except for click sensation at inferior pole of patella when knees were flexed and extended more than 90 degrees. All patients failed to response to conservative treatment. Arthroscopy was performed in these patients. The pathologic condition was inflammation and swollen infrapatellar fat pad that was imprinted in the patellofemoral joint when knee was flexed more than 90 degree. No other pathologic condition was found. After excision of this fat pad under arthroscopic control, all patients relieved from anterior knee pain symptom. Infrapatellar fat pad was postulated to cause anterior knee pain.

Anterior knee pain may cause from many pathologic conditions, such as patellar fracture, bipartite patella, osteochondritis dessecans of the patella, Osgood-Schlatter, jumper's knee, patellar overload syndrome, patellar dislocation/subluxation, chondromalacia patella, meniscus tear, plica, synovitis, refer pain and so on.<sup>1</sup> These conditions have specific clinical symptom and sign. But some patient came with occasional discomfort in his knee and mild pain especially when they flex and extend their knee more than 90 degree. These patients couldn't explained by the conditions that was mentioned above. Some patients improved with conservative treatment but all of them had recurrence of the symptom.

## Material and Method

From June 1990 to March 1993 Thirty patients came to us with anterior knee pain. There were 17 male patients and 13 female patients, age range from 26-46 years, average 36 years. There were 14 left knees and 16 right knees. They suffered anterior knee pain when squatting up or down stairs. Eighteen patients felt some discomfort in their knee as if something obstructed when flexed their knee. Physical examination of all patients were normal except for click sensation at inferior pole of patella when knee was extended from flexed position.<sup>2-5</sup> The X-ray was normal in all knees. Some patients could afford so we use MRI for further investigation. The result was the infrapatellar fat pad more protrude in to the patello-femoral joint when flexed the knee compare to extended knee. (figure 1-2). No other abnormal was detected from MRI. The Primary

diagnosis was fat pad syndrome. Conservative treatment was tried in all cases. The symptom was improved but recurred in all patients. Arthroscopy was performed to confirm diagnosis and treatment in all patients.

## Operation

Arthroscopy was performed in all patients. Triangular technique was used via superolateral and inferolateral approach. The inflamed and hypertrophy of infrapatellar fat pad is the only abnormality that can detect. The inflamed infrapatellar fat pad will impinge into the patellofemoral joint when patella was compressed on the top or knee was flexed. Infrapatellar fat pad was subtotally excised by rotary shaver or metzenbaum. Jone's bandage was used for one day after that patient can has full range of motion and full weight bearing. (figure 3-4)<sup>6-14</sup>

## Result

The patients were followed from 6 months to 2 years, average 8.6 months. All patients relieved from anterior knee pain and click sensation was disappeared after operation. Ten patients have anterior thigh soreness for one week. All patients have full range of motion and full weight bearing in one day after operation. All patients could have the same activity as before treatment without pain. So far no recurrence of anterior knee pain in all patient. The histopathology of the specimen is mild chronic inflammation at the rim of fat pad. No fibrosis or degeneration of fat cell. (figure 5-6)



Fig. 1

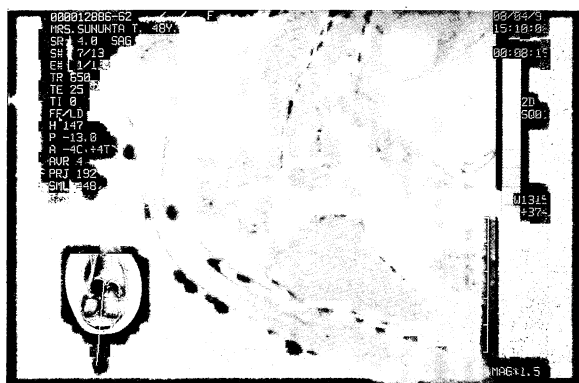


Fig. 2

MRI of the knee in extension and flexion, show that infrapatellar fat pad more protrude into patellofemoral joint when knee was flexed.

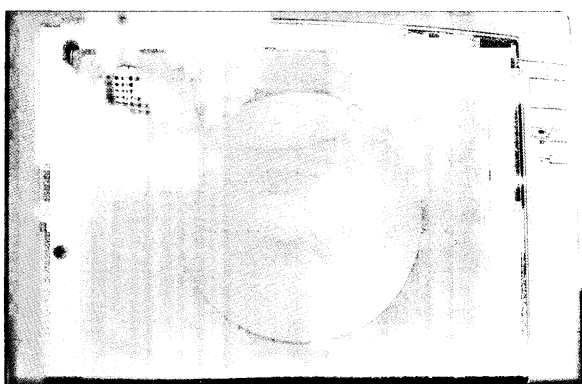


Fig. 3

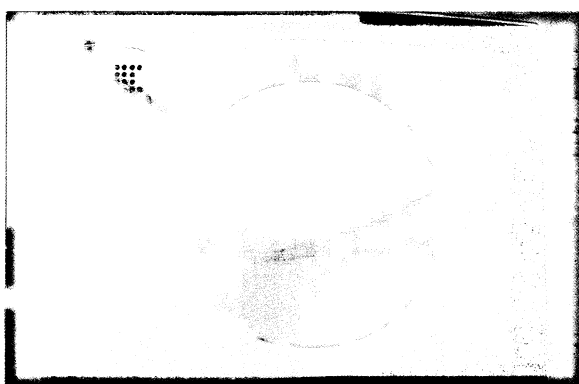


Fig. 4

Pictures from arthroscope show fat pad in patellofemoral joint (Fig. 3) and after excision (Fig. 4)

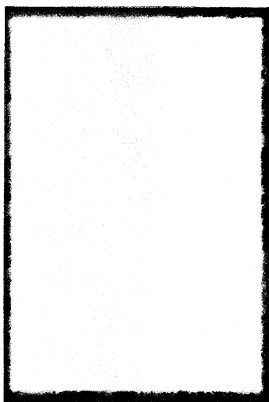


Fig. 5

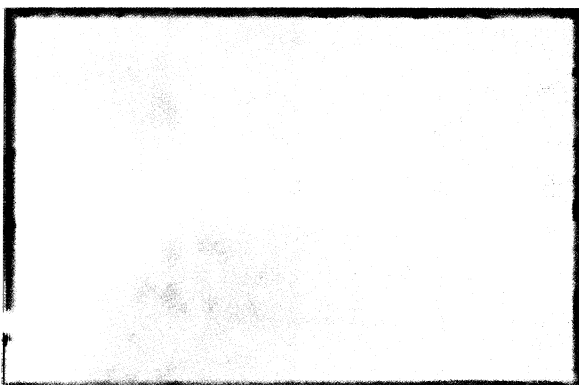


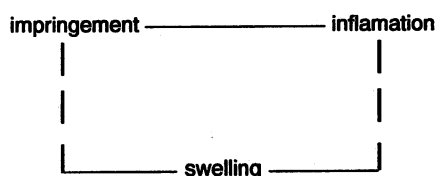
Fig. 6

Histopathological picture of fat pad that taken from the affected knee.

## Discussion

Hoffa in 1904 reported cases of anterior knee pain caused by indurated and fibrotic infrapatellar fat pad impringed in tibiofemoral joint. After that there were some report in literature of anterior knee pain caused by infrapatellar fat pad.<sup>15</sup>

The function of infrapatellar fat pad is to supply circulation to patellar tendon,<sup>16</sup> and cushion for patellar tendon. In normal condition infrapatellar fat pad dose not impringed into patellofemoral joint even flex or extend knee. But space between patellar tendon and femoral condyle is smaller when knee was flex than extend. When infrapatellar fat pad was inflamed and swelling by any cause it will protrude in to patellofemoral joint and it would be impringed in knee flex position. The vicious cycle will happen because in human being he must flex knee even in day or night. The vicious cycle will be like this.



The inflammation of fat pad may be mild to severe but most of them are mild so the patient mostly seeked medicine for himself. This visious cycle off and on when flexed knee so the inflammation process progressed into chronic process. The inflammation cell is only mononuclear cell. After excision of the imflammed fat pad that protruded into the patellofemoral joint. The vicious cycle was broken. All patients relieved from symptom in the day of

operation. All patients could have activity as before without any symptom. The result of treatment in these patients confirmed the diagnosis that anterior knee pain caused by inflammed infrapatellar fat pad. Infrapatellar fat pad shouldn't be excised totally because it will made patellar tendon avascular necrosis. So surgeon should only excised the part that protruded into patellofemoral joint.<sup>15</sup> The incidence of inflammed fat pad cause anterior knee pain in general population and how big of inflammed fat pad that cause anterior knee pain are beyond scope of this study.

## Conclusion

Thirty patients came with anterior pain that couldn't concluded to be any diagnosis and all patients failed to response to conservative treatment. After examination and investigation, the primary diagnosis was fat pad syndrome. Arthroscopy was used for confirmed diagnosis and treatment. The finding was swollen and inflamed infrapatellar fat pad. After subtotal excision of infrapatellar fat pad, all patients relieve from anterior knee pain. The follow up range from 6-24 months, no recurrence in all patients.

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