

Original Research Article

A study on the outcome of arthroscopic synovial biopsy and synovectomy in the management of chronic synovitis of the knee

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ABSTRACT

Background: Synovitis of the knee can be very difficult to treat especially when the diagnosis remains elusive. Synovitis occurs because of various causes. We assess the patients presenting to our hospital with synovitis of the knee, who underwent arthroscopic synovial biopsy and partial arthroscopic synovectomy and did a review of literature.

Methods: This retrospective study included 25 patients with chronic synovitis of the knee presenting to our institution between July 2012 to January 2016. Inclusion criteria were patients presenting with persistent swelling of the knee; not responding to conservative measures. We excluded patients who had recurrent synovitis, patients who had septic arthritis. All patients underwent Arthroscopic synovial Biopsy and partial synovectomy. Preoperative and postoperative VAS score was calculated.

Results: In n=6 patients the histopathological diagnosis was Tuberculosis, which improved with Anti tuberculous drug treatment. In n=1 patient the diagnosis was lipoma arborescens, in n=1 patient the diagnosis was plant thorn synovitis, in n=3 patient the diagnosis was Juvenile rheumatoid arthritis; all 5 patients improved with synovectomy and NSAIDS. In n=14 patients the biopsy report came as chronic non-specific synovitis, 8 of these patients did well with arthroscopic synovectomy while the other 6 had a recurrence. The average VAS score improved from 8.8- pre surgery to 4.7 post surgery.

Conclusions: Arthroscopic synovial biopsy and synovectomy gives good results in patients with chronic synovitis of the knee. It may be recommended as a treatment for chronic synovitis of the knee, which is not responding to conservative measures of treatment.

Keywords: Chronic synovitis, Arthroscopy, Biopsy, Synovectomy

INTRODUCTION

Synovitis of the knee can be very difficult to treat especially when the diagnosis remains elusive. Synovitis occurs because of various causes which include, juvenile rheumatoid arthritis, tuberculosis, gout, plant thorn synovitis, pigmented villonodular synovitis etc. Examination of synovial tissue is generally more useful than synovial fluid analysis, except for example; the

analysis of neutrophils and platelets, and studies of soluble mediators.¹ More recently there has been an increase in the investigations to study the pathological changes in the synovium, because of development of immunohistological methods, polymerase chain reaction and in-situ hybridization.^{1,2} Synovial tissue can be obtained either by open surgery, by doing a blind needle biopsy, or at arthroscopy. Arthroscopic synovial biopsy is a safe and a well tolerated procedure, and gives adequate

tissue sample compared to needle biopsy, but the drawback is that it is more complicated and expensive.^{1,2}

Persistent chronic synovitis of the knee can be managed with either open or arthroscopic synovectomy. It becomes more difficult when the biopsy report comes as chronic non-specific synovitis. Chronic nonspecific synovitis has a high recurrence rate with arthroscopic synovectomy alone. We assess the patients presenting to our hospital with synovitis of the knee, who underwent arthroscopic synovial biopsy and partial arthroscopic synovectomy and did a review of literature.

METHODS

This retrospective study included 25 patients with chronic synovitis of the knee presenting to Mahatma Gandhi Medical College and Research Institute between July 2012 to January 2016. Inclusion criteria were patients presenting with persistent swelling of the knee; not responding to conservative measures. We excluded patients who had recurrent synovitis, patients who had septic arthritis. Patients who had concomitant ligament injuries were also excluded. All the patients underwent diagnostic arthroscopy and the findings noted in the case sheets were recorded. All patients underwent arthroscopic synovial biopsy and specimen was sent for histopathological examination. All the patients also underwent a partial arthroscopic synovectomy at the same time. The biopsy reports were collected and treatment was started according to the diagnosis. The patients were then followed up to assess recurrences if any for a minimum period of 1 year. The patients were also assessed for pain using the visual analog scale. Statistical analysis was done using the paired t test using the SPSS software. P<0.05 will be considered as significant.

RESULTS

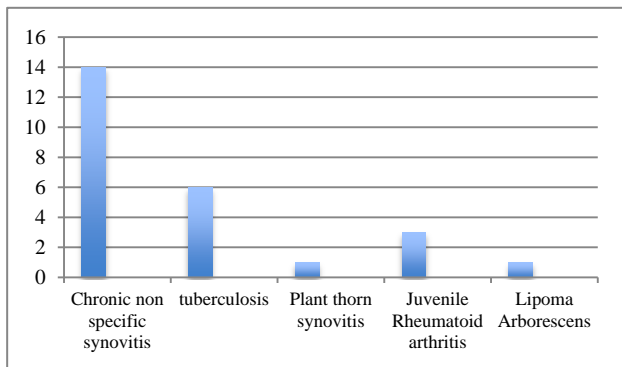


Figure 1: Distribution of various type of synovitis.

The patient’s age varied from 4 to 58 years. There were 17 males and 8 females. Out of the 25 patient’s, in n=6 (Figure 1) patients the histopathological diagnosis was tuberculosis, (Figure 2) which improved with anti tuberculous drug treatment. In n=1 patient the diagnosis

was lipoma arborescens, his symptoms improved with synovectomy. In n=1 patient the diagnosis was plant thorn synovitis he improved with arthroscopic synovectomy. In n=3 patient the diagnosis was juvenile rheumatoid arthritis; (Figure 3) also they had characteristic rice bodies (Figure 4) in the knee seen arthroscopically, they improved with synovectomy and NSAIDS. The mean follow up was 15 months (range of 12- 36).

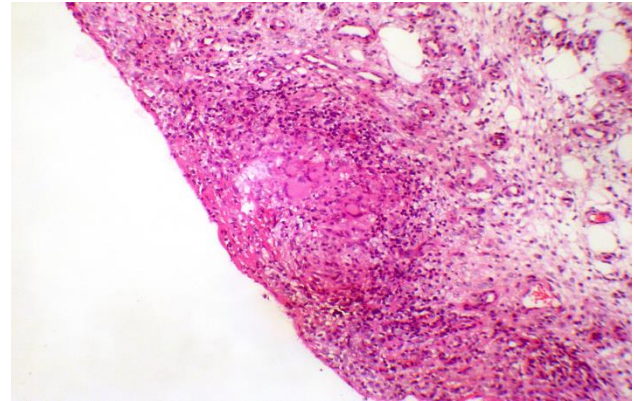


Figure 2: Granuloma with epithelioid cells with central caseation necrosis.

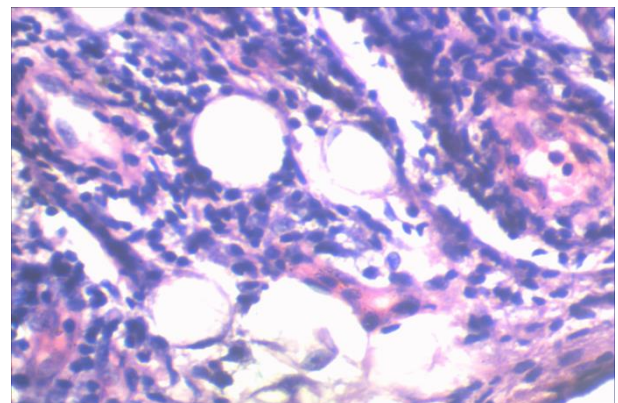


Figure 3: Dense lymphocytic infiltrate suggestive of Rheumatoid arthritis.



Figure 4: Arthroscopic picture of rice bodies in a patient diagnosed as rheumatoid arthritis.

In n=14 patients the biopsy report came as Chronic non-specific synovitis, (Figure 5) 8 of these patients did well with arthroscopic synovectomy and had no recurrence. In the remaining 6 patients; 5 patients had a recurrence of knee swelling following arthroscopic synovectomy. 1 patient came back with septic arthritis, which was treated with open arthrotomy.

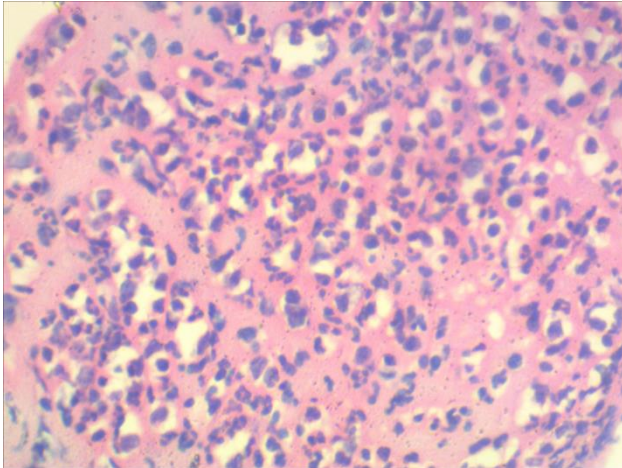


Figure 5: Acute on chronic synovitis- slide showing polysegmented nuclei with round lymphocytes.

All patients had an improvement in the visual analog scale from pre surgery to post surgery; except the patients who had recurrence. The average VAS score improved from 8.8 pre surgery to 4.7 post surgery. This was found to be statistically significant with a two tailed p value <0.0001.

Our results showed that we had good results with arthroscopic synovectomy in 72% of our patients; except in 5 cases of chronic non-specific synovitis where we had recurrence.

DISCUSSION

Synovitis of the knee in our region was due to various causes. Chronic non specific synovitis was the most common cause in our study. We had good results in 72% of our patients.

Singhal et al in their study of 50 cases of synovitis of the knee found that rheumatoid (n=14, 28%) was the most common pathology followed by tubercular (n=13, 26%) and chronic nonspecific synovitis (n=10, 20%).³ In our study we found chronic non-specific synovitis (n=14) to be the most common cause followed by Tuberculosis (n=6).

Akmese et al noted that chronic non-specific synovitis has a high recurrence rate with arthroscopic synovectomy or radiosynoviorthesis as a separate procedure.⁴ They did a study in 14 patients where they combined arthroscopic synovectomy with radiosynoviorthesis and they had good results so they concluded that arthroscopic subtotal

synovectomy and radiosynoviorthesis can be an effective treatment modality for chronic non-specific synovitis of the knee. We had a recurrence in 6 patients treated with arthroscopic synovectomy alone in our study. Addition of adjuvant procedures like radiosynoviorthesis may reduce recurrence.

Kuzmanova et al studied the correlations between arthroscopic findings and synovial membrane histology in patients with rheumatoid synovitis of the knee joint and found that the agreement between arthroscopic and histological diagnosis of the synovitis is high but not an absolute correlation.⁵ The two methods are not contradictory and should be used concurrently in patients with chronic rheumatoid synovitis. In our study also we were able to correlate the arthroscopic findings and the histological picture in most of our patients.

Latosiewicz et al studied the clinical significance of arthroscopic synovial biopsy in the diagnosis of knee synovitis, they did an arthroscopic biopsy in 82 patients.⁶ In 16 cases of specific synovitis; clinical diagnosis was always confirmed by histopathology. In 66 patients with nonspecific synovitis lymphoplasmatic and serofibrous type prevailed. In 8 cases with dominant nonspecific synovitis histological features of specific synovitis have been also found and correct clinical diagnosis has been established. In our series out of 25 patients 11 had a definite diagnosis and appropriate treatment was started along with synovectomy, in 14 patients the diagnosis was chronic nonspecific synovitis.

Ayral in their study of 23 patients (28 knees) who underwent arthroscopic assisted synovectomy found that 50% of the patients had rheumatoid arthritis. They found that except in one patient with severe arthritis, arthroscopic synovectomy produced statistically significant improvements with regards to pain (visual scale), function (Lequesne's index), range of flexion, amount of joint fluid and knee circumference. Results were rated good to very good by 71% of the patients and 61% of the physicians. They concluded that arthroscopic synovectomy is effective and safe but more burdensome and expensive than osmic acid or radiation synovectomy. In our study in 3 patients the diagnosis was juvenile rheumatoid arthritis. We also had good results in 72% of our patients.

Patients with a definitive histopathological diagnosis usually do well with arthroscopic synovectomy and drugs to treat the cause of synovitis. In some patients with a diagnosis of chronic non-specific synovitis, despite doing an arthroscopic synovectomy came back with recurrent episodes of knee swelling and synovitis.

Patients with chronic nonspecific synovitis need to be thoroughly investigated by combining biopsy with immunofluorescence studies to come to a proper diagnosis. A plain histopathological examination may not always give the correct diagnosis; immunohistochemistry

may improve the chances of making a proper diagnosis. Assessment of factors like TNF alpha to rule out rheumatoid arthritis etc. can be added to do a thorough evaluation to find the cause behind the synovitis.

Radiosynoviorthesis may be added as an adjunct to arthroscopic synovectomy in patients with chronic non-specific synovitis where facilities are available.

CONCLUSION

Arthroscopic synovial biopsy and synovectomy gives good results in patients with chronic synovitis of the knee. It may be recommended as a treatment for chronic synovitis of the knee, which is not responding to conservative measures of treatment.

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Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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