



## Non-Specific Synovitis of the Knee in Children: Arthroscopic Management

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### Abstract

Chronic non-specific synovitis is a recurrent proliferative lesion which usually involves a single joint. The main symptoms are pain and swelling. A definitive diagnosis is based on histopathologic findings. This synovial sample is usually obtained by trocar biopsy in adults and more challenging in children and sometimes unachievable. Knee arthroscopy could be performed for biopsy and local treatment (synovectomy).

We report a case of a 4 year old child with no medical history complaining from knee pain, stiffness without any relief after symptomatic treatment. The physical exam showed a mild right limping, a knee swelling without redness or fever. Child was first admitted in rheumatology department for investigation. X ray showed no bone lesion and all biological investigation was negative. MRI revealed a non specific synovial hypertrophy with articular rice bodies. After failure in trocar biopsy, knee arthroscopic showed a whitish budding synovial lesion with free joint debris. This lesion was excised and histological exams revealed a non-specific synovitis, with mononuclear cells and fibrinous axis involving synovial bangs. Bacteriological analysis was negative. Non steroid anti-inflammatory was given in post operative. At last follow up child recover from knee pain with no swelling and full range of motion Arthroscopy, even in children, remains an alternative for managing a non specific arthritis reducing open joint morbidity.

**Keywords:** Arthritis; Child; Knee; Synovitis; Arthroscopy

### Introduction

Non-specific synovitis is the most common type of arthritis [1]. The main symptoms are pain and swelling. A definitive diagnosis is based on histopathologic findings. Needle guided biopsy is not always reliable and surgical options leads often to stiffness. Arthroscopic biopsy could help in diagnosis.

The purpose of this clinical observation was to highlight the role of the arthroscopy in the management of localized nonspecific synovitis of the knee in children and their correlation with MRI images.

### Patient Presentation

A 4-year-old child with no medical history (no tuberculosis contagion) seen at our outpatient department for intermittent

right knee pain and swelling which evolves for 3 months and not relieved with symptomatic treatment.

The child was correctly vaccinated and symptoms began insidiously with no trauma or infections. The physical exam showed a mild right limping, a knee swelling without redness or fever. Knee x ray showed no bone lesion and the child was admitted in rheumatology department for investigation.

Temperature at 37°, no stiffness and no other locations. Biological markers were normal (ESR= 10, CRP= 11 mg/l, WBC= 7500/mm<sup>3</sup>) and also immune markers (ANN, Rhu Fact.). Infectious assessment for common or specific bacteria (search for BK in the sputum, tuberculin test, Quanti-FERON-TB Gold test, wright test) came back negative.

Knee x-ray showed knee effusion with no bone or soft tissue lesion (Figure 1). MRI revealed a synovitis with articular rice bodies none enhancing on gadolinium sequences and with no other associated lesions (Figure2).



Figure 1: Knee x-ray: Effusion with no bone lesions

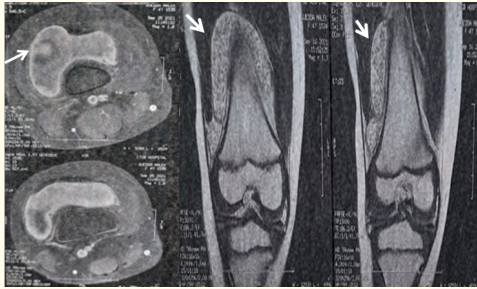


Figure 2: MRI: Synovitis of the right knee with 'rice bodies' hypointenseT1 and T2

Fluid joint analysis was not contributive and trocar biopsy not reliable. Knee arthroscopy was then indicated in order to have an additional view of lesions and to perform biopsy. Arthroscopic exploration showed a whitish budding synovial lesion with free joint rice bodies (Figure 3).

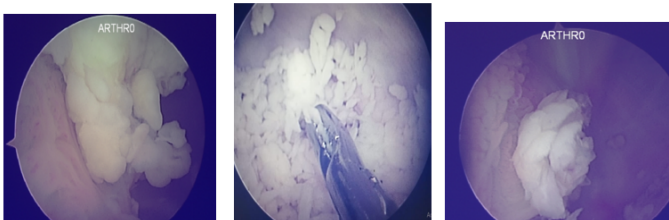


Figure 3: Arthroscopic view with synovial hypertrophy and rice bobodies

A synovial biopsy was performed during the arthroscopy confirming nonspecific synovitis (Figure 4). Synovial tissues were removed using an arthroscopic shaver. Non steroid anti inflammatory was given in post operative. At last follow up child recovers from knee pain with progressive decreasing of swelling and full range of motion. As there may be o recurrence, the child will be seen regularly.

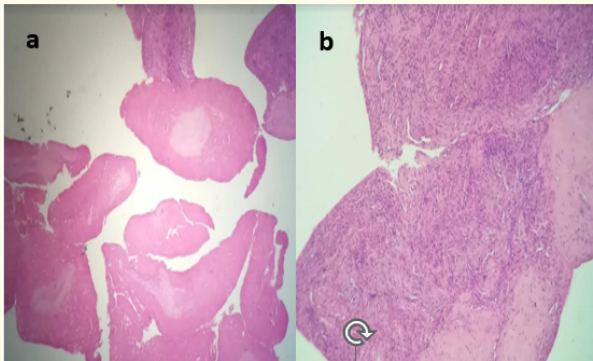


Figure 4: a- Hypertrophic synovial bangs with fibrinous axis  
HEX100  
b- Dense mononuclear infiltrate (lymphocytes, plasma cells) HEX250

Discussion

Chronic non-specific synovitis incidence varies from 47 to 71% in different studies [2]. Synovitis is the main factor leading to osteoarthritis [3]. Our case showed diagnosis difficulties with initial negative biological investigations. MRI was contributive but none specific with rice bodies found particularly in tuberculosis [4]. Even after needle biopsy, septic arthritis couldn't be excluded particularly tuberculosis since Tunisia is an endemic country. Knee arthroscopy was very helpful showing synovial lesion, performing biopsy and partial synovectomy. Excision of pathological synovitis should be performed when not improved after a conservative treatment.

In recent years, arthroscopy replaced open synovectomy for many advantages [5,6]. However, the recurrence rate of synovitis was reported to be higher in a group treated by arthroscopy rather than open surgery. The reason for this high recurrence rate is the insufficient removal of the synovial membrane [7]. Following arthroscopy, according to Roch-Bras., *et al.* [8], the long-term recurrence rate was 29.3%. Klug., *et al.* [9] performed arthroscopy on 93 knees of 81 patients and reported good outcomes in 76.4% of patients after a mean follow-up of 33 months. Gibbons., *et al.* [10] reported that joint good outcomes in 73% of 25 knees after at least 6

years of follow-up after arthroscopy was performed for nonspecific synovitis. On the other hand, Matsui, *et al.* [11] and Oztemür, *et al.* [12] compared arthroscopy with open synovectomy and found no differences. Arthroscopy leads to less muscle atrophy, minimal stiffness, faster recovery, and better cosmetic results.

Arthroscopic procedure, unlike open surgery, is less invasive and could be considered as an alternative even in children.

## Conclusion

Knee arthroscopy even in children is effective helping resolving diagnosis difficulties in non specific arthritis. In fact this mini invasive procedure allows both biopsy and excision of synovial lesions and avoids open surgery morbidities.

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