



Arthroscopic management of recurrent synovial chondromatosis of the hip: a case report

Aashutosh Chaudhary, MBBS^a, Amartya Dahal, MBBS^{a,*}, Rohit Shrestha, MS^b, Sushant Kumar Khadka, MS^a, Sagar Maharjan, MS^b, Ashkal Basi, MS^a, Shreedhar Prasad Acharya, MBBS^c

Introduction and importance: Synovial chondromatosis is a rare condition characterized by the chondral proliferation of synovium forming loose bodies which can lead to pain, swelling, and decreased range of movement of the affected joint.

Case presentation: Here the authors report a case of eighteen years lady with recurrent hip synovial chondromatosis who was treated previously with hip arthrotomy and loose bodies removal and now she underwent arthroscopic loose bodies removal with partial synovectomy.

Clinical discussion: In comparison to arthrotomy of the hip, arthroscopic management is a minimally invasive surgery that is associated with decreased postoperative pain, earlier improvement in range of motion, a shorter course of rehabilitation, and overall lower morbidity.

Conclusion: Thus, the authors recommend arthroscopic removal of the loose bodies and partial synovectomy for the management of synovial chondromatosis of the hip.

Keywords: arthroscopy, case report, hip, synovial chondromatosis

Introduction

Synovial chondromatosis is a rare condition characterized by metaplasia of synovium resulting in the chondral proliferation of synovium forming loose bodies which can lead to pain, swelling, and decreased range of movement of the affected joint^[1]. The incidence of synovial chondromatosis is one per 100 000^[2]. It is mostly monoarticular with the knee joint being the most commonly affected followed by the hip^[3]. It can also involve any joint including the hip, ankle, wrist and, temporomandibular joint^[4]. MRI can be used for definitive diagnosis, which can detect loose bodies in the early stages^[5]. Without treatment, joint deterioration and secondary osteoarthritis might occur^[6].

This condition is usually managed by surgical removal of loose bodies followed by synovectomies. Arthroscopic procedures are popular as compared with conventional open surgeries for the inherent advantages of arthroscopic procedures being minimal

HIGHLIGHTS

- Synovial chondromatosis of the hip is a rare condition.
- The mainstay of treatment is surgery but does carry a risk of recurrence.
- Arthroscopic management of synovial chondromatosis of the hip is associated with shorter rehabilitation and lower morbidity.

invasive procedures hence less morbidity and early rehabilitation of the patient^[4,7]. Here we report a case of 18-years-old lady with recurrent hip synovial chondromatosis who was treated previously with hip arthrotomy and loose bodies removal and now she underwent arthroscopic loose bodies removal with partial synovectomy of the hip. The work has been reported in line with the CARE criteria^[8].

Case presentation

An 18-years-old lady presented to tertiary care centre with pain over the left hip and difficulty in walking for 5 months. The pain aggravated on flexion of the hip and relieved on extension. There was no swelling over the limb. The patient had a similar history of pain over the left hip 5 years back with a diagnosis of primary synovial chondromatosis and hip arthrotomy with synovectomy and loose body removal were done. On examination of the hip joint, a scar mark of about 10 cm was present over the left buttocks. The patient had an antalgic gait with decreased range of motion of the hip in all directions.

X-ray and MRI of the hip were performed. MRI showed multiple loose bodies and hyperintense hip joint with increased joint space of the left hip (Fig. 1). The patient underwent

^aKathmandu University School of Medical Sciences, ^bDhulikhel Hospital, Kathmandu University Hospital, Dhulikhel and ^cKathmandu Medical College, Sinamangal, Nepal
Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.

*Corresponding author. Address: Kathmandu University School of Medical Sciences, Dhulikhel, 45210, Nepal. Tel.: +977 980 439 5036. E-mail: amartya.dhl12@gmail.com (A. Dahal).

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Annals of Medicine & Surgery (2023) 85:4071–4074

Received 6 January 2023; Accepted 10 June 2023

Published online 28 June 2023

<http://dx.doi.org/10.1097/MS9.0000000000000999>

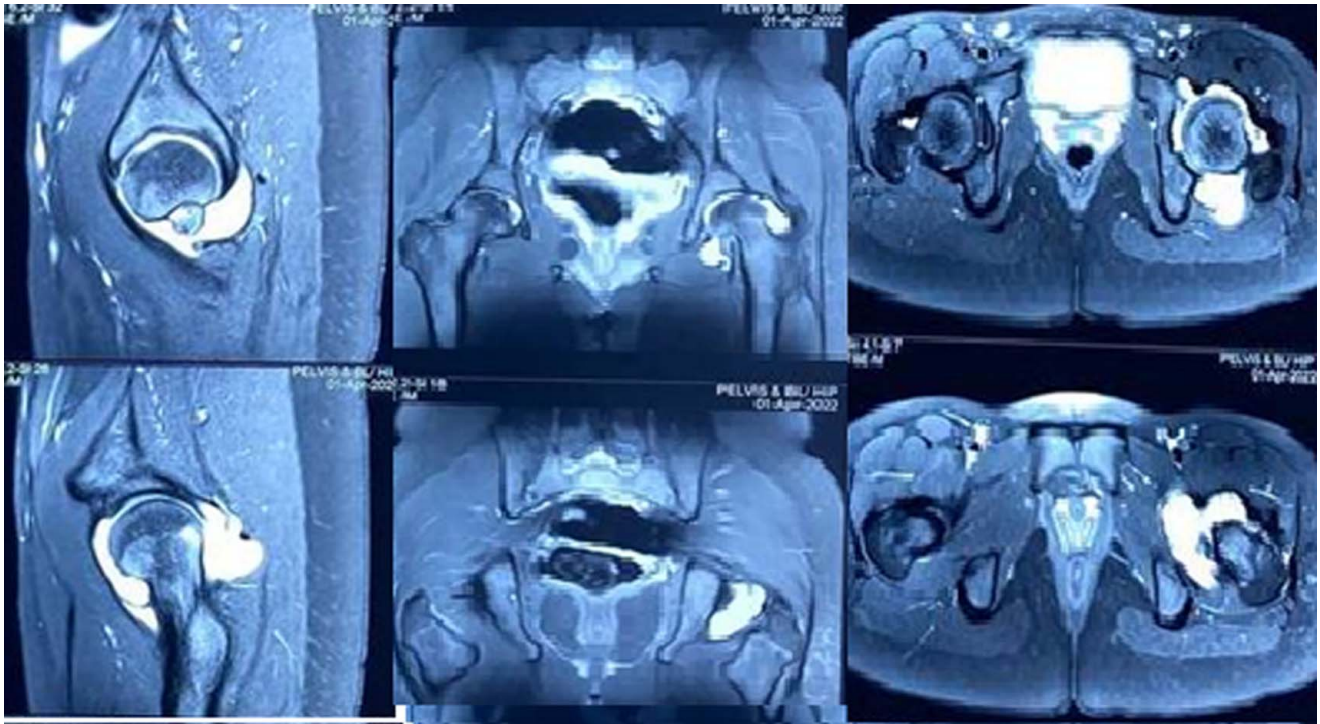


Figure 1. MRI in sagittal, coronal and axial view showing hyperintense multiple nodules in the hip joint with synovial thickening, mild widening of left hip joint scalloping.

arthroscopic removal of the loose bodies, debridement, and partial synovectomy. Under general anaesthesia, the patient was placed in the supine position on traction table with the left lower limb in traction and 10–15° of abduction and slight internal rotation. A surface landmark was made. Under C-Arm guidance, anterolateral portal was made 2 cm anterior and 2 cm superior to the antero-superior border of the greater trochanter, pointing towards the hip joint (Figs. 2 and 3). Serial dilation of the portal

was done until a 4-mm diameter 70° scope was inserted in the hip joint. The second working portal (anterior portal) was made at the intersection of perpendicular line drawn from tip of the greater trochanter to another line drawn distally from the anterior superior iliac spine (Figs. 2 and 3).

Diagnostic arthroscopy was done and larger loose bodies were removed with the help of a grasper. Smaller loose bodies were rinsed out with a cannula and suction. Postero-lateral portal was made about 1 cm posterior and 1 cm proximal to the posterior superior tip of greater trochanter (Fig. 2). Further remaining loose bodies not accessible from the anterior portal were removed. Finally, synovial tissue was removed as much as reachable, with the help of a motorized shaver and a radio frequency ablation device. Complete removal of loose bodies was ensured (Fig. 4) and portal entry sites were sutured with polypropylene 3–0. The patient was followed up regularly and at the latest follow-up at 12 months, she had no pain and a full range of motion of the hip was obtained with the modified Harris Hip Score of 92.

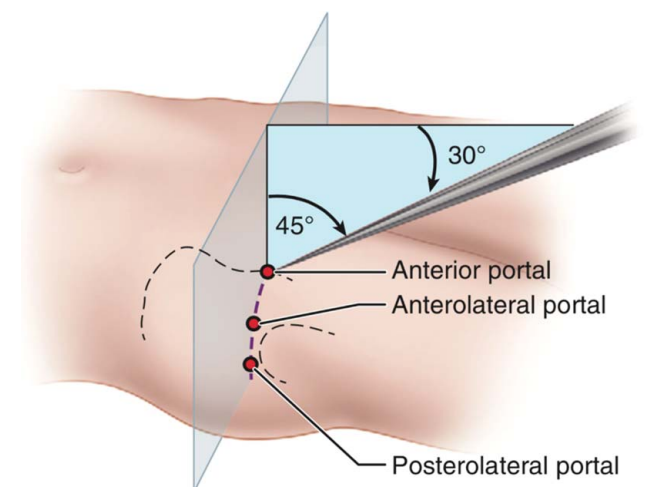


Figure 2. Standard portals for hip arthroscopy (Reproduced from Frederick M. Azar, James H. Beaty, S. Terry Canale: Campbell Operative Orthopedics, 13th edition, 51).

Discussion

Treatment options for synovial chondromatosis include conservative management and open or arthroscopic surgical removal of loose bodies with or without synovectomy^[9,10]. While managing patients with synovial chondromatosis, vigilant surveillance is required for reoccurrence and rarely malignant transformation^[11]. Recurrence following surgical management of synovial chondromatosis of the hip has been reported to be between 0 and 60%^[4]. Conservative management with non-steroidal anti-inflammatory drugs and cryotherapy can be attempted which could decrease pain and swelling; however,

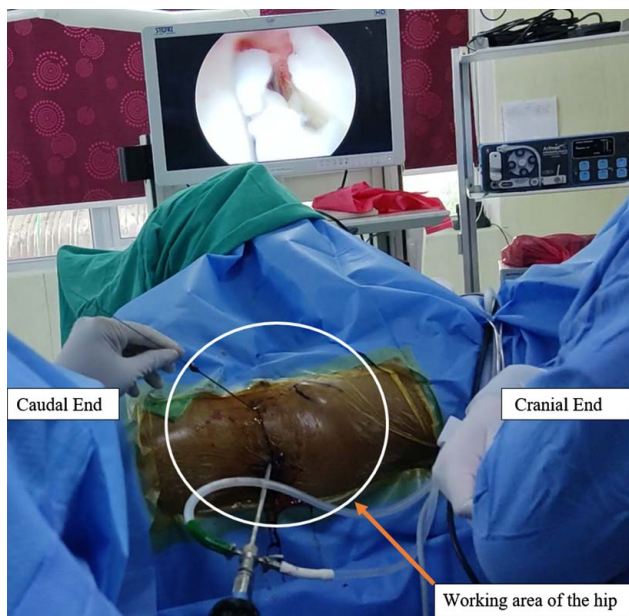


Figure 3. Hip arthroscopy: anterior working portal and anterolateral viewing portal.

there may be no significant improvement of the range of motion or decrease in the risk of recurrence^[4,10]. So, the only definitive management of synovial chondromatosis is open or arthroscopic removal of loose bodies.

Arthroscopic management of synovial chondromatosis of the hip can be a challenging treatment option so some authors may prefer conventional open surgery. However, traditional open surgery is associated with increased morbidity, iatrogenic fracture, increased risk of infection, significant surgical trauma, and thus prolonged rehabilitation^[7,12]. While comparing open and arthroscopic management of synovial chondromatosis, there was no significant difference in the recurrence rate^[9,13]. However, generally arthroscopic management is associated with lower



Figure 4. Loose bodies removed arthroscopically from the hip joint.

morbidity, earlier improvement of range of motion, shorter rehabilitation and decreased postoperative pain and overall significant improvement of clinical outcome^[4,7]. In a case series published by Boyer and Dorfmann on arthroscopic management of hip synovial chondromatosis of 111 patients, they found hip arthroscopy to be beneficial for patients as 63 (56.8%) of these 111 patients showed good or excellent outcomes^[13]. In a study conducted by Murphy and colleagues, 42% of patients had severe loss of range of motion following open surgery while Coolican and Dandy reported no loss of range of motion in 18 patients following arthroscopic management of synovial chondromatosis of the hip^[14,15].

Synovectomy has been believed to prevent recurrence where the active metaplastic synovium is removed^[4,16]. In a study conducted on thirteen patients of synovial chondromatosis of the knee by Ogilvie-Harris and Saleh, five were managed with loose body removal alone and eight were managed with loose body removal with total synovectomy^[16]. None of the patients managed with loose body removal with total synovectomy developed recurrence while three out of five patients managed with loose body removal alone developed recurrence^[16]. In cases of synovial chondromatosis of the hip, partial arthroscopic synovectomy can be performed^[9]. Partial synovectomy in managing hip chondromatosis, as compared with complete synovectomy, has been reported to have a slightly higher risk of recurrence but is associated with a lower rate of complication^[17].

However, in some studies, loose bodies removal alone has been shown to provide a definitive result with relief of symptoms with no significant difference in recurrence as compared with loose bodies removal with synovectomy^[18]. The rate of recurrence following loose body removal has been reported between 3 and 60% while recurrence following total synovectomy has been reported to be between 0 and 7.1%^[4,11]. But there are no conclusive studies showing a definitive advantage of synovectomy in preventing recurrence. However, synovectomy facilitates in visualization of the intra-articular structures and also facilitates the removal of loose bodies without any additional complication or surgical time^[4].

Conclusion

Synovial chondromatosis of the hip is a rare benign condition that is treated surgically but does carry a risk of recurrence. At present, there is no conclusive evidence to select the best modality of treatment in order to prevent recurrence. However, as compared with arthrotomy of the hip, arthroscopic management is a minimally invasive surgery, which is associated with decreased postoperative pain, earlier improvement in the range of motion, shorter course of rehabilitation and overall lower morbidity. Thus we recommend arthroscopic removal of the loose bodies and partial synovectomy for the management of synovial chondromatosis of hip.

Ethical approval

Patient anonymity is maintained throughout this manuscript, and consent was obtained for publication from the patient. Ethical approval was not required as we are dealing with a single patient in this case report and as per our Institutional Review Committee (IRC), we don't require approval for case reports.

Consent

Written informed consent was obtained from the patient for publication and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Source of funding

No sources of funding.

Author contribution

A.C. and A.D.: manuscript writing and editing. R.S.: surgical procedure, patient care, manuscript writing. S.K.K., S.M., A.B., and S.P.A.: manuscript editing.

Conflicts of interest disclosure

All authors declare that they have no conflicts of interest.

Research registration unique identifying number (UIN)

NA.

Guarantor

Dr. Rohit Shrestha.

Data availability statement

Research data associated with case report are available.

Provenance and peer review

Not commissioned, externally peer-reviewed.

References

- [1] Milgram JW. Synovial osteochondromatosis: a histopathological study of thirty cases. *J Bone Joint Surg Am* 1977;59:792–801.
- [2] Robinson D, Hasharoni A, Evron Z, *et al.* Synovial chondromatosis: the possible role of FGF 9 and FGF receptor 3 in its pathology. *Int J Exp Pathol* 2000;81:183–9.
- [3] McKenzie G, Raby N, Ritchie D. A pictorial review of primary synovial osteochondromatosis. *Eur Radiol* 2008;18:2662–9.
- [4] Neumann JA, Garrigues GE, Brigman BE, *et al.* Synovial chondromatosis. *JBJS Rev* 2016;4:e2.
- [5] Giancane G, Tanturri de Horatio L, Buonomo PS, *et al.* Swollen knee due to primary synovial chondromatosis in pediatrics: a rare and possibly misdiagnosed condition. *Rheumatol Int* 2013;33:2183–5.
- [6] Ackerman D, Lett P, Galat DD, *et al.* Results of total hip and total knee arthroplasties in patients with synovial chondromatosis. *J Arthroplasty* 2008;23:395–400.
- [7] Zhang X, Gao G, Wang J, *et al.* Clinical outcomes after arthroscopic treatment of synovial chondromatosis in the hip. *CARTILAGE* 2021;13: 1324S–30S.
- [8] Riley DS, Barber MS, Kienle GS, *et al.* CARE guidelines for case reports: explanation and elaboration document. *J Clin Epidemiol* 2017;89: 218–35.
- [9] Marchie A, Panuncialman I, McCarthy JC. Efficacy of hip arthroscopy in the management of synovial chondromatosis. *Am J Sports Med* 2011;39: 126–31.
- [10] McFarland EG, Neira CA. Synovial chondromatosis of the shoulder associated with osteoarthritis: conservative treatment in two cases and review of the literature. *Am J Orthop (Belle Mead NJ)* 2000;29:785–7.
- [11] Murphey MD, Vidal JA, Fanburg-Smith JC, *et al.* Imaging of synovial chondromatosis with radiologic-pathologic correlation. *RadioGraphics* 2007;27:1465–88.
- [12] Rath E, Amar E, Doron R, *et al.* Hip arthroscopy for synovial chondromatosis: tips and tricks. *Arthrosc Tech* 2014;3:e709–12.
- [13] Boyer T, Dorfmann H. Arthroscopy in primary synovial chondromatosis of the hip. *J Bone Joint Surg Br Vol* 2008;90-B:314–8.
- [14] Murphy FP, Dahlin DC, Sullivan CR. Articular synovial chondromatosis. *JBJS* 1962;44:77–86.
- [15] Coolican MR, Dandy DJ. Arthroscopic management of synovial chondromatosis of the knee. Findings and results in 18 cases. *J Bone Joint Surg Br* 1989;71:498–500.
- [16] Ogilvie-Harris DJ, Saleh K. Generalized synovial chondromatosis of the knee: a comparison of removal of the loose bodies alone with arthroscopic synovectomy. *Arthroscopy* 1994;10:166–70.
- [17] Lim S-J, Chung H-W, Choi Y-L, *et al.* Operative treatment of primary synovial osteochondromatosis of the hip. *JBJS* 2006;88:2456–64.
- [18] Shpitzer T, Ganel A, Engelberg S. Surgery for synovial chondromatosis: 26 cases followed up for 6 years. *Acta Orthop Scand* 1990;61:567–9.