



Original Research Article

Evaluation and Management of Infection Following Knee Arthroscopy

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ABSTRACT

Introduction: Knee arthroscopy is one of the most commonly performed orthopaedic surgery worldwide now a days, as it has been associated with faster recovery and minimum complications. Like every operative procedure, knee arthroscopy has been linked with various complications, infection being uncommon but potentially devastating complication. We carried out this study to evaluate incidence of infection following knee arthroscopy and their management.

Methods & Material: Total 213 patients with mean age 37.4 years (19years-46 years), 147 male and 66 females undergone various knee arthroscopy surgeries. After arthroscopy all patients were observed and followed for development of any sign of infection. Infection was considered when patient presented with fever, erythema, effusion, pain at stitch-line and painful knee movement. Infection was further confirmed by positive knee aspirate along with elevated blood cell counts, erythrocyte sedimentation rate and C reactive protein.

Results: Incidence rate of intra-articular infection was 0.9% while that of extra-articular infection following knee arthroscopy was 1.4% and overall incidence rate of infection was 2.3%. Total 5 patients developed infection. Out of five, two patients developed septic arthritis.

Conclusion: Infection following arthroscopy is a serious complication. Septic arthritis can be treated by either arthroscopically or open. We prefer open arthrotomy for removal of all debris and infected synovium tissue. Extra-articular infection should be treated by removal of pus and secondary re-suturing of wound.

Key-words: Knee arthroscopy, Infection, Septic arthritis

INTRODUCTION

Knee arthroscopy is one of the most commonly performed orthopaedic surgery worldwide now a days, as it has been associated with faster recovery and minimum complications. Incidence of arthroscopic surgeries is increasing day by day because of increase in sports injuries as well as increase in public awareness regarding arthroscopic surgeries. Every

operative procedure has its own complication, though knee arthroscopy is safer procedure but it has been linked with various complications. Reported complications includes infection, haemarthrosis, thromboembolism, adhesions, effusions, fracture, local wound healing, nerve injury, Complex Regional Pain Syndrome and instrument failure. (1-3)
Overall complication reported following

knee arthroscopy varies from .8% to 8.2%. (1-5) Infection following knee arthroscopy is rare but potentially devastating complication. Reported incidence of infection varies from 0.08% to .8%. (1-6) We carried out this study to evaluate incidence of infection following knee arthroscopy and their management, in our tertiary care institute.

MATERIALS & METHODS

This prospective study conducted on 213 patients underwent knee arthroscopy between June 2012 to December 2013. Total 213 patients with mean age 37.4 years (19years-46 years), 147 male and 66 females were enrolled. Total 213 patients underwent various knee arthroscopy surgeries as depicted in table 1. All necessary investigations pertaining to their surgical fitness were performed. Diagnosis was confirmed clinically as well as radiologically by X-rays and MRI. All patients underwent knee arthroscopy as an elective procedure. All arthroscopic surgeries were performed by senior author. After arthroscopy all patients were observed and followed. After first stitch-line dressing at third day, patients were discharged, if they do not have any surgical or medical complication. Patients were called on tenth day in outdoor department for stitch removal. Patients were advised for rehabilitation program as per the procedure done. Patients were further followed at 4week than at four weekly intervals for observation of development of any sign of infection. Infection was considered when patient presented with fever, erythema, effusion, pain at stitch-line and painful knee movement. Infection was further confirmed by positive knee aspirate along with elevated blood cell counts, erythrocyte sedimentation rate and C reactive protein. Patients with infection were divided into two groups, first with intra-articular infection developing

septic arthritis and second with extra-articular infection developing local wound abscess, pus under stitches.

Table.1 Distribution of patients undergoing various arthroscopic knee surgeries

Procedure	No of patient
ACL Reconstruction	73
PCL Reconstruction	35
Meniscal Repair/Menisectomy	37
Multi-ligament reconstruction plus meniscal repair/Menisectomy	22
Synovectomy	29
Chondroplasty	8
Medial Patellofemoral Lig.	6
Arthrolysis	3
	Total(n=213)

RESULTS

In our study we observed incidence rate of intra-articular infection was 0.9% while that of extra-articular infection following knee arthroscopy was 1.4% and overall incidence rate of infection was 2.3%. Total 5 patients developed infection. Out of five (Table.2), two patients developed septic arthritis and rest developed pus locally under stitches. Out of two patients with septic arthritis, one patient had developed after undergoing revision ACL surgery and another one after synovectomy. Both of the patients were treated by open arthrotomy, lavage, suction drainage and extended course of antibiotics. Both of the patients at the end of recent follow-up had terminal restriction of range of movement. Rest three patients with extra-articular infections, were treated by removal of stitches, debridement, resuturing of wound and extended antibiotics. All patients presented within ten days of surgery and recovered completely after debridement though they required longer duration of hospital stay.

Table.2 Pattern of Infection after arthroscopic knee surgery

Patient developing Infection	Type	Procedure
Total(n=5)	Intra-articular (n=2)	Revision ACL (n=1)
		Synovectomy (n=1)
	Extra-articular (n=3)	Multi-ligament repair (n=2)
		Arthrolysis (n=1)

DISCUSSION

Infection following arthroscopy is uncommon but it has been reported as most common complication, Sherman et al ⁽³⁾ reported 0.1%, DeLee ⁽⁴⁾ showed 0.08%, Sazler et al ⁽⁵⁾ reported .84%, Armstrong et al ⁽⁶⁾ showed .42% and D'Angelo et al ⁽⁷⁾ showed 0.23% total infection rate in their studies. In our series, we observed 2.3% total incidence of infection, which is higher than other reported series because of lesser no of subjects in our study. In our series patient developing septic arthritis after revision ACL probably because patient had previous knee surgery and per-operative it took longer time for surgery. Patient developed persistent fever from second post-operative day, on examination temperature over knee was raised, effusion was present and movements of knee were also painful. Haematological reports showed elevated cell counts, raised ESR and CRP. On aspiration frank pus was aspirated. Second patient, who developed septic arthritis following synovectomy, was probably because patient received intra-articular steroid following surgery due to persistent knee effusion. He presented to us on eighteenth day following surgery with similar features of fever, painful knee movement and effusion of knee. Aspiration was positive for staphylococcus. Both of the patients were managed by open arthrotomy, copious lavage and suction drainage. Intra-venous antibiotics were continued for an average six weeks. Grafted ACL was retained in ACL reconstructed patient as after debridement sign of infections subsided so we decided to continue we reconstructed graft. After settlement of infection rehabilitation was started progressively. Though both patients achieved functional range of motion but there was limitation of terminal range of motion.

Out of 92 patients with either isolated ACL reconstruction or along with

multi-ligament reconstruction, one patient developed septic arthritis. Incidence rate of septic arthritis following ACL reconstruction was 1.08% in our study. Mc Allister et al ⁽⁸⁾ reported 48%, Burks et al ⁽⁹⁾ showed 42% while Judd et al ⁽¹⁰⁾ showed 68% incidence rate of septic arthritis following ACL reconstruction. In our study, though only one patient developed infection but incidence rate was higher as compare to other series in literature because of lesser no of subjects in our series. Armstrong et al ⁽⁶⁾ showed male sex; prolong operative time, repeated knee surgery, technically demanding complicated procedures, and use of intra-articular corticosteroids as significant risk factors for development of septic arthritis following arthroscopy. He gave recommendations for prevention, diagnosis and management of septic arthritis following arthroscopy which are later modified by Marmor et al. ⁽¹¹⁾ He recommended following important points that

- It is imperative to inform patients about complication risk regarding arthroscopy.
- to give proper postoperative care to manual workers who work on their knees;
- to avoid corticosteroids peri-operatively;
- to not ignore the possibility of infection after arthroscopy and to set up patient follow-up consequently;
- to aspirate the knees of all patients who experience abnormal pain or fever after arthroscopy. Aspiration is never wrong. The liquid must be analyzed regardless of its appearance and regardless of the blood sample results. Coagulase-negative staphylococcus can be responsible for septic arthritis after arthroscopy

and must not be routinely considered a simple contaminant;

- to begin intravenous probabilistic antibiotic prophylaxis as soon as the needle aspirate is taken, and then secondarily to adapt it to the infectious agent;
- to perform arthroscopic lavage, the surgical treatment of choice in emergency;
- to avoid continuous irrigation lavage.

We treated extra-articular infections by removal of infected debris, pus under stitches and secondary resuturing of wound along with extended course of antibiotics for ten days. All of the three patients responded well and recovered fully.

CONCLUSION

Infection following arthroscopy is a serious complication. High index of suspicion is required to diagnose septic arthritis following arthroscopy as sign of septic arthritis are subtle in these cases. Intra-articular steroid following arthroscopy should be avoided as they increase the risk of infection. Septic arthritis can be treated arthroscopically or open but all debris and infected synovium tissue should be removed followed by antibiotics. Extra-articular infection should be treated by removal of pus and secondary re-suturing of wound.

Conflict Of Interest: None

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