

## PATIENT SATISFACTION WITH KNEE ARTHROSCOPY UNDER LOCAL ANESTHESIA AND SEDATION

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### Abstract

**Introduction:** Knee arthroscopy can be performed under general, regional (spinal or epidural) or local anesthesia with different patients' satisfaction after surgery.

**Purpose:** The aim of our study was to evaluate the level of satisfaction in patients after knee arthroscopy under local anesthesia.

**Patients and methods:** The study included 52 patients where knee arthroscopy under local anesthesia was performed at the University Clinic for Orthopedic Surgery in Skopje, North Macedonia in the period from February 2021 to February 2022. The study did not include patients with allergy to the used drugs, infection at the portal sites of injection, any previous surgery to the knee, patients with chronic extensive synovitis or gross deformity of the knee (severe varus or valgus knee), as well as those with psychological problems, severe systemic disease, consumption of analgesics or non-steroidal anti-inflammatory drugs within 24 h of surgery, bleeding diathesis or coagulopathy. Evaluation of patients' satisfaction after surgery was done one to three months later by determining the level of satisfaction, pain during surgery, anesthesia-related postoperative complications and preference of this anesthetic technique in the future.

**Results:** The majority of patients were either very satisfied (84.6%) or satisfied (9.6%) with local anesthesia for knee arthroscopy. Only 1.9% of them were not satisfied at all. Most of the patients reported no pain (80.8%) or mild pain (11.5%) during knee arthroscopy under local anesthesia. Only 1.9% of patients complained of strong or very strong pain during arthroscopy. Of all patients, 51 (98%) had no anesthesia-related problems after surgery except one patient who had redness, pain, swelling and blisters formation on the portal where local anesthetic and adrenaline were previously injected. Most of the patients (96%) reported that they would choose local anesthesia for knee arthroscopy again.

**Conclusion:** Our study showed that most patients had no pain, were very satisfied and would choose local anesthesia for knee arthroscopy again.

**Keywords:** knee arthroscopy; local anesthesia; patients' satisfaction.

### Introduction

Knee arthroscopy is a minimally invasive surgical technique that can be performed under general, regional (spinal or epidural) or local anesthesia. Although local anesthesia for knee arthroscopy is less preferred compared to regional and general anesthesia, it offers several advantages such as decreased hospital and recovery time, prolonged postoperative analgesia, low cost and rare side effects and complications seen in spinal and general anesthesia such as nausea, vomiting, drowsiness, and urine retention (1). Fear of insufficient anesthesia with patient discomfort and unsuccessfully performed arthroscopy with an increased number of rearthroscopies could be some of the reasons why some orthopedic surgeons do not prefer this type of anesthesia for knee arthroscopy. Studies by Forssblad et al. (2) and Jacobson et al. (3) showed that only 0.9% of the primary arthroscopies under local anaesthesia could not be performed safely due to patient discomfort and that patients with gross knee deformity (severe varus or valgus) as well as those with extensive hypertrophic synovitis of the knee are not good candidates for knee arthroscopy under local anesthesia. A study by Iossifidis (4) showed no discomfort or mild discomfort in 94% of patients during knee arthroscopy under local anesthesia, mostly experienced during knee manipulation and introduction of instruments inside the knee. A study by Inam (5) reported discomfort in 20% of patients where knee arthroscopy under local anesthesia was performed. The satisfaction rate in patients where knee arthroscopy under local anesthesia was performed varies according to the literature. The studies by Maldini (1), Iosifidis (4), Kan-Yip Law (6) and Kozlowski (7) showed that more than 93% of patients were either satisfied or very satisfied with their knee arthroscopy under local anesthesia and agreed to have the same procedure in the future. Opposite to these studies, there are other like those by Inam (5) and Eriksson (8), which showed lower satisfaction rate (70% and 77% retrospectively).

The aim of our study was to evaluate the level of satisfaction in patients after knee arthroscopy under local anesthesia.

## **Material and methods**

The study included 52 patients where arthroscopic knee surgery under local anesthesia was performed in the period from February 2021 to February 2022 at the University Clinic for Orthopedic Surgery in Skopje, North Macedonia. Preoperative assessment included medical history, clinical examination, detailed laboratory investigations, radiography (RTG) and magnetic resonance imaging (MRI) of the knee and electrocardiogram (ECG). Exclusion criteria were: allergy to the used drugs, infection at the portal sites of injection, any previous surgery to the knee, patients with chronic extensive synovitis or gross deformity of the knee (severe varus or valgus knee), psychological problems, severe systemic disease, consumption of analgesics or non-steroidal anti-inflammatory drugs within 24 h of surgery, bleeding diathesis or coagulopathy. Prior to surgery, a document for informed consent was obtained by all patients.

Knee arthroscopy was performed without a tourniquet. Knee portal sites were anesthetized with 10 ml solution of 2% lidocaine with adrenaline 1:200,000 (5 ml at each portal site) and 10 ml of 0.5% bupivacaine with adrenaline plus 4 mg morphine were injected inside the knee. After 15 to 20 minutes, knee arthroscopy was performed. Intravenous sedation with propofol was used in apprehensive patients to manage their anxiety and irritability. In some patients who experienced marked knee pain

during the surgery fentanyl (0.05 – 0.15 mg) was also added intravenously.

In order to evaluate patients' perception of the technique, one to three months after the surgery patients were contacted and asked to fill in a questionnaire (Table 1) describing the level of satisfaction, pain during surgery, anesthesia related postoperative complications and preference of this anesthetic technique in the future.

Table 1. Questionnaire for evaluation of patients' satisfaction after knee arthroscopy under local anesthesia

How satisfied were you by the anesthesia during knee arthroscopic procedure? (range 1 – not satisfied at all to 5 – very satisfied)
Did you experience pain during the arthroscopic procedure? (range 1 – no pain to 5 – very strong pain)
Did you have anesthesia-related side effects and complications after the arthroscopic procedure?
Do you prefer local anesthesia for knee arthroscopy in the future?

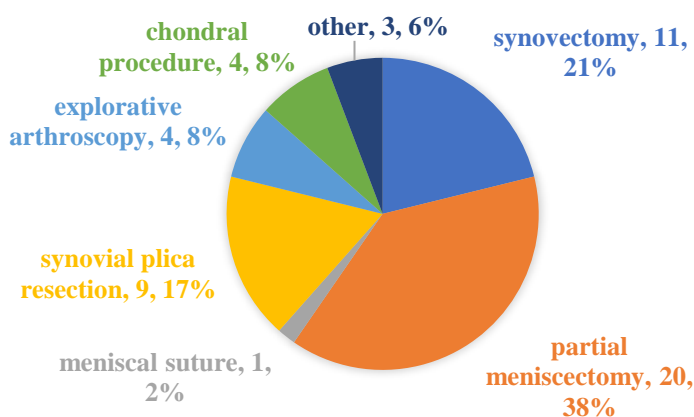
We used descriptive statistics and multiple regression analysis to assess the impact of age, sex, intraoperative pain, type of procedure, postoperative complications and revision surgery on patient satisfaction. We used XLSTAT Statistical Software for Excel for data analysis. The alpha level was set at 0.05.

## Results

Of the 52 patients who underwent knee arthroscopy under local anesthesia in this study, 20 patients (38.5%) were female and 32 (61.5%) were male. The average age of patients was 39.1 years (range 15 – 71). Distribution according to type of performed arthroscopic procedure is shown in Figure 1. Three arthroscopies (5.8%) were revision procedures and the rest were primary procedures. Arthroscopic surgery was successfully performed in 49 (94%) of patients. In 1 patient we had poor visibility because of intra-articular bleeding and in 2 patients it was difficult to access the menisco-capsular part of the medial meniscus due to the tightness of the knee joint. In some patients there was poor visibility caused by inadvertent infiltration of anterior fat pad, but we used shaver to clean it and obtain better visualization. There were no conversions from local to other type of anesthesia during surgery in none of these patients. No side effects of local anesthetics were noted. The average hospital stay was 3.2 hours (range 2 – 5).

Figure 1. Distribution of performed arthroscopic procedures

**IMAGE 1: DISTRIBUTION OF PERFORMED PROCEDURES**



Most of the patients were either very satisfied (84.6%) or satisfied (9.6%) with local anesthesia for knee arthroscopy (Table 2). Only 1.9% of them were not satisfied at all.

**Table 2. Patients' satisfaction after knee arthroscopy under local anesthesia**

Answer	No. of patients	Percentage of patients (%)
1 – not satisfied at all	1	1.9
2 – a little satisfied	0	0
3 – moderately satisfied	2	3.9
4 – satisfied	5	9.6
5 – very satisfied	44	84.6

Most of the patients reported no pain (80.8%) or mild pain (11.5%) during knee arthroscopy under local anesthesia (Table 3). Only 1.9% of the patients complained of strong or very strong pain during arthroscopy.

**Table 3. Pain during knee arthroscopy under local anesthesia**

Answers	No. of patients	Percentage of patients (%)
1 - no pain	42	80.8
2 - mild pain	6	11.5
3 - moderate pain	2	3.8
4 - strong pain	1	1.9
5 - very strong pain	1	1.9

Of all patients, 51 patients (98%) had no anesthesia-related problems after surgery and only one patient reported problems after the procedure. He had redness, pain, swelling and blisters formation on the portal where local anesthetic and adrenaline were previously injected.

According to the preference of local anesthesia for knee arthroscopy, 50 patients (96%) would choose local anesthesia for knee arthroscopy again in the future and 2 patients (4%) would not choose the same type of anesthesia. One of these patients had very strong pain during the

procedure and the second one had moderate pain. None of them experienced anesthesia-related problems after surgery.

Multiple regression analysis showed that only the level of pain significantly affected patient satisfaction by anesthesia ( $p < 0.0001$ ), while sex, type of surgical procedure, revision surgery and postoperative complications related to anesthesia did not have significant influence on the satisfaction ( $p > 0.05$ ). Pain during surgery was also the main factor that affected patients' willingness to undergo the same type of anesthesia for knee arthroscopy in the future ( $p < 0.0001$ ).

These results show that most patients have no pain and are very satisfied with the use of local anesthesia for knee arthroscopy. The level of pain is the main predictor of patient satisfaction.

## **Discussion**

There is no patient that is fully satisfied with any surgical procedure under any anesthesia since each and every patient expects the procedure to be pain-free and he/she wants to be able to do routine work immediately after surgery. Although these expectations in ambulatory surgery under local anesthesia can be fulfilled in majority of patients, there are also patients who are not completely satisfied. Most of the studies (1, 2, 3, 4, 6, 7) showed high patient satisfaction rate after knee arthroscopies under local anesthesia. There are also studies (5, 8) which showed low satisfaction rate (70% and 77% retrospectively) compared to previous studies.

In our study we found high satisfaction rate in patients where knee arthroscopy under local anesthesia was performed. Most of the patients were either very satisfied (84.6%) or satisfied (9.6%) with local anesthesia for knee arthroscopy. Multiple regression analysis showed that the level of pain was the main predictor of patient satisfaction. In our study, most of the patients reported no pain (80.8%) or mild pain (11.5%) during surgery. According to Takahashi et al. (9), in patients where knee arthroscopy under local anesthesia was performed more knee pain was experienced at the time of injection of local anesthetic as well as when synovectomy, anterior cruciate ligament remnant or plica resection was done. In our study, synovectomy was done in 21%, plica resection in 17%, meniscal suture in 2% and anterior cruciate ligament remnant resection in 3.5% of the patients, but the type of surgical procedure did not show significant influence on the level of pain during surgery or patient satisfaction after surgery. This was probably due to the sedation with propofol and analgesia with fentanyl performed in some patients.

In our study, we did not investigate the influence of other factors on patients' satisfaction such as poor communication skills of the operation theatre personnel, poor discipline, noise, increased trafficking, prolonged surgery etc., and this was the limitation of our study.

## **Conclusion**

Our study showed that most patients had no pain and were very satisfied with the use of local anesthesia for knee arthroscopy. The level of pain was the main predictor of patient satisfaction in our study. Intravenous sedation with propofol should be used in apprehensive patients to manage their anxiety and irritability. More studies that investigate the influence of other factors on patients' satisfaction should be performed in the future.

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