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Knee arthroscopy and arthrotomy under local anesthesia

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We report our experience with knee arthroscopy in local anesthesia in 64 patients with subsequent arthrotomy in 14 of these. The effectiveness of the anesthetic method was evaluated by both the patient and the anesthetic personnel. There was no difference in pain assessment between arthroscopy alone and arthroscopy followed by arthrotomy. Half of the patients had no pain and only one regarded the procedure as very painful. Supplementary analgesia with 0.05 mg fentanyl was given to half of the patients not undergoing arthrotomy and to two thirds of those who had arthrotomy. It was not necessary to abandon any arthroscopic or surgical procedure because of pain. We conclude that local anesthesia is a safe and practical method for diagnostic arthroscopy, arthroscopic surgery, and minor arthrotomy.

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Introduction

Local anesthesia of the knee joint was first described by Rietz (1932). He was able to perform arthrotomies with meniscectomies or removal of loose bodies using this technique. Local anesthesia is now often used for arthroscopy and arthroscopic surgery (Eriksson et al. 1986, Wredmark & Lundh 1982, Read 1983). The need to perform an arthrotomy arises often, however, because the required percutaneous operative technique may be beyond the competence of the surgeon or the case is not suitable for arthroscopic surgery. The customary procedure in this situation is to reoperate on the patient later using general or epidural anesthesia. We have chosen to extend the local anesthesia into the line of incision and to perform the necessary operation directly. We report our experience with arthroscopy and arthrotomy under local anesthesia.

Patients and methods

Our hospital serves the army of northern Norway. Most patients are soldiers doing their first military service, but some of the patients are civilians from the nearby districts. Arthroscopy is performed one to three times weekly by two surgeons. Routine operative technique was lateral or midpatellar tendon insertion of a Stortz 5 millimeter arthroscope. The knee joint was then examined systematically with 30° and 70° lenses. As a routine, we inserted a blunt probing hook percutaneously in order to reveal peripheral detachments of the menisci and to test the integrity of the anterior cruciate ligament. Irrigation and distention of the joint cavity was maintained by infusion of isotonic saline. Arthrotomy was performed, if necessary, using medial or lateral anterior incision. A bloodless field was never used.

For local anesthesia, we employed the technique described by Eriksson (1979): 40 ml lidocaine (5 mg/ml) was given intraarticularly and 10 ml lidocaine (10 mg/mg +5 ug/ml adrenaline) periarticularly and in the skin. The arthroscopy was started 10 minutes after the intraarticular injection. If arthrotomy was required, we added 10 ml lidocaine with adrenaline along the line of incision. Patients were routinely given 75 mg pethidine and 50 mg Phenergan 1 hour before surgery, and 0.05 mg fentanyl was sometimes given during the operation.

During 10 months, we performed a diagnostic arthroscopy on 64 consecutive patients, followed by a percutaneous operation in 9 patients and arthrotomy in 14 (Table 1).

Table 1. Knee surgery under local anesthesia, 64 patients

Diagnostic arthroscopy only	38
Percutaneous meniscectomy	7
Percutaneous biopsy	3
Percutaneous removal of loose body	2
Open medial meniscectomy	10
Open lateral meniscectomy	1
Open removal of loose body	3

The acceptability of this anesthetic method was evaluated by the anesthesia nurse and by the patient. They were asked to indicate the level of pain during the administration of the local anesthesia and during the operation as not painful, moderately painful, or very painful.

For statistical comparisons, we used the chi-square test.

Results

There was no difference in pain assessment between arthroscopy alone and arthroscopy followed by arthrotomy (Table 2). The local anesthetic procedure was assessed as painful as the operation. In the group without arthrotomy, half of the patients received supplementary analgesia with fentanyl, whereas two thirds of the patients undergoing arthrotomy received supplementary fentanyl (not significant). It was not necessary to abandon any arthroscopic or surgical procedure because of pain. Only 1 patient found the diagnostic arthroscopy very painful. The same patient also experienced the injection of the local anesthetic drug as very painful.

No infections, venous thromboses, or pulmonary emboli were noted. Adverse reactions to the local anesthesia were not encountered.

Table 2. Assessment of anesthetic effect by patient (P) and by anaesthesia nurse (N)

	Procedure			
	Injection of local anaesthesia		Surgery	
	P	N	P	N
Diagnostic or therapeutic arthroscopy				
Not painful	33	40	30	41
Moderately painful	15	10	19	9
Very painful	2	0	1	0
Arthroscopy and arthrotomy				
Not painful	8	12	8	11
Moderately painful	6	2	6	3
Very painful	0	0	0	0

Discussion

The majority of arthroscopies reported in the literature have been performed using general, spinal, or epidural anesthesia (Older & Cardoso 1983, Thomas et al. 1982). The use of local anesthesia has several advantages: an anesthesiologist is not required and the method is safe, reliable, and inexpensive. Because little observation of the patient is required postoperatively, arthroscopic examination may be carried out on outpatients. The anesthetic technique causes no reduction of the diagnostic accuracy (Wredmark & Lundh 1982), and sufficient time is available, since it takes several hours for the local anesthesia to wear off. The most rational, economic, and practical approach is to perform the necessary corrective surgery directly following the diagnostic arthroscopy. The utilization of the same anesthesia for the corrective procedure is therefore of considerable practical advantage.

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