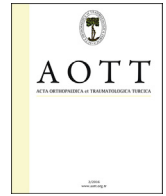




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The effects of intra-articular levobupivacain versus levobupivacain plus magnesium sulfate on postoperative analgesia in patients undergoing arthroscopic meniscectomy: A prospective randomized controlled study

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ABSTRACT

Objective: The aim of this study was to compared the effectiveness of intraarticular levobupivacain with levobupivacain and magnesium sulfate.

Methods: In this prospective randomized double blinded study, 96 patients (67 male, 29 female; age range: 18–65 years) with ASA (American Society of Anesthesiologist) score I and II, who had undergone arthroscopic meniscectomy operation, were divided to 3 groups that had postoperative analgesia with intra-articular saline injection (control group), levobupivacain injection (L group) or levobupivacain and magnesium sulfate injection (LM group). Patients were compared with postoperative VAS (Visual Analog Score) score during rest and activity, opioid analgesic need, non-opioid analgesic need and other medication needs.

Results: Postoperative VAS scores during rest and activation at early postoperative period were significantly lower at LM group when compared with L group and lower than control group at all time periods. Opioid analgesic need, non-opioid analgesic need and other medication needs for non-pain symptoms were lower at LM group when compared with L and control groups at all time periods.

Conclusion: Intraarticular magnesium sulfate plus Levobupivacain injection is a safe and effective method for post operative pain management after arthroscopic meniscectomy.

Keywords: Intra-articular injection, Magnesium sulfate, Levobupivacain, Postoperative analgesia, Chondrocyte apoptosis, Pain management, Arthroscopic meniscectomy

Level of Evidence: Level I, Therapeutic study

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Introduction

Arthroscopic meniscectomy operation is an outpatient orthopedic surgery procedure. Patient satisfaction and outpatient surgery can only be obtained with effective postoperative analgesia.

Early postoperative analgesia can be obtained with opioid analgesics, non-opioid analgesics, local analgesics and neuraxial blockers.¹

Multimodal pain management (oral, intravenous, peripheral blocks) is the common method for postoperative pain management after arthroscopic knee surgeries. Recent papers recommend multimodal intra-articular cocktails instead of multimodal pain management due to its side effects like nausea, vomiting, sedation, acute gastric irritation, itching, urinary retention, respiratory depression and partial motor block.^{2,3}

Neuraxial block is not the choice for postoperative pain management after small surgical procedures because of its side effects like urinary retention, prolonged motor block, headache and epidural hematoma. Intra-articular local anesthetic injections are effective but lasts for a short time. Side effects of systemic drugs distracts single drug usage.

Levobupivacain (Chirocaine 0,5% levobupivacaine hydrochloride 5 mg/ml, 10 ml Abbot) is an effective local anesthetic for intra-

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articular use but it has been shown to disrupt chondrocyte membrane activity and this effect is dose dependent.^{4,5} Magnesium sulfate acts as an NMDA (N-Methyl-D-Aspartate) receptor antagonist. There are a few studies that report magnesium sulfate increase the analgesic effect of levobupivacain but we couldn't find a study comparing the effectivity of intra-articular levobupivacain with levobupivacain and magnesium sulfate.

We hypothesized that magnesium sulfate when used as an adjunct to levobupivacain intra articularly may produce equally or better analgesia in arthroscopic meniscectomy operations with lower dose of levobupivacain in order to decrease local anesthetic related chondrocyte damage.

Material and method

Ninety-six patients (46 female, 50 male), 18–65 years of age with ASA (American Society of Anesthesiologist) score I and II, undergoing arthroscopic meniscectomy operation between 4/2013 and 3/2014 were included into the study. Patients were assigned

randomly to one of three groups using an Excel (Microsoft, Redmond, WA, USA)-generated randomization table (Group L: levobupivacain group, n = 32; Group LM: levobupivacain plus magnesium sulfate, n = 32; Group C: control group, n = 32) Flow chart of the study is shown in Fig. 1.

Informed consent was obtained from all patients and ethical committee approval was taken from the institution's ethical committee. All patients were informed about the VAS score system and PCA (Patient controlled analgesia) devices. Initial evaluation of patients was performed with physical examination including assessment of active and passive range of motion (ROM) and evaluation of joint line tenderness, stability of collateral and cruciate ligaments, patellar compression test and lower extremity alignment. Radiographic evaluation was performed with MRI. Patients who had knee instability due to cruciate and/or collateral ligaments injuries; cartilage damage requiring surgical interventions; and lower extremity mal-alignment due to congenital, acquired or traumatic lower extremity deformities, were excluded.

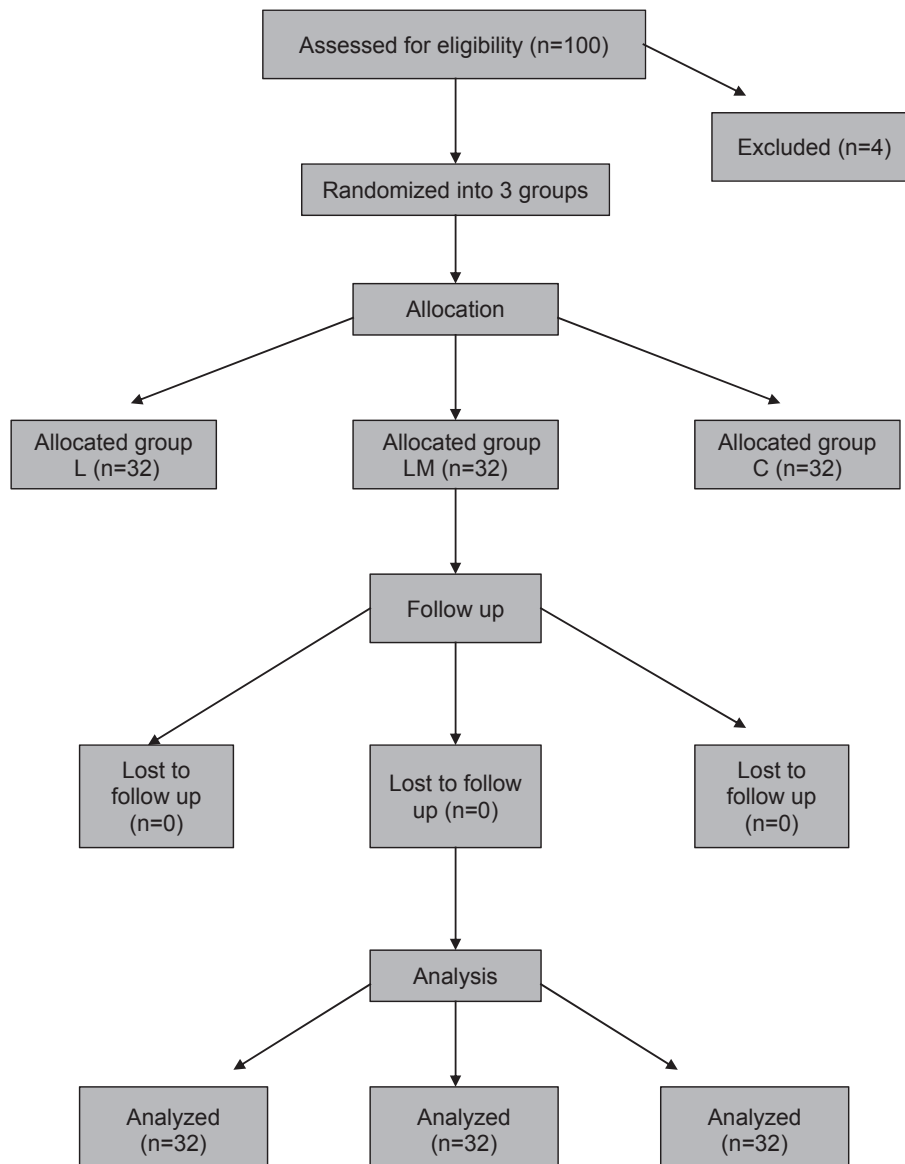


Fig. 1. Flow chart.

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