

Intra-articular Drain Versus No Drain After Arthroscopic Anterior Cruciate Ligament Reconstruction: A Randomized, Prospective Clinical Trial

Robert G. McCormack, M.D., F.R.C.S.C., Robert J. Greenhow, M.D.,
Fabricio Fogagnolo, M.D., and Ian Shrier, M.D.

Purpose: A significant proportion of surgeons use intra-articular drains after arthroscopic anterior cruciate ligament (ACL) reconstruction. The usual reason given to justify the use of a drain is to minimize patient pain and stiffness of the knee joint. The purpose of this study was to assess the validity of this approach. **Methods:** In this study 118 consecutive ACL reconstruction patients were randomized to no drain or a postoperative intra-articular suction drain. Inclusion criteria included a successful ACL reconstruction via either 4-strand hamstrings or bone-patellar tendon-bone autograft as a graft source. The primary outcomes were defined as pain (assessed by pain scores and analgesic counts) and range of motion (ROM) (assessed by loss of flexion and extension compared with the nonoperative leg). An independent statistical analysis was performed. **Results:** The 2 groups were comparable with respect to patient demographics, surgical findings, and procedures performed. There were no differences between the treatment groups for the primary outcomes of pain and ROM during the 8-week follow-up period. The study had adequate power to detect a clinically significant difference. Regarding the secondary outcomes, there was a difference in the grade of hemarthrosis between the groups at week 1 but not at week 4 or 8. However, the difference in subjective grade of hemarthrosis at 1 week did not have any effect on the primary outcomes of pain and ROM. During the study period, there were no complications in either group. **Conclusions:** The routine use of intra-articular drains after arthroscopic ACL surgery was not supported by this study. **Level of Evidence:** Level II, randomized controlled trial without narrow confidence intervals. **Key Words:** Anterior cruciate ligament—Suction—Drainage—Hemarthrosis—Postoperative pain—Range of motion.

Drains have been used commonly in orthopaedics to evacuate hematomas under the presumption that this will decrease pain and swelling, hasten the

return of motion, shorten the hospital stay, speed rehabilitation, and potentially decrease the risk of infection.¹⁻¹⁰ Over the years, the necessity of intra-articular drains has been questioned in the literature.¹⁻⁸ However, drains have not been abandoned for fear of local complications. Several prospective, randomized studies have evaluated the use of drains in joint arthroplasty and orthopaedic trauma, and the preponderance of these show no benefit to using drains.^{1,2,4-7} There is a paucity of literature evaluating the use of intra-articular drains after arthroscopic procedures. A prospective but nonrandomized review of 60 arthroscopic knee surgeries showed that patients with a drain and no tourniquet had fewer hemarthroses develop and had a quicker return of motion.⁹ However, this study did not include anterior cruciate ligament (ACL) patients. These patients may be different than

From the Department of Orthopedic Surgery, University of British Columbia (R.G.M., R.J.G.), New Westminster, British Columbia, Canada; Ribeirão Preto School of Medicine, University of São Paulo (F.F.), São Paulo, Brazil; and the Centre for Clinical Epidemiology and Community Studies, Jewish General Hospital (I.S.), Montreal, Quebec, Canada.

Supported in part by the Simon Fraser Orthopedic Fund. The authors report no conflict of interest.

Address correspondence and reprint requests to Robert G. McCormack, M.D., F.R.C.S.C., New West Orthopedic and Sports Medicine Center, 102-65 Richmond St, New Westminster, British Columbia, Canada V3L 5P5. E-mail: mccormac@interchange.ubc.ca

© 2006 by the Arthroscopy Association of North America
0749-8063/06/2208-3801\$32.00/0
doi:10.1016/j.arthro.2006.05.004

other orthopaedic patients because they tend to be younger, with high functional demands. Therefore small deficits in range of motion (ROM) may have a greater effect on function and are a greater concern. In addition, with the desire to perform these as outpatient procedures, any beneficial effect from a drain in reducing postoperative pain would be of value. A study by Matava et al.¹⁰ included a questionnaire to directors of U.S. sports medicine fellowships and showed no consensus on drain use after ACL surgery, with 51% advocating routine use. Our study was preceded by an e-mail survey of Canadian sports knee surgeons, which showed a similar lack of consensus on drain use after ACL surgery. Forty-seven percent of the responding Canadian knee ligament surgeons "never" used a drain postoperatively, and thirty-three percent used a drain "routinely." The purpose of this study was to determine the efficacy of intra-articular drains in improving outcomes after arthroscopic ACL reconstruction.

METHODS

This was a prospective, randomized trial comparing the use of an intra-articular drain versus no drain after arthroscopic ACL reconstruction. The study was approved by the Clinical Investigations Committee (Fraser Health Authority, New Westminster, Canada), and informed consent was obtained from all patients. Consecutive patients with an ACL reconstruction, via either 4-strand hamstrings or a 10-mm bone-patellar tendon-bone autograft from the ipsilateral knee, were enrolled. Exclusion criteria included significant pain preoperatively (narcotic-dependent), a large swelling preoperatively (grade 3 or 4 effusion), revision cases, and patients with a known increased risk of bleeding (bleeding diathesis or prescribed anticoagulation medication).

All surgeries were performed on consecutive patients by the senior author (R.G.M.), and randomization was performed at the end of the case by opening a sealed envelope. The anesthetic type (regional or general) was not controlled and was selected at the discretion of the anesthesiologist. All patients received prophylactic intravenous antibiotics preoperatively. The procedures were all done in a standardized fashion via an arthroscopic inflow pump at 30 to 35 mm Hg. An initial diagnostic arthroscopic examination was performed with management of the menisci and articular cartilage as necessary. A tourniquet was inflated at the time of graft harvest. Graft choices consisted of 4-strand hamstrings (gracilis and semi-

tendinosus tendons doubled over) or a 10-mm bone-patellar tendon-bone autograft from the ipsilateral knee. A single-incision technique was used in all cases, and the grafts were fixed with bioabsorbable screws that were sized for the graft in both the tibial and femoral tunnels. A notchplasty was performed only if there was significant notch stenosis or if impingement of the graft was present. The amount of notchplasty was determined by the notch and graft size. In many cases the notch enlargement was minimal. Full ROM was confirmed intraoperatively, and the Lachman test was performed to confirm stability. The knee joint and portals were injected with a standard volume of bupivacaine with epinephrine (20 mL of 0.25% bupivacaine with epinephrine). In the drain group, a 1/8-inch, spring-type, disposable suction drain (Hemo-vac; Zimmer, Warsaw, IN) was inserted through the superolateral portal but not until the intra-articular bupivacaine had 5 minutes to absorb into the synovium. The drain was assumed to be intra-articular because it was inserted through the outflow cannula (which had been visualized arthroscopically), and there was immediate free backflow of bupivacaine and arthroscopy fluid from the cannula. All patients underwent application of a compression stocking and a Cryo/Cuff (Aircast, Summit, NJ) before deflation of the tourniquet. They were discharged home on the same day with a prescription for ketorolac (or acetaminophen/codeine in the presence of an allergy). Patients used the Cryo/Cuff for 1 week. All patients underwent standardized rehabilitation supervised by a physiotherapist to emphasize early ROM, immediate full extension, and weight-bearing as tolerated. Walking aides were used until there was adequate quadriceps control and a minimal limp. The drain was removed on postoperative day 1 by the home care nurse, and the amount of drainage was recorded. The patients kept a medication diary and recorded their pain on a visual analog scale (VAS) at a consistent time in the evening on postoperative days 1, 2, and 3. They were reviewed in the clinic at weeks 1, 4, and 8. Pain (VAS), ROM, grade of hemarthrosis, and thigh circumference, as well as the presence of any complications, were documented. Patients were instructed not to reveal whether they had received a drain postoperatively. Primary outcome measures included pain, measured by VAS and pill count, and ROM, measured by use of a standard handheld goniometer (extension and flexion compared with contralateral limb). Secondary outcome measures included grade of hemarthrosis, according to the classification of Coupens and Yates⁹ (graded subjectively from 0 to 4) (Table 1);

Download English Version:

<https://daneshyari.com/en/article/4047179>

Download Persian Version:

<https://daneshyari.com/article/4047179>

[Daneshyari.com](https://daneshyari.com)