

Safety and Efficacy of Drains in Orthopaedic Surgeries

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Abstract

While drains have been routinely used in orthopaedic surgery for postoperative wound drainage following inpatient surgical procedures, there are no published reports on the efficacy of drains for outpatient orthopaedic surgeries. This review reports our experience between July 2021 and January 2022 with the use of drains for 35 patients having outpatient orthopaedic surgery. Consequences of drain usage were determined by medical chart review and a follow-up telephone survey in which patients were asked a series of questions regarding the drains used for their operation. None of the patients had an infection or any other medical problem as a result of drain usage and there were no problems with wound healing. Patients were quite capable of managing and removing their own drains. We conclude that drains are effective and can be used safely for outpatient orthopaedic surgical procedures.

Keywords: Outpatient surgery; Drains; drains; orthopaedics

Introduction

Drains have been routinely used in orthopaedic surgery for postoperative wound drainage following certain inpatient surgical procedures^[1-4]. Some surgeons have recently also started to use drains for selected outpatient surgical procedures. There are, however, no published reports on the safety or efficacy of drains for outpatient orthopaedic surgeries.

Much has been written about the advantages and disadvantages of postoperative wound drainage. Advantages of drain usage include improved apposition of tissue surfaces by removing excess blood, protection of the skin from irritating discharges, and for intraarticular drains, decreased joint swelling which facilitates early range of motion.

Disadvantages of drain usage include foreign body effects, mechanical problems (such as entrapment by a misplaced suture), promotion of fluid and electrolyte losses, and the potential for an increased incidence of wound infection.

Despite the potential risks most orthopaedic surgeons use drains routinely in certain situations. We routinely use drains for patients having selected outpatient orthopaedic operations. Some of these patients stay overnight in our inpatient ward and have the drain removed by the surgical team in the morning before they are discharged, but others are sent home with the drain in place and are given instructions for follow up the day after surgery. The purpose of this review is to report our experience with the use of drains in the ambulatory surgery setting.

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Materials and Methods

Between July 2021 and January 2022, 117 outpatient orthopaedic operations were performed by the senior consultant at Hind institute of medical sciences, sitapur.

Thirty-five of these surgeries involved the placement of at least one polyvinylchloride or silastic drain in or around the surgical site. The group of patients who had these drains placed at surgery comprises the study group for this review. There were 28 males and seven females in the group. The average age of the patients was 31 years with a range from 16 to 59 years.

Twenty-six patients stayed overnight after their surgery at the center. Twenty-one of these patients had their drain removed by a member of the orthopaedic surgery team on the morning after their surgery. Five of these patients were followed up day after with their drain in place and were given instructions about the drain themselves. Nine patients went home on the day of their surgery and they were also given instructions about drain removal. All 14 patients sent home with a drain in place received clear written and verbal instructions about when, how, and what to expect regarding the removal of the drain.

There is a wide variety of outpatient orthopaedic operations for which drains are useful. In this review there were 12 anterior cruciate ligament reconstructions, five open reductions of fractures or joint dislocations treated with internal fixation, four open Bankart repairs, three hardware or loose body removals, three minor bony resections, two lateral retinacular releases, two ulnar nerve transpositions, two extensive arthroscopic knee joint debridements, one lysis of adhesions between quadriceps muscle and femur fracture callous, and one elbow lateral epicondylar release.

A total of 44 drains (36 hemovac and eight silastics) were used for the 35 procedures reviewed. Two drains were placed in nine of the operations and one drain was placed in the other 24 operations. One open reduction with internal fixation of a metatarsal, one hardware removal of tibial screws, two of the minor bony resections, one of the ulnar nerve transpositions, and the lateral epicondylar release were the only procedures for which we used a silastic drain. The rest of the operations involved the placement of a hemovac drain.

In order to assess the efficacy of the drains used for these outpatient surgeries we conducted a follow-up survey by telephoning each patient after their last post-operative visit to ask them questions regarding the drain used for their operation. Specifically,

we asked each patient what the elapsed time was between their surgery and drain removal, if they had any problems or medical complications as a result of the drain and, finally, we asked if our instructions about drain management were clear and easy to follow or if they needed to call the office about any drain related questions.

Results

None of the 35 patients in this review had an infection or any other medical problem as a result of drain usage and none had any problem with primary wound healing. Additionally, none of the 14 patients who removed the drain on their follow up reported any significant pain with drain removal, whereas two of the 21 patients who had their drain removed on day by orthopaedic team reported severe pain with drain removal.

The average time elapsed between surgery and drain removal was 21 h (range from 8 h to 30 h) for patients who had their drain removed at the surgery center before going home and was 46 h (range 6 h to 7 days) for patients who went home with their drain in place and removed it themselves.

Two patients who were sent home with their drain in place had unplanned drain removals. In one patient the drain was inadvertently removed after 6 h when the patient rolled over in bed on the evening after surgery. The other patient did not understand the instructions and left the drain in until the first postoperative visit at seven days. This patient was the only one in the review that either was not given or did not understand our instructions regarding the care and removal of the drain. All the rest of the patients felt that our instructions were clear and easy to follow and none needed to call the office with any drain related questions.

Discussion

Drainage of orthopaedic wounds has been strongly advocated for many years. In one of the first studies on the role of drains for orthopaedic surgeries, Waugh and Stinchfield [5] compared the postoperative complications of 100 various orthopaedic operations using drains with a similar number of undrained matched controls. They reported a 1% infection rate for drained wounds compared to a 3% infection rate for undrained wounds and concluded that all wounds involving medullary bone as well as all wounds involving a potential dead space should be drained 'to promote

a more benign and uncomplicated postoperative course'. This research supports the surgical principle that mini- mizing postoperative hematoma will minimize postop- erative infection [6,7].

Not all research, however, has supported the use of drains. Stevens [8] initiated concerns about drain usage when he reported an increased infection rate for ortho- paedic surgeries using drains. More recently, several studies have suggested either no benefit or even an increased risk from the use of drains for orthopaedic surgeries. Cobb [9], in a prospective randomized study on the use of drains after surgery for femoral neck fractures, concluded that drains did not seem to im- prove overall wound healing. Other studies on the role of drains in total joint arthroplasty surgery have come to the conclusion that the potential risk of increased infection may not be worth any advantages that may be afforded by drain usage.

All previous reports on the use of drains for orthopaedic surgeries have reviewed inpatient procedures. This report is unique in that it is the first to review the use of drains for outpatient orthopaedic surgeries. It is significant that there were no infections or medical complications as a result of the drain for any of the patients in our review. Perhaps the relatively short time for which a drain is needed after an outpatient surgery helps to minimize the potential increased risk of infection that drains may cause. Also, it may be that the drains themselves were the reason for the lack of infections in that they were effective in evacuating wound hematomas which have long been known to be a fertile source of infections.

We believe that surgeons should feel confident that patients can safely manage their own drain care should they need to be sent home with a drain in place. Only one of our patients who was sent home with a drain in place had any problem in following our verbal instructions about when to take the drain out and even then no untoward outcome occurred.

This study does not address the issue of whether or not drains should be used for particular surgical procedures. That is a question that has not been clearly answered by the current orthopaedic literature, and as such, is subject to the beliefs and experiences of individual orthopaedic surgeons. The current medical climate requires that more and more orthopaedic procedures be done in the outpatient setting. This study asks the simple question of whether

or not drains can be used safely and effectively in the ambulatory setting. Our patients had the benefits of surgical wound drainage and there were no complications. It would seem that surgical drains can be used in outpatient orthopaedic procedures when the surgeon feels it is warranted. As long as the patient has clear written and verbal instructions, we feel that the use of drains is a safe and effective adjunct for outpatient orthopaedic surgical procedures.

Informed Consent: written informed consent was taken from patients.

Ethical Approval: ethical committee approval was taken from the AIMSR institutional committee of ethics.

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