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Original Article

Use of closed suction drainage after primary total hip arthroplasty: a prospective randomized controlled trial☆

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ABSTRACT

Objective: This study aimed to investigate drain use in a controlled population of patients with hip osteoarthritis undergoing primary total hip arthroplasty.
Methods: This prospective controlled trial evaluated 93 patients randomized into two groups: a group that received drains and a group that did not. The patients who were randomized to the drain group used a 3.2 mm drain placed under the fascia that was kept in place for 24 h. Postoperative evaluations were performed after 24 h and then three, six, and 12 weeks after total hip arthroplasty. The primary outcome was perioperative blood loss in both groups 24 h after total hip arthroplasty. The other parameters that were evaluated included mid-thigh circumference, the rate of blood transfusion, hematocrit, inflammatory serum levels, and the Harris Hip Score.
Results: The clinical and laboratory data revealed no differences between the study groups with respect to blood loss and need for blood transfusion, duration of hospital stay, reoperation rate, complications, inflammatory serum markers, and the Harris Hip Score. Patients without closed suction drainage reported higher pain levels after 24 h (VAS score 1 vs. 2, $p < 0.01$).
Conclusion: Similar clinical and laboratory outcomes were found in both cohorts.

☆ Work performed in the Grupo de Quadril, Instituto de Ortopedia e Traumatologia, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo, São Paulo, SP, Brazil.

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Uso de drenos de sucção fechada após artroplastia total de quadril primária: um estudo prospectivo, randomizado e controlado

Palavras-chave:
Artroplastia de quadril
Sucção
Drenagem
Perda sanguínea cirúrgica

RESUMO

Objetivo: Investigar o uso de drenos em uma população controlada de pacientes com osteoartrose do quadril submetidos a artroplastia total de quadril primária.
Métodos: Este estudo prospectivo controlado avaliou 93 pacientes randomizados em dois grupos: um grupo no qual se usou drenos e um grupo no qual não se usou drenos. Os pacientes que foram randomizados para o grupo com drenos utilizaram dreno de 3,2 mm, colocado sob a fáscia, e mantido no local por 24 horas. As avaliações pós-operatórias foram realizadas após 24 horas e três, seis e 12 semanas após a artroplastia total de quadril. O desfecho primário foi perda sanguínea perioperatória em ambos os grupos 24 horas após a artroplastia total de quadril. Os demais parâmetros avaliados foram circunferência do meio da coxa, taxa de transfusão de sangue, hematócrito, níveis séricos inflamatórios e Harris Hip Score.
Resultados: Os dados clínicos e laboratoriais não indicaram diferenças entre os grupos de estudo quanto à perda de sangue e necessidade de transfusão de sangue, tempo de internação hospitalar, taxa de reoperação, complicações, marcadores séricos inflamatórios e *Harris Hip Score*. Os pacientes que não usaram drenos de sucção fechada relataram maiores níveis de dor após 24 horas (EVA 1 *vs.* 2, $p < 0{,}01$).
Conclusão: Encontramos resultados clínicos e laboratoriais semelhantes em ambas as coortes.

Introduction

Closed suction drainage (CSD) after total hip replacement (THR) is a common practice among orthopedic surgeons. Waugh and Stinchfield focused their studies on wound hematomas and demonstrated a lower infection risk associated with the use of CSD.[1] Over the last decades, the advantages of CSD have been extensively debated, and the routine use of CSD after THR remains controversial.[2–6] Drainage may still be a risk factor for blood transfusion postoperatively[2,4] and wound complications.[3] A drainage period of 24 h is the most commonly accepted duration, and this period is when the maximal drainage volume occurs.[7–9] The analysis of clinical parameters such as hematocrit levels and thigh circumference may provide more objective information and improve the scientific evidence. The goals of this study were to (1) compare the blood loss of patients undergoing THA and (2) evaluate the clinical and laboratory results at 3, 6 and 12 weeks after the procedure between patients who received a CSD and patients who did not.

Methods

Trial design

The study design was a single-center, prospective, 1:1 randomized, parallel clinical trial. Both the patients and surgeons were blinded before the surgical procedure. This trial was registered and approved by the National Institutes of Health, and approval was obtained from the local Institutional Review Board.

Participants

We enrolled study participants who were undergoing a THA due to primary or secondary osteoarthritis. The patients who reported a previous surgery on the same limb, patients with hip arthrodesis and patients with coagulation disorders were not included. We excluded patients who had the following complications detected during surgery: intraoperative fractures, significant bleeding, or the need to increase the surgical incision to a length greater than 20 cm.

Surgical procedure

A non-cemented porous titanium alloy coated with hydroxyapatite THA (Lépine® and Depuy®) was implanted through a direct lateral Hardinge approach in all cases. Patients randomized to Group 1 had a single 3.2 mm diameter, 100 mm length suction drain placed under the fascia slightly anterior and distally from the surgical incision. Wound closure was performed in layers using absorbable sutures (Vicryl 1) for the reattachment of the gluteus medius muscle to the greater trochanter and closure of the fascia lata. The subcutaneous tissue was closed with Vicryl 2.0, and the skin was closed with mononylon 3.0. The procedure time was recorded in minutes from the time of the skin incision until skin closure. The routine dressing consisted of a 10 cm × 25 cm sponge taped to the skin using adhesive strips. All patients were assigned to the same ward and received care from the same nursing staff. Enoxaparin (40 mg) was administered 12 h after the procedure and was continued for four weeks for deep vein thrombosis prophylaxis. The hemostatic measures for intraoperative bleeding were biterminal electrocoagulation or manual compression.