

Применять или не применять дренаж при первичном тотальном замещении коленного сустава: сравнительное исследование

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Drainage versus nondrainage in primary total knee replacement: a comparative study

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Цель. Сравнить результаты у 80 пациентов, которым провели тотальное замещение коленного сустава, выяснить преимущества применения закрытого отсасывающего дренирования и сопоставить результаты с таковыми в группе, где дренаж не использовался. **Методы.** Рандомизированное проспективное исследование проводилось в 2011 году в группе А (40 пациентов) без применения дренажей и в группе В (40 пациентов) с применением дренирования. Общая кровопотеря была значительно больше у пациентов, которым применяли дренирование (400 мл) в сравнении с 200 мл в группе без использования дренажей, хотя скрытое количество кровопотери точно определить нельзя. **Результаты.** Статистической разницы по показателям послеоперационной боли, экхимоза или по частоте случаев инфекции в послеоперационный период в обеих группах не было. **Выводы.** Не отмечалось никаких явных свидетельств в поддержку применения дренажей при тотальной артропластике коленного сустава, несмотря на это многие хирурги предпочитают их использовать.

Ключевые слова: сустав, первичная тотальная артропластика, кровопотеря, инфекция, дренирование.

Objective. To compare the results of 80 patients undergoing total knee replacement and to see the benefit of using of close suction drain and compare it with no drain group. **Methods.** A randomized prospective study conducted during 2011 group A (40 patients) without drains, and group B (40 patients with drains). The total blood loss was significantly greater in those with a drain (400 ml versus 200 ml of non-drain group although hidden amount of blood lost cannot be accurately determined. **Results.** There was no statistical difference in the postoperative pain, ecchymosis, or in the incidence of infection in the postoperative period in both groups. **Conclusions.** There were no clear evidence to support the use of drains in total knee arthroplasty, even so still there are a lot of surgeon prefer to use it.

Keywords: the knee (joint), primary total arthroplasty, blood loss, infection, draining.

INTRODUCTION

Total knee arthroplasty is widely used to treat moderate or severe osteoarthritis whether it primary or secondary changes, and rheumatoid arthritis and is associated with significant postoperative blood loss for which blood transfusion might be necessary. A significant number of patients needs blood transfusions. A postoperative hematoma may be an important factor contributing to the development of prolonged drainage, delayed wound

healing and infection of the wound. The role of wound drainage is controversial. The use of drains was thought to be effective in decreasing hematoma formation [1-3], to decrease postoperative pain, swelling, and the incidence of infection [4]. However, bleeding in the drained knees is more evident. Although some studies have shown that drainage after TKA is not necessary [5-9], it is still widely used by orthopedic surgeons [10].

PATIENTS AND METHODS

We study a group of patients underwent primary total knee replacement, a group of 40 patients drain were used, and the other 40 patients no drain used. Total blood loss was calculated depending on drain collection, weight of dressing gauze, post-operative HCT, even accurate amount of blood lost in the non-drain group. It is difficult to accurately assist exact amount of blood lost which called the hidden blood lost, the correlative complications and transfusion amounts were compared and analyze the amount of blood collects in the drain group, non-drain group, group randomized 80 patients undergoing primary total knee replacement. Randomization to receive one deep drain or no drain.

Table 1

Details of 80 patients underwent TKR

	DRAIN GROUP	NON DRAIN
Number	40	40
Male/female	18:22	16:24
Primary OA	20	20
Average age	57-80yrs	58-78 yrs
Hematocrit	34-48%	35-47%
Body mass index	32	Less than 30
Lateral release	6	2

Preoperative measurements included the hematocrit, the range of movement of the knee and the circumference of the knee at the mid-patellar point, all form of anticoagulant stopped. A cemented posterior stabilized prosthesis was implanted (PFC; Johnson & Johnson). Anterior approach with parapatellar and mid-vastus arthrotomy was used depending on the soft tissue situation and the weight of patient and the severity of deformity. A tourniquet was used and deflated at the end of surgery when the dressings were in place. All bleeding vessels stopped, entry of intramedullary guide for the femur backed with cancellous bone piece. The dressings were left for 48 hours unless they caused constriction or discomfort. Mobilization started within 24 hours and the drain was removed approximately 48 hours after surgery. In all patient same anticoagulant dose and regimen were used in ohepe 4500 unit given subcutaneously on daily basis for 3 weeks.

Postoperative blood loss was assessed by measuring the volume of blood drained when a drain was present and weight of the dressings gauze in patients with no drains group. The hematocrit was measured on the second and fifth

postoperative days. Blood transfusion was given to patients with hematocrit below 30. The mid-patellar circumference was measured on the second and fifth days. Active straight-leg raising and the active knee flexion achieved each day

under the supervision of a physiotherapist were recorded. Pain was assessed on the second and fifth days by a 10 cm visual analogue scale. All the complications in the postoperative period were recorded and reviewed.

RESULTS

Average amount of blood lost in the non-drain group that detected by weighting the dressing about 200 ml (180-300 ml) in comparison to 400 ml (300-550 ml) in the drained group, in two thirds of patients without drain dressing on second day post operation because of soaked dressing, the main and majority of discomfort came from bleeding and soaking of dressing, and bed cover that makes major hazard for patient, family and staff nurse in unit. The amount of blood lost more with drained group, but really if check and accurately measure the amount of blood lost in the non-drain group in addition the hidden amount in soft tissue and in joint space really may find a very little difference. Blood transfusions were needed in 10 patients with the drain group compare to 8 patients in non-drain group.

There was no significant difference in the mid-patellar circumference on the third and tenth postoperative days between the two groups. Hematoma developed in two cases post operatively on day 10, on the 11th postoperative day in a knee with a drain. This resolved satisfactorily and did not cause

loss of movement. Four patients in each group had persistent drainage into the dressings until the fourth postoperative day. There was no significant decrease in concentration of hemoglobin between the groups. A blood transfusion was required for 24 patients with and 12 without a drain.

Still the formation of wound hematoma a major risk factor for prolong stay in hospital, and so prolong hospital stay and cost of operation, significant wound drainage noticed in the non-drain group and thus increase the incidence of wound infection and each day increase the risk of infection by 30%, ecchymosis was noted more in group without drain, pyrexia occurred in 10 patients of without-drain group and 8 patients of drained group, a significant difference in range of flexion noted between the two group in first week, more flexion achieved in drained group up to 100 degrees in compare to 70 degrees in non-drain group, and no significant difference was noted in the 4 weeks post surgery, single case of infection was noted 6 weeks in the non-drain group, most of ecchymosis site resolved in 3-4 weeks without any hazards.

DISCUSSION

In our institute Queen Alia hospital it is a common to use close suction drains for 48 hours, although there is no clear evidence worldwide whether to use the drains or not many orthopaedic centers in Europe and USA still use close suction drains, a lot of studies from different centers still showing no clear evidence about the use of drains, our study showing a significant amount of blood lost in the drained group (400 ml) in compare with non-drain group (200 ml) although still we believe that there is a significant amount of blood lost in joint space and in tissue around the knee. The ideal drainage system would decrease hematoma, formation and not cause excess blood loss. Surgeons have tried to achieve this goal by using some blood-saving strategies. The drain clamping method, if it is effective, is a much easier way to reduce blood loss than autologous blood reinfusion, and since most of blood lost occurs in first few hours post-

surgery after release of tourniquet, so some surgeon open the tourniquet after the end of implanting metal (prosthesis) and try to coagulate any bleeding vessels, but still we believe in release the tourniquet after closure the wound and dressing the wounds, also from our notice hematoma formation and ecchymosis area around the wound, and amount of soaked dressing and bed cover in addition to patient and family worry about the bleeding site, and to amount of pain that occurs more with the non-drained group, and the duration of wound drain that makes hazard to get infection, although our golden goal when we do total knee to patients firstly to relieve pain and to restore movement and function that means restore active life to patients, to do anything that makes the surgery so benefit and useful and pain free so to add some little cost (the drain cost) really is not so harmful if we weight the advantage.

CONCLUSION

Although there were significant differences observed in the total amount of blood drainage between both group which clear more in the drained group, still we underestimate the hidden amount of blood lost in joint space and soft tissue around the knee, there is no significant difference in hemoglobin loss between group A and group B. Transfusions were administered in 10 cases in group A, and only 8 cases in group B, and since the surgeons have the choice whether to use the drains or not and since no strict guideline for the usage of drain, so the last decision still depends on surgeons and the observation of soft tissue situation intraoperatively, from our experience we

recommend to drain the knee in obese patients when there is excessive release, in hypertrophic OA when there is large deformity, and rheumatoid arthritis cases.

Although we were unable to show that the absence of a drain increases the incidence of complications the poor clinical outcomes all occurred in knees without a drain. Results from the Swedish Knee Arthroplasty Register suggest a revision rate of less than 2% for infection at five years [10]. We have been unable to provide evidence to support the use of a single closed-suction drain in cemented knee arthroplasty. A reinfusion drain may, however, have benefits.

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