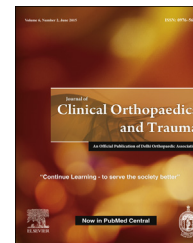


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Original Article

Evaluation of pain in bilateral total knee replacement with and without tourniquet; a prospective randomized control trial



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ABSTRACT

Aim: Thigh pain following tourniquet application is a common complaint in early post operative period following total knee arthroplasty.

Method: Post operative Thigh pain was evaluated in 30 consecutive simultaneous bilateral total knee arthroplasty patients between July 2013 and January 2014. Patient thigh pain was evaluated with the VAS score. The scale was applied on first, second, third day & second and six weeks after surgery.

Result: There were statistically significant difference in VAS score in non-tourniquet group on first, second, third post operative day. We did not find statistically significant difference at Second and Six weeks post operatively.

Conclusion: This Randomized trial demonstrates that non-tourniquet use in TKA has less early postoperative pain and leads to better recovery.

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1. Introduction

Tourniquet pain is one of the most intriguing pains for the anesthesiologist and also a cause of concern for the orthopaedic surgeons.

Tourniquets have been used in total knee replacements since the procedure was first introduced. Tourniquet use during TKA surgery decreases total blood loss, creates a bloodless field and decreases operative time.¹

Complications reported as a consequence of tourniquet application are skin injury [skin abrasions, blisters, breaks & pressure necrosis], nerve injury, post tourniquet syndrome, Deep venous thrombosis, Postoperative pain, wound healing disorders and early infections.^{2–12} Pain is one of the most important outcome measures that contribute to patient dissatisfaction after TKA. Thigh pain has been a very common early postoperative complaint in our patients after having total knee Arthroplasty (TKA) using a tourniquet. The purpose of this study was to evaluate the hypothesis that tourniquet is

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associated with more postoperative thigh pain as compared with no use of tourniquet in total knee replacement.

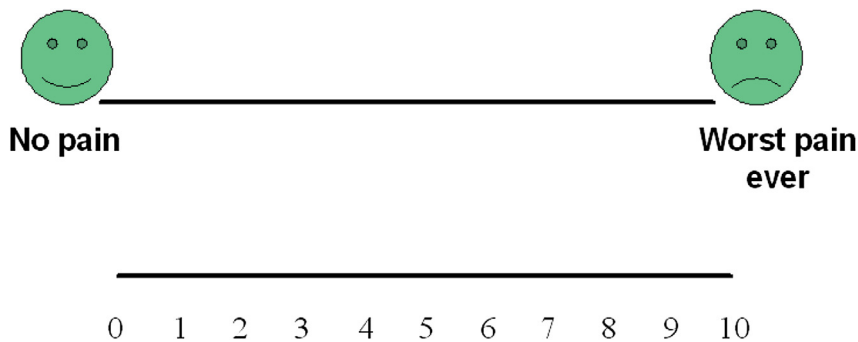
2. Material and methods

Thirty consecutive patients undergoing bilateral primary total knee replacement at this institution were included in the study. Patients with severe cardiac comorbidities or neurologic problems were excluded.

Every patient signed an informed consent before being included in the study. All surgeries were performed by the same surgical team with standard technique. Epidural anesthesia was used in all the patients.

given with epidural morphine 50 µg/kg along with 0.1% bupivacaine in 10 ml normal saline. Along with that IV Diclofenac sodium was used twice daily for five days postoperatively and then shifted to oral formulation accordingly. Active isometric quadriceps and continuous passive movement were started on the second post-operative day, and walking with full weight bearing permitted as tolerated under the supervision of a physiotherapist. Patient thigh pain was evaluated with the VAS score. The pain scale was applied on the first, second, and third day, as well as 2 and 6 weeks after surgery.

For VAS score a card board was placed on patient's bed side of A4 size with double-side print or photocopy the next two diagrams ensuring that the lines are exactly 10 cm in length and superimposed.



Both knees were prepared at the same time and a single set of instruments were used. One knee was operated first and then other by senior author [CSY]. All patients received perioperative antibiotics [Amoxicillin-clavulanic acid 1.2 gm × 10].

The thigh that will receive the tourniquet pressure will be randomized according to a coin toss just prior to the start of surgery. The tourniquet cuff used was an 85 cm long and 8.5 cm wide. One soft roll pad was applied between the skin and the cuff.

In Thigh 1 [tourniquet used side] was inflated to a pressure of systolic blood pressure plus 100 mm Hg and was released after the first quadriceps stitch. Hemostasis was achieved before closure. The wound was closed after wound irrigation and then elastic bandages were applied. In Thigh 2, the tourniquet was wrapped around the thigh but was not inflated during the surgery. In both thighs, the midline skin incision and a Mid vastus approach was used. More electrocautery was used to facilitate the surgery in patients without a tourniquet. All drill holes in the distal femur were filled with an autogenous bone plug. Suction drains were inserted before closure. Postoperative collection in drain was noted. Drain was removed when Postoperative collection was less than 100 ml for 12 h. Average time of drain removal was 48 h in both groups. After closure the knee was placed in a compressive dressing after the application of sterile cotton rolls and crepe bandage to the limb from groin to just above ankle. The knee was immobilised in extension. Postoperatively, analgesia was

3. Result & analysis

Lower limb pain in the thirty consecutive eligible patients undergone simultaneous bilateral primary TKAs were noted. There were 9 men and 21 women with a mean age of 58 years [range,45–69].

The tourniquet was used on left side in 14 cases (46.7%) and on right side in 16 cases (53.3%). There were no statistical differences in operating times in both thighs [THIGH 1 = 68.35 ± 3.75 min; THIGH 2 = 69.1 ± 3.04 min].

Mean VAS Score noted on first, second, third days and second, sixth weeks after surgery were 5.75, 4.4, 3.35, 1.7 and 1.05 in THIGH 1 and 3.95, 2.7, 2.05, 1.25, 1 in THIGH 2 respectively (Table 1, Fig. 1).

There were statistically significant difference in VAS score between THIGH 1 and THIGH 2 on the first day [p < 0.001], second day [p < 0.001], third day [p < 0.001] postoperatively. We did not find statistically significant difference at second and six weeks after surgery (Table 1 and Fig. 1).

4. Discussion

Pneumatic tourniquets have been associated with many different complications. The tourniquet causes tissue ischemia underneath and distal to the cuff, resulting in a variety of metabolic, cellular, and microvascular changes

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