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An Old Approach to a New Blockade - the Effect of Popliteal Plexus Blockade after Total Knee Arthroplasty

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A feasibility study

Introduction

Total knee arthroplasty (TKA) is associated with:

- severe pain
- high postoperative opioid consumption
- importance of early and effective rehabilitation

Background

- A combined femoral triangle and obturator nerve block effectively reduces pain and opioid consumption after TKA
- Popliteal plexus is formed by contributions from the obturator and the tibial nerve.
- In cadavers injection of 10 mL of dye in the distal adductor canal spreads to the popliteal fossa and stains the popliteal plexus and the posterior obturator nerve

Femoral triangle block

The anteromedial innervation of the knee

Identification of the apex of the femoral triangle prior to the femoral triangle block

Endpoint of injection by a femoral triangle

La = lateral, Me = medial, A = femoral artery, SA = sartorius muscle, AL = adductor longus muscle, MVN = medialis vastus nerve, SN = saphenous nerve, VM = vastus medialis muscle

Popliteal plexus block

The posterior knee innervation

Endpoint of injection by a popliteal plexus block

VM = vastus medialis muscle, SA = sartorius muscle, A = femoral artery, AC = adductor canal, AM = adductor magnus muscle, F = femoral bone

Methods

- femoral triangle block was performed preoperatively
- spinal anesthesia for the surgery
- if postoperative pain > 3
- then a popliteal plexus block was performed

Results

In 10 Patients:

- NRS: 5.5 (4-8) prior to Popliteal Plexus Block (PPB)
- NRS < 3 within 10 minutes after PPB
- no motor block of the motor function of the sciatic nerve

Conclusion

Popliteal plexus block appears to have a supplemental effect on pain after total knee arthroplasty without affecting the motor function.