Is Lumbosacral Plexus Block an Effective and Safe Alternative as Surgical Anesthesia for Total Hip Replacement?

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References

Introduction
An increasing number of patients for hip replacement have severe cardiovascular comorbidity. Spinal and general anesthesia are potentially dangerous for these patients due to risk of hemodynamic instability. Lumbosacral plexus block is reported to provide surgical anesthesia for total hip replacement. Hemodynamic impact from lumbosacral plexus block is theoretically minimal.

Hypothesis
Surgical anesthesia with Lumbosacral plexus block induces less hemodynamic impact than Continuous spinal anesthesia and Single-dose spinal anesthesia.

Subjects and Method
Unblinded and unrandomized pilot study. 6 patients for total hip replacement. Age ≥ 50 years and ASA ≥ II. Hemodynamic parameters measured by femoral artery pulse contour analysis from baseline to 60 min after block performance included: Cardiac output (primary endpoint) Systemic vascular resistance Stroke volume Central venous oxygen saturation

Lumbosacral Plexus Block (LSPB; n = 3)
- Blockade of Lumbar Plexus
  - Shamrock block6 with 10 mL ropivacaine 7.5 mg/mL
  - ParaSacral Parallel Shift block5 with 10 mL ropivacaine 7.5 mg/mL
- Single-Dose Spinal Anesthesia (SDSA; n = 1)
  - Bupivacain 5 mg/mL titrated to effect - max 3 mL

Continuous Spinal Anesthesia (CSA; n = 2)
- LSPB
- CSA

Further Results
No significant change in any hemodynamic parameters from baseline to 30 minutes after block performance in groups LSPB and CSA.

Conclusion
Neither lumbosacral plexus block nor continuous spinal anesthesia appear to affect any hemodynamic parameters in this pilot study on patients without severe cardiovascular comorbidity. Lumbosacral plexus block did not provide complete surgical anesthesia for total hip replacement. Additional block of superior cluneal nerves would have been needed. Further studies are necessary to access the hemodynamic effects of lumbosacral plexus block in patients with cardiovascular comorbidity. Performing such studies in patients without severe cardiovascular disease is probably futile.

Cardiac Output
- Nerve block performance
- Post-block observation

Systemic Vascular Resistance
- Nerve block performance
- Post-block observation

Further Results
No significant difference detected between the treatments LSPB and CSA. Insufficient analgesia of posterior part of incision area (innervated by superior cluneal nerves) in all 3 subjects with LSPB.

Systemic Vascular Resistance
- Lumbosacral plexus block
- Continuous spinal anesthesia
- Single-dose spinal anesthesia

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