Adductor canal block for total knee arthroplasty: a systematic review

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Background

- Total knee arthroplasty (TKA) is commonly performed for knee arthritis.
- Incidence of moderate to severe pain postoperatively has been reported as roughly 50%\(^1\).
- Post-op analgesia modalities vary and include neuraxial (epidural), local anesthetic infiltration, nerve blockade, patient controlled analgesia opioids, etc…

\(^1\) Grosu et al.
Femoral nerve block

- A common nerve blockade for TKA
- Effective in reducing opioid consumption and reducing length of hospital stay\(^2\)
- Compared to epidural, FNB provides excellent analgesia and less opioid-related side effects\(^2,3\)
- Concern exists that FNB reduces quadricep strength, delaying mobilization and increasing risk of falls\(^4\)

\(^2\) Paul et al.
\(^3\) Fowler et al.
\(^4\) Atkinson et al.
Adductor canal block

- Adductor canal block (ACB) is a relatively new block being increasingly used for pain control post-TKA.

- Potential advantage is only the terminal sensory branch of the femoral is blocked – the saphenous nerve.

- Sometimes referred to as “sub-sartorial block”

Image source: www.aagbi.org
The adductor canal

- Aponeurotic tunnel in middle third of thigh from apex of femoral triangle to opening in adductor magnus\(^5\)

- Borders:
  - A: sartorius
  - AL: vastus medialis
  - PM: adductor longus

\(^5\)Manickam et al.
ACB vs FNB

- Small studies have shown better pain control and lower incidence of complications vs FNB\textsuperscript{6,7,8}

- Patients receiving ACB have better quadriceps strength and less opioid consumption post-op\textsuperscript{8,9}

- Overall, a relative paucity of data comparing the two techniques

\textsuperscript{6} Andersen et al.
\textsuperscript{7} Jin et al.
\textsuperscript{8} Hanson et al.
\textsuperscript{9} Jaeger et al.
The ACB debate

- There has been debate between regional anesthesiologists as to what exactly a “proper” or “true” ACB is and the precise anatomy of the adductor canal\textsuperscript{10,11}
  - Unclear at this time whether this is clinically relevant
  - Certainly a potential confounding variable between studies

\textsuperscript{10} Jaeger et al.
\textsuperscript{11} Bendtsen et al.
Clinical Question

- **P**: adults undergoing primary TKA
- **I**: Adductor canal block for post op analgesia
- **C**: Femoral nerve block for post op analgesia
- **O**: Pain scores, opioid consumption, muscle strength, patient satisfaction, hospital LOS, persistent post surgical pain at 3 months
Methods

• Comprehensive and formal literature search to identify RCTs comparing ACB to FNB (and possibly to other modalities)
  Study selection will be done in duplicate and any discrepancies will be resolved by consensus

• Studies will be assessed for bias using the Cochrane Review Handbook criteria

• Data extraction will be done by one reviewer and verified by second reviewer

• Plan for a meta-analysis (using the random effects model) if there isn’t too much heterogeneity

• Results will be presented with Forrest plots
Outcomes

- VAS pain scores during rest & activity
- Opioid usage
- Quadriceps strength
- Hip adductor strength
- Patient satisfaction
- Length of stay
- Possibly others?
After the systematic review. . .

- Preliminary plans to conduct an RCT locally with the goal of developing a clinical prediction tool.
- The hope is to aid clinicians in determining which patient should get which block when undergoing TKA.
Questions?
Comments?
Suggestions?
References


