Efficacy of Buprenorphine and Clonidine Local Anesthetic Additives in Adductor Canal Blocks for Total Knee Arthroplasty

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Introduction

- Adductor canal nerve block (ACB) has been recently well-described in regional anesthesia literature
- Clonidine and buprenorphine have been described as adjuvants to local anesthetic (LA) for peripheral nerve blocks
- No studies have evaluated use of these additives for ACB
- Retrospective study to evaluate recent change in practice
- We hypothesized more efficacious block with additives

Materials and Methods

- Following IRB approval, retrospective chart review of patients undergoing total knee arthroplasty (TKA) from October to December 2014
- Preoperative ACB with combined spinal epidural (CSE) as primary anesthetic technique
- Patients divided into two groups
  - Group 1: ACB with 20ml 0.25% bupivacaine PLUS 200mcg buprenorphine and 25mcg clonidine
  - Group 2: ACB with 20ml 0.25% bupivacaine ALONE
Materials and Methods

- ACBs performed mid-thigh using ultrasound guidance
- Preoperative characteristics and data points from the perioperative period were abstracted from patient’s charts
- GraphPad Prism (La Jolla, CA) used for statistical analyses
  - Mann-Whitney U test

Results

- 56 qualifying patient’s charts were reviewed
- Each group contained 28 patients
- Preoperative Characteristics included age, gender, BMI, ASA score, weight, pre-op opioid use, pre-op pain score
- Perioperative data points included opioid consumption, pain scores, ambulation distance, and PACU/hospital times

<table>
<thead>
<tr>
<th>Preoperative Characteristics</th>
<th>Group 1</th>
<th>Group 2</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age mean (yrs.)</td>
<td>64.1</td>
<td>63.1</td>
<td>0.628</td>
</tr>
<tr>
<td>BMI mean (kg/m²)</td>
<td>31.3</td>
<td>26.5</td>
<td>0.090</td>
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<tr>
<td>Median ASA score</td>
<td>2</td>
<td>2</td>
<td>&gt;0.999</td>
</tr>
<tr>
<td>Gender (n)</td>
<td>M=12, F=16</td>
<td>M=13, F=15</td>
<td>N/A</td>
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<tr>
<td>Pre-op Opioid use (n)</td>
<td>8</td>
<td>5</td>
<td>N/A</td>
</tr>
<tr>
<td>Pre-op Pain (mean)</td>
<td>1.39</td>
<td>1.82</td>
<td>N/A</td>
</tr>
</tbody>
</table>
### Discussion

- In our study, appears there is no advantage to buprenorphine and clonidine adjuvant use in ACB for TKA.
- Factors that may have impacted results:
  - Patient sample size
  - Standardized perioperative pain regimens
  - Standardized physical therapy routines
  - PACU wait times for hospital beds
- Further studies exploring additional additives (i.e. dexamethasone), volume of injection, LA concentration

### References