Monofilament Testing To Detect Subclinical Neuropathy Following Brachial Plexus Blockade – A Prospective Study
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BACKGROUND

• Regional Anesthesia has become the anesthesia of choice for most upper extremity surgery, especially for ambulatory procedures.

• Egol et al showed improved pain score with regional anesthesia for distal radius fractures (2012)

• Its short-term advantages over general anesthesia include lower immediate pain scores, decreased nausea, and shorter PACU stays (Ilfield 2006).

• Nerve injury following regional anesthesia is rare; however it may occur. Rates of transient neuropathy has been reported as high as 3% (Brull 2007).

• The purpose of this study was to determine if there are any short term neurologic changes associated with supraclavicular and infraclavicular blocks.

MATERIALS AND METHODS

• Prospective study on 51 elective hand surgery patients receiving a brachial plexus blocks and a hand surgery procedure not involving a nerve procedure.

• Monofilament testing was performed on both hand preoperatively and at the first post-operative visit (7-14 days)

• Testing was performed at the pulp of all fingers including the on the radial and ulnar aspects of the ring finger, as well as the first dorsal web space

• Two sided chi-squared statistical analysis performed

RESULTS

Demographics

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
<th>Supracavicular block</th>
<th>Infraclavicular block</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Age</td>
<td>47.6</td>
<td>37</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

Surgical Procedures

<table>
<thead>
<tr>
<th>Total</th>
<th>Nerve blocks</th>
<th>Fractures</th>
<th>Nerve blocks Fractures</th>
<th>Fractures Fractures</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>25</td>
<td>25</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Results

• There was no statistically significant difference in sensibility between the operative and non operative hand.

• There was no statistically significant difference in sensibility in the operative hand when pre-operative testing was compared to post-operative testing.

• No specific nerve distribution showed any particular diminished sensibility

LIMITATIONS

• Currently study may be underpowered

• Difficult to discern effects of block versus effect of surgery

• Multiple people administering the tests

• No control general anesthesia group

CONCLUSIONS

• Brachial plexus blockade does not appear to result in subclinical neuropathy as measured by monofilament testing.

It is a safe method of anesthesia for upper extremity surgery.