Intraosseous Regional Prophylaxis in TKA in High BMI Patients

A Randomised trial

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Disclosures

Previous Research support - Vidacare
“Prophylactic antibiotics must be present in the tissues at sufficient concentration from the time of incision until the time of closure”

Burke 1961, Journal of Surgery
Intraosseous Regional Administration (IORA) Prophylaxis

Higher Tissue Concentrations of Vancomycin With Low-dose Intraosseous Regional Versus Systemic Prophylaxis in TKA

A Randomized Trial

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CORR 2014

Higher Cefazolin Concentrations with Intraosseous Regional Prophylaxis in TKA

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CORR 2013

Tissue Concentrations 6-10x higher
500mg Vancomycin in 130-150ml Saline

IO needle medial border tibia

Injection below inflated tourniquet

Vancomycin distributes via vascular system
Study Rationale

Greater PJI risk with high BMI

IORA prophylaxis gives antibiotic concentrations 6-10x higher

Will IORA work in high BMI patients?

Increased volume distribution
IO injection difficult in obese
Randomized Controlled Trial

Primary TKA
BMI > 35

22 Patients Enrolled

Mean BMI 41
Range 35-52

11 IV Systemic
15mg/kg IV
1-2 hr Infusion

11 Intraosseous Regional
500mg IO Bolus, 150ml Saline

Vancomycin
# Patient Data

<table>
<thead>
<tr>
<th></th>
<th>15mg/kg IV Systemic</th>
<th>500mg IO Regional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Age (mean)</td>
<td>63</td>
<td>66</td>
</tr>
<tr>
<td>BMI</td>
<td>40 (35-51)</td>
<td>41 (35-53)</td>
</tr>
<tr>
<td>ASA Score</td>
<td>2.6</td>
<td>2.5</td>
</tr>
<tr>
<td>Mean Procedure Duration (min)</td>
<td>80 (60-127)</td>
<td>90 (63-150)</td>
</tr>
</tbody>
</table>
Vancomycin Concentration µg/L

Vancomycin - Fat Samples

Sample (Mean time post incision)

1 (2min)
2 (19min)
3 (45min)
4 (70min)

500mg IOR

15mg/kg IV Systemic
Vancomycin - Bone Samples

Vancomycin Concentration µg/L

Sample (Mean time post incision)
1 (19 min)
2 (45 min)
3 (70 min)

15mg/kg IV Systemic
500mg IORA
# Mean Antibiotic Concentrations

<table>
<thead>
<tr>
<th>Sample</th>
<th>Concentration ((\mu g/g))</th>
<th>Concentration ((\mu g/g))</th>
<th>(p) Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fat 1</td>
<td>5.0</td>
<td>82</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Fat 2</td>
<td>5.1</td>
<td>31</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Fat 3</td>
<td>4.8</td>
<td>28</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Fat 4</td>
<td>2.6</td>
<td>17</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Bone 1</td>
<td>7.7</td>
<td>16</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Bone 2</td>
<td>5.5</td>
<td>66</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Bone 3</td>
<td>5.1</td>
<td>21</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

- **15mg/kg IV Systemic**
- **500mg IO Regional**
Conclusions - IORA Vancomycin

Effective in High BMI patients

4-8x higher tissue concentrations

Targeted option in this high-risk group
Further Information

IORA presentations, videos, published articles and thesis is available for download at:

www.drsimonyoung.co.nz/IORA