Skin Closure in Primary Total Hip Arthroplasty at The Northern Hospital

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Disclosure

Neither of the Authors have any disclosures
Aims

To investigate the outcomes of *Staples vs Monocryl* for skin closure after Primary Total Hip Replacements in regards to:

1. Incidence of adverse events

2. Incidence of dressing change and Incidence of temporary cessation of chemical VTE prophylaxis
Methods

• Retrospective cohort study
• Consecutive primary THRs from a 3 year period (Nov 2009 – Oct 2012)
• All wounds closed with either 3-0 subcuticular monocryl or staples
• Any revision procedure excluded
Methods

Data collected

– Age, sex, length of stay
– smoking and diabetes
– Surgeon and registrar, wound closure method, use of a drain
Staples Vs Monocryl

Primary Outcome

Incidence of Adverse Events:
- Oral or IV antibiotics for wound issues
- Readmission to hospital or return to theatre for wound complications

Secondary Outcomes

Postoperative dressing change or reinforcement due to wound discharge until wound is healed
Temporary cessation of chemical VTE prophylaxis and subsequent confirmed VTE
Results

- 188 THRss on 175 patients by 16 consultants and 23 registrars
- 108 Females and 80 Males, Mean age 66
- 18 for # NOF, 170 for OA
- Minimum follow up 10 months
- 16% had a drain
- All wounds dressed using a waterproof dressing with absorbent pad
- 184 were given 40mg or renally adjusted dose Clexane daily started D1 postop with compression stockings and foot pumps
- 4 were given rivaroxiban 10mg daily started D1 postop with compression stockings and foot pumps
Fascia closed with 1 Vycril
Fat closed with 1 Vycril
Dermis closed with 2-0 Vycril
Skin closed with Staples or Monocryl
## Results - Primary

<table>
<thead>
<tr>
<th></th>
<th>Staples</th>
<th>Monocryl</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=</td>
<td>136</td>
<td>52</td>
</tr>
<tr>
<td>Adverse Event</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral antibiotics</td>
<td>10 (7.4%)</td>
<td>1 (1.9%)</td>
</tr>
<tr>
<td>IV antibiotics</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>readmission</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>return to theatre</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

**OR 4.05 (0.51-32.44) P=0.19**
# Results - Secondary

<table>
<thead>
<tr>
<th></th>
<th>Staples</th>
<th>Monocryl</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=</td>
<td>136</td>
<td>52</td>
</tr>
<tr>
<td>Total Dressing Changes</td>
<td>322</td>
<td>48</td>
</tr>
<tr>
<td>Changes per Patient</td>
<td>2.4</td>
<td>0.9</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>OR</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any Dressing Change</td>
<td>5.6 (2.15-11.38)</td>
<td><strong>P&lt;0.001</strong></td>
</tr>
<tr>
<td>3 or more changes</td>
<td>7.18 (3.14-16.40)</td>
<td><strong>P&lt;0.001</strong></td>
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<tr>
<td>5 or more changes</td>
<td>21.25 (2.84-159.1)</td>
<td><strong>P=0.003</strong></td>
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<table>
<thead>
<tr>
<th></th>
<th>OR</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 0-2</td>
<td>12.38 (4.94-31.03)</td>
<td><strong>P&lt;0.001</strong></td>
</tr>
<tr>
<td>Day 3-5</td>
<td>2.07 (1.07-4)</td>
<td><strong>P=0.030</strong></td>
</tr>
<tr>
<td>Day 6 and Subsequent</td>
<td>1.94 (0.98-3.83)</td>
<td><strong>P=0.055</strong></td>
</tr>
</tbody>
</table>
## Results - Secondary

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<thead>
<tr>
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<th>Monocryl</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=</td>
<td>136</td>
<td>52</td>
</tr>
<tr>
<td>Temporary VTE prophylaxis cessation</td>
<td>26 (19.1%)</td>
<td>2 (3.9%)</td>
</tr>
<tr>
<td><strong>OR 5.91 (1.35-25.87) P=0.018</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PE</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>DVT</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>9 (6.7%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

Temporary cessation of Chemical VTE prophylaxis resulted in no incidence of VTE
No patient on Rivaroxiban suffered wound complications or VTE
Results

Age, Gender, Use of a drain, smoking, diabetes, consultant and registrar were not independent risk factors for adverse events, dressing changes or temporary cessation of chemical VTE prophylaxis
Results

Independent Risk Factors for Adverse Outcomes

3 or more dressing changes
\[ OR \ 5.98 \ (1.26\text{-}28.48) \ P=0.025 \]

Clexane cessation
\[ OR \ 5.58 \ (1.57\text{-}19.77) \ P=0.008 \]
Discussion

*Smith et al* – Staples have 4x risk of wound complications in hip surgery

- 4 articles pertaining to hips deemed suitable for inclusion
- 2 strongest pro-suture articles had poor outcome measures
- Single study deemed methodologically sound found no difference (authors now use staples)
Discussion

*Patel et al (2007)* - Prolonged wound drainage leads to higher infection rate ($p<0.001$)

*Saleh et al* - $P=0.01$

*Eveillard et al* - $P=0.02$

*Surin et al* - $P<0.01$
Discussion

Limitations

– Low numbers
– Wound closer not documented
– Minimal co-morbidities recorded
– Wounds dressed at acute hospital or rehab
– Nursing discretion
– Documentation
Conclusions

Primary Outcome
There is no statistically significant difference in rates of adverse events using either staples or Monocryl to close primary THR wounds.

Secondary Outcomes
Using staples rather than Monocryl leads to increased rates of dressing changes and clexane cessation for prolonged wound discharge.

Dressing changes and cessation of clexane for prolonged wound discharge are independent risk factors for adverse events.
Acknowledgements

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- Dr Hardeep Sandhu – Orthopaedic Resident
- Dr Phaethon Karragianis – Orthopaedic Resident
References


4. Surin et al. *Infection after Total Hip Replacement. With Special Reference to a Discharge From the Wound*. JBJS (Br) 1983;65:412-8