SERVICE EVALUATION ON THE USE OF RRDs

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BACPAR 14
RIGID REMOVABLE DRESSINGS (RRDs)

- Used for trans-tibial amputees
- Evidence base towards the use of RRDS
  - Early application (Nawijn et al, 2005)
- Under utilized in UK with only 10% patients receiving one (Condie et al, 1996)
- Number of varieties available
  - POP
  - Fibreglass
  - Vacuum formed
- Protect the stump
- RRD encompasses residuum limiting oedema formation
BENEFITS OF REDUCING OEDEMA

- Reduction in healing time (Nawijn et al 2005)
- Improved pain control (Smith et al 2003)
- Facilitation of early mobilisation (Graf and Freijah, 2003; Condie et al 1996)
- Readiness for prosthetic rehabilitation (Van Velzen et al 2005 and Vigier et al 1999)
- Stump shaping and maturation (Louie et al 2010)
- Reduction in length of hospital stay (Vigier et al 1999)
AIMS OF EVALUATION

- RRDs introduced at MRI in Jan 2011
- Aimed to determine
  - Whether RRDs reduce time to casting
  - Whether RRDs reduce hospital LOS
  - How RRDs are used
- Masters dissertation project
- Ethics gained from University and Trust
**Method**

- Retrospective review of patients notes and database
- Patients selected using therapy database
- RRD group – transtibials who received RRD postoperatively (Jan 2011 – Sept 2012)
- Control group – transtibials receiving standard care prior to introduction of RRDs (June 2009 – Dec 2010)
Control Group Protocol

- Standard post op dressings of wool and gauze
- Day 4 - compression therapy
  - Compression sock
  - Flotron – 4 times a day (20 mins)
- Day 7
  - PPAM aid – daily sessions for up to an hour
- Cast once oedema controlled
- Primary fitting week post casting
- 2-3 weeks in-patient prosthetic rehab following fitting
RRD GROUP PROTOCOL

- Application within first week post op
- Daily fitting checks
- Wound dressed and monitored by specialist nurse
- Compression sock applied day 4
- Recast of RRD once deemed necessary
- PPAM aid begun day 7
- Wear 24 hours a day (minus therapy and dressing changes)
- Worn until started prosthetic rehab or discharged
RESULTS

- 66 patients identified 33 in each group
- Review of medical records
  - 4 excluded control group (3 revision surgery, 1 RRD at DSC)
  - 5 excluded RRD group (3 RIP, 2 medically unwell)
- Review of data
  - 13 excluded from RRD group (8 RRD applied after 7 days post-op, 5 inconsistent use of RRD)
  - These patients were included in data for reasons RRD stopped
## DEMOGRAPHICS

<table>
<thead>
<tr>
<th></th>
<th>Control Group (n = 29)</th>
<th>RRD group (n = 15)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean age at amputation</strong></td>
<td>59.7 (SD 15.4)</td>
<td>68.9 (SD 14.1)</td>
<td>0.046</td>
</tr>
<tr>
<td><strong>Gender</strong>&lt;br&gt;Male</td>
<td>24 (83%)</td>
<td>11 (73%)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>5 (17%)</td>
<td>4 (27%)</td>
<td></td>
</tr>
<tr>
<td><strong>Ethnicity</strong>&lt;br&gt;White British</td>
<td>24 (83%)</td>
<td>14 (93%)</td>
<td></td>
</tr>
<tr>
<td>Afro-Caribbean</td>
<td>3 (10%)</td>
<td>1 (7%)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>2 (7%)</td>
<td>0 (0%)</td>
<td></td>
</tr>
<tr>
<td><strong>Cause</strong>&lt;br&gt;Vascular</td>
<td>26 (90%)</td>
<td>12 (80%)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>3 (10%)</td>
<td>3 (20%)</td>
<td></td>
</tr>
<tr>
<td><strong>Current / Ex smoker</strong></td>
<td>23 (79%)</td>
<td>10 (67%)</td>
<td></td>
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<tr>
<td><strong>Diabetic</strong></td>
<td>12 (41%)</td>
<td>10 (67%)</td>
<td></td>
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<tr>
<td><strong>Haemodialysis</strong></td>
<td>7 (24%)</td>
<td>2 (13%)</td>
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</table>
TREATMENT MODALITIES

- All patients in each group received compression sock

- Median day application
  - Control = 7
  - RRD = 5 \[ p = 0.152 \]

- 2 patients in control didn’t use PPAM aid and 1 in RRD group

- Median day application
  - Control = 9
  - RRD = 8 \[ p = 0.385 \]

- Median day application of RRD 4 days
## Casting and LOS

<table>
<thead>
<tr>
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<th>Control Group (n = 29)</th>
<th>RRD group (n= 15)</th>
<th>p value</th>
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</thead>
<tbody>
<tr>
<td>Days to casting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>24</td>
<td>21</td>
<td>0.028</td>
</tr>
<tr>
<td>IQR</td>
<td>18</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>11 - 85</td>
<td>10 - 30</td>
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<tr>
<td>Overall LOS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>48</td>
<td>42</td>
<td>0.206</td>
</tr>
<tr>
<td>IQR</td>
<td>28</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>5 - 128</td>
<td>14 - 66</td>
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Relationship between time of RRD application and prosthetic casting

![Graph showing the relationship between days until prosthesis cast and day of RRD application.](image)

- **Days until Prosthesis Cast**
- **Day of RRD Application**

Regression analysis results:
- $F = 7.775$, $p = 0.0192$
REASONS FOR STOPPING USE OF RRDS

- Prosthetic (n = 15)
- Discharge (n = 6)
- Wound issues (n = 2)
- Misplaced (n = 1)
- Compliance (n = 3)
- Pain (n = 2)
- Ill fitting (n = 2)
- Unknown (n = 1)
DISCUSSION

- RRD group stat significantly older
- Stat significant reduction in time until prosthetic casting fro RRD group
- General trend to reduced LOS
- Delay in starting of compression sock and PPAM aid in both groups
- Small RRD group with large exclusions
- Changes to services and NHS
IMPROVEMENTS TO SERVICE

- Greater awareness of targets for compression sock and PPAM aid
- Continued use of RRDs
- Aim to apply RRD in theatre
- Development on info booklet for RRD
- Possibility of further research
  - RCT
  - Qualitative research
  - Survey into use of RRD in UK
- Submitted for publication in P&O International
REFERENCES


