A multidisciplinary approach in reducing sternal wound complications post sternotomy

Eshelle N. Hara
Core surgery fellow
Royal Sussex County Hospital, Brighton
14 March 2016
SCTS Cardiothoracic Forum 2016 Birmingham ICC
Objective

To address wound burden post sternotomy, we have piloted a multidisciplinary approach to reduce these complications by trialing use of adjuncts and assess its feasibility.
Burden of sternal wound issues post cardiac surgery.

- Extra theatre time
- Prolonged hospital stay
- Cancelled elective procedures
- Involvement of other specialties e.g. Plastic surgery
- Dealt with by most junior member of staff
• 18 months of cases requiring extra theatre time logged – Root cause analysis performed. Pattern emerged to show common themes.

- Sternal instability
- High BMI
- Wound discharge
- Diabetes
A multidisciplinary approach was developed to deal with wound complications. This included:
• An agreed trial approach was piloted for 1 consultant series.

High BMI → External sternal support

Diabetes → Negative pressure dressing
• Pilot consisted of a multidisciplinary team to take part in trial of adjuncts for patients immediately after cardiac surgery.

- BMI > 30, diabetes
  - negative pressure dressing at time of surgery
  - external support vest the next day.
By initiating the pilot in 1 consultants series, between Apr 2015 - Aug 2015:

15 patients fit the criteria, adjuncts were applied.

Resulting in ->

No wound dehiscence

No extra theatre time

No plastic surgical involvement.

BMI range (31-43) median 35
Table 1: Data showing wound complications in 5 monthly time frames before and after trialing the pilot approach within the department.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total no. of patients with</td>
<td>13</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>sternal wound complications</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of sternal wound complications</td>
<td>6.4%</td>
<td>5.4%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Total extra time in theatre</td>
<td>65hrs 24mins</td>
<td>68hrs 6mins</td>
<td>36 hrs 21 mins</td>
</tr>
</tbody>
</table>
Table 2: Risk factors of patients in 5 monthly time frame before and after trialing the pilot approach within the department.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Average BMI</td>
<td>30.4</td>
<td>30.9</td>
<td>30.0</td>
</tr>
<tr>
<td>No. pts of those with wound complications with BMI &gt; 30</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>No. of diabetic patients with wound complications</td>
<td>6</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
% of sternal wound complications before and after introducing adjuncts post sternotomy

*5 MONTHLY TIME FRAMES*
> 50% reduction in theatre time
Data analysis:

• By widening the approach across the department, extra theatre time has reduced by >50% in a 5 monthly period.

• Retrospective modelling cost analysis was tabulated for 1 yr of patients with wound complications. By introducing adjuncts, a reduction of at least 50% wound burden would save £60K per annum.

• Based on the above cost analysis, by introducing adjuncts across the department this meant a savings of £25,000.
**Conclusion**

Based on the results demonstrated so far:

- This approach involving a multidisciplinary group has led to a feasible use of adjuncts to reducing sternal wound issues.

- It has proven to be economically sound by savings of at least £25 000 over 5 months

- Additionally, positive feedback from nursing staff and patients alike makes this dynamic approach for further progression by:

  - expanding the inclusion criteria –
    - BMI >30, Diabetic
    - redo sternotomy
    - Re-opening for bleeding
    - Patients on immunosuppressants of any kind.
    - Frail patients with poor bone quality (on surgeon’s request).
    - Greater than 5 cm fat superficial to sternum
Thank you

Questions?