The first UK experience with Posthorax® vest - Prophylactic use results in reduced sternal wound complications following sternotomy.

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Deep Sternal Wound Complication
DSWC

- Sternal instability
- Drainage
- ± Fever / Septic Shock
Increased mortality and morbidity

Depression
Poor quality of life
Long term illness

DSWC Implications

>400% length of stay

Longer occupancy of beds and repeated use of theatres

Loss of new admissions

Abx, Vac Pump
HDU/ITU-RRT
DSWC

- **Pre operative**
  - Hygiene
  - MRSA screen
  - Hair removal
  - Antibiotics
  - Skin preparation

- **Operative**
  - Type/Length of Operation
  - Laminar air flow
  - ↓ OR traffic
  - Sterilisation
  - Closure technique
  - Wax/Electrocautery

- **Post operative**
  - Ward cleanliness
  - Dressings care
  - Glycemic control
  - ↓ blood transfusion
  - Personal Hygiene
  - **Sternum Stability**¹,²

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The Posthorax Vest is a post-operative jacket for patients who have undergone heart surgery via sternotomy.

- Provides support for the chest without restricting breathing.
Function of Posthorax®

- Anteroposterior stabilization of the sternum (2 front cushions)
- Different sizes
- Ergonomical fit for males and females
- Lateral straps for optimum fit and stop mechanism which allows normal breathing but stops hyperextension of the thorax
- Individual sizing at the shoulder straps to prevent vertical malposition
Non flexible front section to prevent movement of the two sternum halves

Breathing and Stop Mechanism

Fracture

Breathing and Stop Mechanism

Pull

Antero-posterior pressure - created by pulling to each side

Coughing pressure up to 8 NM / cm²

Breathing - deep breathing - coughing - normal movement
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Selection process/ Data collection

- Pre operative decision (clinic or in hospital)
- Documentation in the notes (suitability, reason, size)
- Application by trained staff
- Ideally, application immediately after extubation
- Recommended use for up to 6 weeks
- 1st year Prospective collection
- 2nd year Retrospective collection
Indications (prophylactic use)

- High BMI (>30)
- Diabetes
- Steroids
- Reduced Lung Function
- Re operation
- Severe osteoporosis (Intraoperative finding)
Indications (therapeutic use)

- Clicky sternum
- Severe Cough/ chest infection
- Superficial infection
- Delirium/agitation
- DSWC (on Vac Pump or post rewiring)
Posthorax vs Non Posthorax

![Bar chart showing comparison between Posthorax and Non Posthorax]

- Posthorax: 240
- Non Posthorax: 2492

Legend:
- Yellow: No posthorax
- Purple: Posthorax
## Risk Factors

<table>
<thead>
<tr>
<th></th>
<th>Non Postthorax group</th>
<th>Postthorax group</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>69.3±11.7</td>
<td>69.2±11.4</td>
<td>p=ns</td>
</tr>
<tr>
<td>BMI</td>
<td>27.8±4.9</td>
<td>31.3±5.9</td>
<td>p&lt;0.001</td>
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<tr>
<td>COPD</td>
<td>12%</td>
<td>17.3%</td>
<td>p=0.03</td>
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<tr>
<td>Diabetes</td>
<td>19.4%</td>
<td>25.6%</td>
<td>p=0.05</td>
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<tr>
<td>Previous operation</td>
<td>11.5%</td>
<td>16.3%</td>
<td>p=0.07</td>
</tr>
<tr>
<td>Logistic EuroSCORE</td>
<td>8.6%</td>
<td>8.1%</td>
<td>p=ns</td>
</tr>
<tr>
<td>X clamp time</td>
<td>68.4±32.2</td>
<td>67.7±32.9</td>
<td>p=ns</td>
</tr>
<tr>
<td>CPB time</td>
<td>105.1±46.3</td>
<td>101.2±42</td>
<td>p=ns</td>
</tr>
<tr>
<td>Urgency</td>
<td>38.8%</td>
<td>32.2%</td>
<td>p=ns</td>
</tr>
</tbody>
</table>
Time spent wearing jacket

Hospital

Follow up

Treatment Prophylactic

<20 hours >20 hours

<20 hours >20 hours
Patients pain with jacket fitted

Hospital

Follow up

![Bar chart showing pain reduction in patients with jacket fitted during hospitalization and follow-up. The chart compares treatment and prophylactic effects, with categories for improved, same, and worse outcomes.](chart.png)
Weeks wearing jacket

![Bar chart showing weeks wearing jacket for Treatment and Prophylactic groups, with categories 0 to 2, 3 to 5, and 6 to 8.]
DSWC per Group

- Posthorax: 1.2%
- No Posthorax: 2.1%

p = 0.62
Conclusion

- Reduction of infection incidence
- Contributes to faster recovery
- Reassurance for the patient
- Cost effective