Reducing delay in hand elevation using a Modified Brooke Sling

**Introduction & background**

Effective control of upper limb swelling is crucial in the course of recovery for patients who are admitted with hand injuries or infection. In our hospital, a Brooke sling is used to elevate an injured upper limb. However, these slings are not readily available in the wards and its application is often delayed.

In order to reduce the time taken in elevating the upper limbs, we have modified the Brooke Sling.

**Current Conditions**

<table>
<thead>
<tr>
<th>Pre-sewn cloth Brooke Sling</th>
<th>Commercial sling from private vendor</th>
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<tbody>
<tr>
<td>- Available only during office hours</td>
<td>- Available at any time</td>
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<tr>
<td>- Time to obtain sling: 30 to 120 min</td>
<td>- Time to obtain sling: 10 to 60 min</td>
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<tr>
<td>- Cost per piece: $2.50 but reusable</td>
<td>- Cost per piece: $25</td>
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<tr>
<td>- Cost of washing: 50¢</td>
<td>- Additional charge if sling is soiled and needs changing</td>
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**Analysis**

Delay in Application of Brooke Sling
- Brooke Sling not readily available in wards
- To obtain cloth Brooke Sling from Linen Room
- Only available during office hours; requires memo from ward Nurse Clinician
- Cost constraint
- Discomfort due to the material
- Patients refuse to use Brooke Sling
- To obtain Commercial Brooke Sling from ward 75
- Only available during office hours; Chargeable to patient

**Methodology**

A Modified Brooke Sling was designed out of a disposable pillow case sheet and cable ties which are readily available in all wards. The time taken to put up these slings was measured as the duration from the time a clinician ordered for hand elevation till the time the hand was elevated in a sling.

The time taken to put up the sling was compared between the three different slings: Pre-sewn Cloth Brooke Sling (n=20), Commercial Sling (n=30) and Modified Brooke Sling (n=30). The cost of each sling was also compared. Feedback was gathered from ground staff regarding ease of setting up the sling and from patients, the comfort in using the sling.

**Proposed Counter Measures**

Using a disposable pillow case as a Modified Brooke Sling:

**Step 4**: Hang sling on drip pole

**Step 3**: Cut two small holes at the upper end of sling and insert a cable tie into each hole.

**Step 2**: Tuck in a corner of the pillow case into the other side.

**Step 1**: Prepare a disposable pillow case and 2 cable ties.

**Results**

The average time to application of the Modified Brooke sling was reduced by:

**Time comparison**

<table>
<thead>
<tr>
<th>Mean time spent (min)</th>
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</thead>
<tbody>
<tr>
<td>Cloth Brooke Sling (n=20)</td>
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<tr>
<td>Commercial Brooke Sling (n=30)</td>
</tr>
<tr>
<td>Disposable Pillow Case (n=30)</td>
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</tbody>
</table>

**Cost savings**

- Cloth Brooke Sling: $2.50 per piece
- Commercial Sling (Vendor): $25
- Disposable Pillow Case: $1.8 per piece

**Other measures**:

a. 100% of the Patients were satisfied with the use of the Modified Brooke Sling
b. staff feedback that the application of the Modified Brooke Sling was fast and easy
c. Disposable pillow cases and cable ties are readily available in all wards
d. It also saves storage space and washing cost and time for the Linen Room

**Conclusion**

The Modified Brooke Sling is the quickest to set up and the delay in elevating the patient’s hand is significantly reduced. Moreover, there is also significant cost savings to the institution and patient.