Heart Hugger Reduces Sternal Dehiscence and Infections
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Reduce sternal dehiscence and infections

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At Wake Forest University Baptist Medical Center, Winston-Salem, NC, approximately 4% of all cardiac surgery-related readmissions are attributed to sternal wound dehiscence and/or infection. Some 800 cardiac surgeries are performed annually. Now they hope to cut these readmissions dramatically.

A factor contributing to sternal complications is patient noncompliance with precautions following open heart surgery. These precautions include the need to support the sternum when deep breathing and coughing, and to avoid lifting more than 10 pounds or pushing or pulling objects.

To improve compliance among high-risk patients, the cardiothoracic surgery team introduced the use of a sternal support harness. Such devices provide circumferential sternal support during movement and activity.

Few studies in the literature evaluate sternal support harnesses. One study, however, found sternal support to be effective in reducing pain during coughing and deep breathing exercises in the outpatient cardiac rehabilitation setting.

An easy solution to a costly problem

The Wake Forest cardiothoracic surgery team conducted a trial to evaluate the effectiveness of the sternal support harness among a group of high-risk patients. Patients with like characteristics were randomly selected as a control group.

High-risk characteristics are:

1. Presence of diabetes

2. Weight greater than 250 pounds

3. Large chest, and/or pendulous breasts

4. Redo sternotomy

5. Use of bilateral mammary arteries for coronary bypass grafts.

A sternal support device was placed on the selected patients immediately after extubation. Patients, family members, and the nursing staff were taught the appropriate application and use of the device to help ensure effectiveness. The Heart Hugger device is adjustable and easy for the patient to manage (see figure 1). It is manufactured by General Cardiac Technology Inc., Los Gatos, CA.

Patients were asked about their pain level and device compliance throughout their hospital stay. Overall, patients reported decreased pain, increased compliance with sternal precautions, and increased mobility with the use of the sternal support harness. The patients were instructed to use the device for three to four weeks after discharge. Final follow-up was completed at the time of the postoperative visit with the surgeon.

Convincing results

Among 19 patients randomized to the sternal support device group, 2 were readmitted with sternal wound infections. The average length-of-stay was three days. In the control group, 4 of 19 patients were readmitted with wound infections. LOS ranged from three weeks to three months.

Based on these findings, the sternal support harness was approved by the hospital's Product Evaluation Committee. It will be used for all high-risk patients. Approximately 30% to 40% of adult patients who undergo cardiac surgery at Wake Forest meet the criteria for being at risk for wound dehiscence. The cost of the harness is $85. It is a Medicare approved medical device.

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For more information about the sternum support harness, visit http://www.hearthugger.com*.*

Reference: *"The sternum support harness for the treatment of sternotomy pain and the prevention of sternal instability," Peg Meisler, PT,* Cardiopulmonary Physical Therapy Journal, *vol. 11, #2, February 2000, pp. 1163-68.*