Gastroesophageal reflux (GER) is a disorder that affects many infants. GER is a malfunction of the distal esophageal sphincter that causes frequent return of stomach contents into the esophagus (Herbst, 1981). If untreated, GER can result in vomiting, weight loss, failure to thrive, melena, heartburn, esophageal stricture, abnormal neurologic symptoms (Herbst, 1981), recurrent pneumonias, and apnea (Ramenofsky & Leape, 1981).

Positioning is the primary conservative treatment regimen for infants suffering from GER (Herbst, 1981; Meyers & Herbst, 1982; Ramenofsky & Leape, 1981); it includes placing the infant in a prone upright position at a 30° angle to keep the stomach contents below the level of the gastroesophageal sphincter. Because infants are not developmentally able to assume or maintain a prone, head-elevated posture of 30° over a prolonged period, various positioning devices have been tried (Herbst, 1981; Meyers & Herbst, 1982; Orenstein, Whitington, & Orenstein, 1983). These devices include an inclined board with a padded peg that fits between the legs to maintain the position, or a special infant seat that places the infant in a supine position. A cloth restraint for holding in-
Figure 2
Pattern Pieces for Gastroesophageal Reflux Sling

Figure 2a
Cutting Line
Sewing Line

Figure 2b
Front
1 in. Webbing
1 in. Loop Fastener
1 in. Loop Fastener
Top Stitching
2 in. Loop Fastener

Figure 2c
Back
1 in. Hook Fastener
1 in. Hook Fastener
Top Stitching

Figure 2d
Back
Reverse Side
2 in. Hook Fastener
Top Side

Infants in position has also been reported (Joseph, MacEwen, & Boos, 1982). Studies of positioning infants with GER in a supine, prone, or prone position raised to an angle of 30° show that in the latter position, incidences of reflux were decreased in number and frequency (Meyers & Herbst, 1982). The infant seat, which placed the infant in a supine position, resulted in increased gastroesophageal reflux (Orenstein et al., 1983). Positioning the infant in a prone position has been preferred because there is less likelihood of refluxed material being aspirated (Ramenofsky & Leape, 1981).

In response to requests from pediatricians at the University of Texas Medical Branch (UTMB) at Gal-
veston, the occupational therapists at UTMB designed a cloth sling as an alternative to the inclined board. The sling is pinned to the mattress and maintains the infant in a prone position, and the head of the bed is elevated to prevent reflux. This is a secure placement for the infant and allows for free exploration of objects and activities placed within reach.

The antireflux sling has been used at the UTMB clinic with infants 2 weeks to 6 months old. The physician's clinical evaluation of the infant is the basis for initiating or discontinuing the use of the sling. The sling is an example of an inexpensive method to help correct a problem that would otherwise require surgical correction or result in developmental delay.

Fabrication

Materials

1. One-half yard prewashed fabric
2. 1 in. prewashed webbing, cut into four 15 in. pieces
3. 8 inches of 1 in. hook-and-loop fastening material
4. 3 inches of 2 in. hook-and-loop fastening material
5. 4 heavy-duty safety pins

Method

1. Draw paper pattern for size needed (see Figure 1).
2. Secure paper pattern with tape or straight pins to a double thickness of the fabric. Cut out sling, using the pattern as a guide (see Figure 1).
3. First, make the sling front. Place the front pieces together, right sides facing each other, and stitch, leaving \( \frac{1}{8} \) in. seam allowance. Leave a 2 in. unstitched opening to turn sling inside out (see Figure 2a). Turn sling inside out.
4. Topstitch along all the edges of the sling front, taking care to close the area left open.
5. Repeat steps 3 and 4 for sling back.
6. Securely stitch webbing (for straps) and 1 and 2 in. hook-and-loop fastening material onto sling front, loop side up (see Figure 2b).
7. Place sling front and back on top of each other and mark sling back for placement of buttonholes (webbing straps will be pulled through buttonholes [see Figure 2c]).
8. Make buttonholes on sling back (two parallel zigzag lines of stitching, locked at each end) to allow for passage of webbing straps from sling front. Sew two pieces of hook-and-loop fastening material onto back, flush with top stitching, hook side up (see Figure 2c).
9. Turn sling back over and sew 2 in. fastening material onto reverse of back portion, hook side up (see Figure 2d), making sure to place it so that it lines up with the fastening material you have sewn onto the front (see Figure 2b).
10. Pull side straps of sling front through buttonholes of sling back.
11. Put distal part of sling front through the infant's legs and fasten to the fastening material on posterior of sling back.

The sling should be securely fastened to the mattress by the side and top straps with heavy-duty safety pins. To ensure that the safety pins are placed out of the child's reach, pull the straps over the top of the mattress and fasten them to the bottom edge. The head of a hospital bed should be elevated to a 30° incline (Meyers & Herbst, 1982). When the child is
discharged, the care giver can be instructed to place rolled blankets or pillows under the child’s mattress to achieve the desired angle (see Figures 3 and 4).

The antireflux sling has been used successfully at UTMB over the past year with 40 patients who have a diagnosis of GER. It is inexpensive, quickly fabricated, and washable. Prefabricated reflux slings in three sizes are available in the occupational therapy clinic to provide expedient service to both physician and patient.

Nurses and care givers should be educated in the application and care of the sling. One advantage of the sling is that it is not necessary to unpin it completely to remove the child. Leaving the two top straps and one side strap pinned in place, the care giver can easily wash the infant’s weight.

Having fabricated both the antireflux prone positioning board and the antireflux sling, the occupational therapists at UTMB have found that the sling has several advantages over the board. The sling is less time-consuming to construct, is easier to apply, is sanitary and easily washed, and the materials are less expensive. Because it does not require that a peg be placed between the infant’s legs, it allows for freedom of movement for developmental tasks.

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