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The Gastrostomy Feeding Button™

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The button™ feeding device replaces conventional long-term gastrostomy feeding tubes. Health care professionals can educate parents on maintenance of the button and provide them with emotional support.

The reasons for a gastrostomy tube are varied, ranging from severe asphyxia, complex gastrointestinal disorders, and irreparable or long-term burns of the esophagus. The cosmetic appearance of a gastrostomy tube can be distressing to parents and problems with conventional gastrostomy tubes are common, especially in children. The recently developed gastrostomy feeding button™ may be the answer to the above concerns. Health care professionals can provide teaching and support to parents when they are familiar with the maintenance and function of the button.

The major indication for insertion of a gastrostomy feeding button is the need for long-term enteral feedings. Pediatric patients who are in need of this type of prolonged nutritional support may include: (a) children with poor oral-motor function as a result of central nervous system damage, (b) children with esophageal atresia, and (c) children with oral and esophageal burns (Paarlberg & Balint, 1985). Children requiring gastrostomy tubes for abdominal decompression after surgery or short-term enteral feedings would not be suitable candidates for the button, since insertion requires a well-established gastrostomy site (Bard Interventional Products, 1986; Gauderer, Picha & Izant, 1984).

Once the gastrostomy has been done using a standard technique such as laparotomy (Stamm technique) or percutaneous endoscopic technique (Gauderer, et al., 1984) and the site is well-established, insertion of the but-

ton is relatively easy. The button is a small, flexible silicone device that has a mushroom-like dome at one end and two small wings at the other end (see Figures 1 and 2). There is a one-way valve inside the device to prevent reflux of stomach contents.

Insertion

The steps for insertion of the gastrostomy feeding button are as follows:

1. The depth of the stoma must be determined so that the proper size feeding button is used (see Figure 3). At present, there are three sizes: small (1.7 cm shaft), medium (2.7 cm shaft), and large (4.3 cm shaft) (Bard Interventional Products, 1985).
2. Once the appropriate size has been chosen, distend the button with an obturator to aid in insertion (see Figure 4). The obturator should be lubricated with a water soluble lubricant and the button distended several times prior to insertion ensuring patency of the antireflux valve.
3. Lubricate the dome of the button and the stoma with water soluble lubricant and introduce the button through the gastrostomy site into the stomach (see Figure 5).
4. Remove the obturator (see Figure 6). When removing the obturator, you may note the antireflux valve sticking to the obturator. If the valve is not properly seated, leakage of gastric contents could occur. Slightly rotating the obturator when removing it may eliminate this problem. If the antireflux valve continues

to stick, gently push the obturator back into the button until the valve goes back to its closed position (Bard Interventional Products, 1986). An 8 or 10 French suction catheter can also be used since it is softer, more flexible, and less likely to damage the stomach than the obturator. Simply insert the catheter until the valve goes back to its closed position.

5. After removing the obturator or catheter, visually check the position of the antireflux valve to make sure it is closed, then insert the flip-top silicone safety cover. The outer surface of the button will be flush with the skin, and the safety plug remains in place between feedings (see Figure 7).

Advantages and Limitations

Although the gastrostomy feeding button has many potential benefits for the pediatric client, its use is not with-

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Figure 1. Diagram of Gastrostomy Feeding Button™

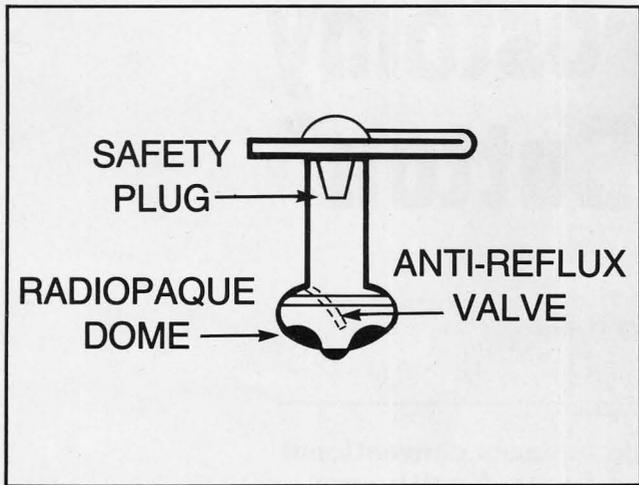


Figure 2. Gastrostomy Feeding Button™

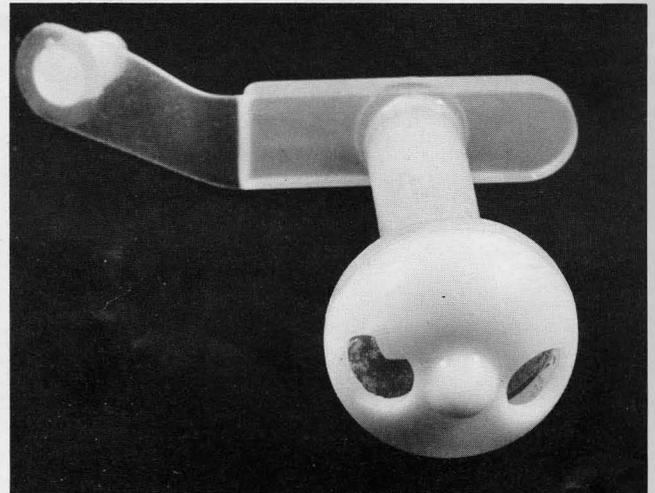


Figure 3. Stoma Depth Measuring

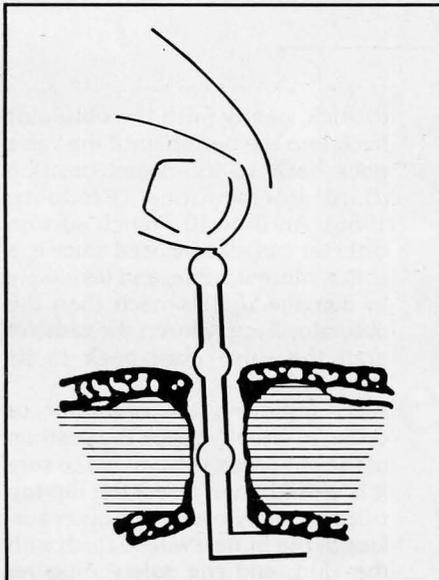


Figure 4. Button Distention

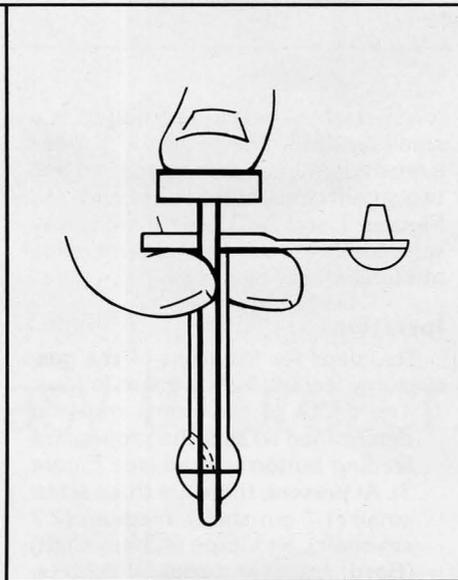


Figure 5. Button Introduction

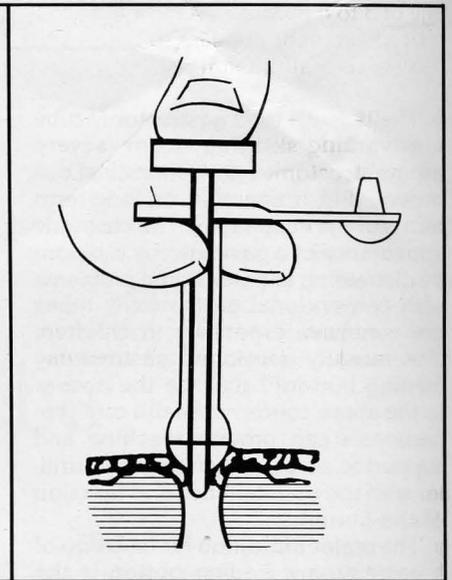


Figure 6. Obturator Removal

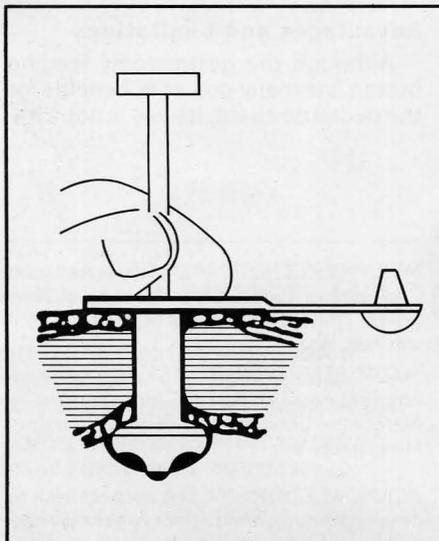


Figure 7. Safety Plug Inserted

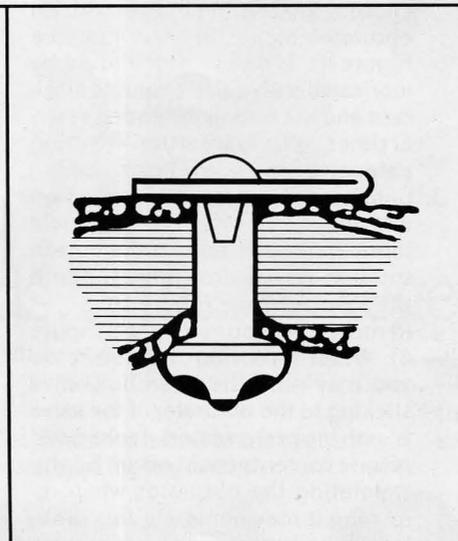
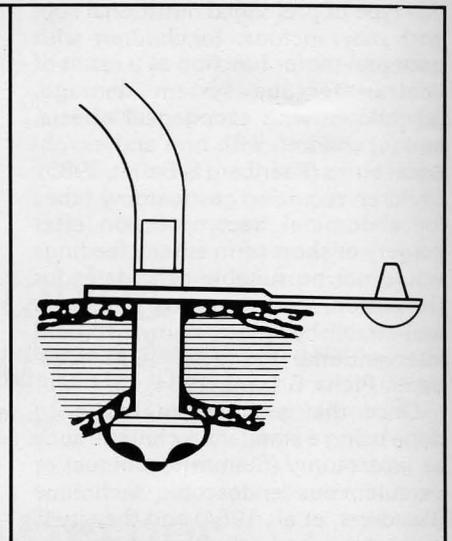


Figure 8. Feeding Tube Attached



out drawbacks. Advantages and limitations of the button are noted in Table 1.

In general, advantages of the button include: (a) ease of care, (b) absence of reflux of gastric contents through the tube, (c) decreased incidence of skin breakdown and irritation at the site, (d) decreased possibility of accidental dislodgement or migration, and (e) cosmetic appearance. A major limitation of the gastrostomy feeding button is that insertion requires a well-established gastrostomy site that can accommodate a size 18-20 French catheter. In addition, the button may need to be replaced fairly frequently. At the present time, the button is classified as a temporary implant and is only approved by the Food and Drug Administration for 6-month implantation (Bard Interventional Products, 1986). A pediatric surgeon in a metropolitan children's hospital has noted that the button presently lasts an average of 3 to 4 months. The usual reason for replacement appears to be antireflux valve malfunction.

Routine Care

Preventing skin breakdown around the gastrostomy stoma site is important. Since a nipple, dressing, and tape are not needed to secure the button, there is an advantage over the conventional gastrostomy tube in maintaining skin integrity. However, stomach contents can leak if the antireflux valve is broken, and since the device is flush at skin level, irritation can occur.

Nursing staff and parents need to rotate the button when doing site care to allow complete cleaning. This is done by turning the button around in a full circle during every cleaning.

A mild soap and water may be used to clean around the stoma. The button can be fully immersed in water since there are no sutures and it is designed primarily for a well established gastrostomy site. In fact, a convenient time to clean the stoma site is during the bath (Paarlberg & Balint, 1985). After bathing and site care, dry the area well and leave the site exposed to the air for 20 minutes to assure complete drying.

Site care should be done one to two times daily, depending on the condition of the skin. If the stoma site becomes red, irritated or excoriated when using soap and water, try cleaning the site with half-strength hydrogen peroxide followed with betadine (liquid or swab sticks). A new solution of hydrogen peroxide should be prepared for each cleaning since it disintegrates when exposed to light. Application of stomahesive powder is another alternative if skin integrity becomes impaired.

Table 1. Advantages and Limitations of the Gastrostomy Feeding Button™

Advantages	Limitations
<ul style="list-style-type: none"> • Cosmetically pleasing appearance • Simplified care • Decreased incidence of skin breakdown/irritation/infection • Increased comfort and mobility for the pediatric client • Decreased risk of accidental dislodgement • Decreased risk of migration and subsequent obstruction • Ease of replacement • Minimal leakage or reflux • Long-lasting material • Fully immersible in water • Safety valve eliminates need for clamp • Radiopaque 	<ul style="list-style-type: none"> • Requires well-established gastrostomy site • Limited number of sizes • Valve may become clogged • Requires more specialized tubing • More expensive than conventional gastrostomy tube • Child must remain fairly still during feedings, since tubing may disconnect with increased activity • Pressure necrosis may occur if button size is too small

To reiterate, let the site dry thoroughly before covering the area with clothing (see Table 3).

The inside of the feeding button can become coated with formula or food particles. Rinsing with 10 cc of water after every feeding and periodically cleaning the inside tube with a cotton tipped applicator and water will help maintain patency and reduce bacterial growth.

The feeding button system costs approximately \$155 and includes the button, a feeding catheter, 60 cc syringe, adapter, and obturator. A 14 French feeding catheter with an attached serrated adapter, designed to retrofit the button, is also available. Equipment needs to be rinsed with water after every feeding. Once daily, equipment should be washed in warm soapy water and rinsed thoroughly. A pipe cleaner can be used to clean the feeding catheter and adapter. A baby bottle brush works well to clean the syringe. Once a week, the equipment can be soaked in acetic acid or a cold sterilant. After soaking, the equipment must be rinsed well before being reused for feedings.

Feeding

Since the feeding button is an alternate method of feeding, parents may feel that their normal nurturing role is being usurped. A highly relevant article by Paarlberg & Balint (1985) addresses parent-child interaction and stimulation during gastrostomy feedings, positioning of the child, food temperature, nutritional requirements,

Table 2. Feeding Supplies

<ul style="list-style-type: none"> • 60 cc syringe or standard feeding bag • Feeding catheter • Adapter • Tap water to flush
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and food selection. The guidelines and suggestions presented by Paarlberg and Balint are the same as those used with the gastrostomy feeding button.

Feeding Procedure

1. Attach the adapter and feeding catheter to the syringe. A feeding bag, which is attached to a specially designed 14 French feeding tube, may also be used to deliver liquids into the stomach. Clamp off the lower portion of the catheter with a clamp or your fingers.
2. Fill the syringe/feeding bag and catheter with the feeding. Filling the feeding catheter prevents large amounts of air from entering the stomach and causing abdominal distention.
3. Open the safety plug and attach the adapter and feeding catheter to the button (see Figure 8).
4. Elevate the syringe or feeding bag above the level of the stomach. Let the feeding flow in by gravity over 15 to 30 minutes (Wink, 1983). Flow rate can be altered by changing the height of the syringe. A pump may be used for the child on continuous

Table 3. Troubleshooting

Complications	Possible Causes	Interventions
Leakage of stomach contents.	<ol style="list-style-type: none"> 1. Antireflux valve is sticking 2. Antireflux valve is broken 	<ol style="list-style-type: none"> 1 a. Gently insert the obturator or 8-10 French suction catheter into the shaft of the button until it moves the valve back to the closed position. <ol style="list-style-type: none"> b. The antireflux valve will make a popping sound and the stomach contents will stop leaking. 2. If the stomach contents continue to leak after the above method has been tried several times, contact the physician and keep the child flat. Taping the top safety valve will provide temporary relief of leakage.
Feeding catheter becomes dislodged during a feeding	<ol style="list-style-type: none"> 1. Child coughs or is active and knocks the catheter out 	<ol style="list-style-type: none"> 1 a. Estimate the amount of feeding lost. <ol style="list-style-type: none"> b. Reattach the feeding catheter and refeed.
Misplaced or broken feeding equipment		<ol style="list-style-type: none"> 1. Contact: Bard Interventional Products — C.R. Bard, Inc.; 5 Federal Street; Bellerica, MA 01821 (617) 663-2244 Formerly American Endoscopy, Inc.
Redness and irritation around the stoma	<ol style="list-style-type: none"> 1. Mild soap and water cleansing is not effective 2. Button has not been rotated during stoma care 3. Stoma site is not completely dry after stoma care and bath 4. Spilled formula or milk has not been cleaned from the skin 	<ol style="list-style-type: none"> 1 a. Clean the stoma site with half-strength hydrogen peroxide followed with betadine. <ol style="list-style-type: none"> b. Apply stomahesive powder. c. Clean the stoma site more frequently. 2. Rotate the button in a full circle during every cleaning. 3. Dry the stoma site well and leave it exposed to air for 20 to 30 minutes. 4. If formula or milk is spilled on the skin, clean it off immediately.
Plugging of the button	<ol style="list-style-type: none"> 1. Occlusion from food and/or medication 	<ol style="list-style-type: none"> 1 a. Use liquid medications or well-ground, diluted medication. <ol style="list-style-type: none"> b. Irrigate with 5 to 10 cc of tap water after administering food and medication. c. Attach a 10 cc syringe with 2 to 3 cc of air or water and gently try to dislodge the plug. d. Insert an 8 or 10 French suction catheter about 1½ inches into the shaft of the button and gently try to push the plug through. e. Clean the inside of the feeding button with tap water and a cotton tipped applicator to help maintain patency.
Dislodgement of the button	<ol style="list-style-type: none"> 1. Accidental pulling of the button 	<ol style="list-style-type: none"> 1 a. If the button becomes dislodged, save it for reinsertion. This is not a medical emergency. <ol style="list-style-type: none"> b. Slightly lubricate the obturator, dome of the button, and stoma site with a water soluble lubricant. c. Push the obturator down the shaft of the button to distend it. Then insert the distended button into the stoma. d. If unable to reinsert the button, contact the child's physician.

infusion or feedings that are done over several hours.

5. Refill the syringe before it empties to prevent air from entering the stomach.
6. When the feeding is complete, flush the button with 10 cc of tap water to rinse the feeding tube of any formula or food particles and to prevent premature occlusion.

7. After flushing with tap water, lower the syringe below stomach level to facilitate burping. Eructation sounds like a release of air. If active vomiting occurs or if the child is at risk for emesis after feeding, the button could be vented with the adapter and feeding catheter.
8. Remove the adapter and feeding catheter. If the antireflux valve is

functioning properly, formula or food should not return. Snap the safety plug in place to keep the lumen clean (see Figure 7). The safety plug should also eliminate reflux of stomach contents if the antireflux valve fails (Bard Interventional Products, 1986).

Problems can occur during the feeding. For example, the feeding catheter

can pop out when the child coughs. If the child is active, the feeding catheter can be knocked out of the button. If these situations arise, the feeding needs to be restarted with an estimation made of the amount of feeding already received.

Medications. Thick medications can plug the button (Gauderer, et al., 1984). To prevent obstruction of the feeding button, medication in tablet form should be crushed and mixed well with water, formula, milk or juice before placing in the syringe. Fruit or pudding may be used if the medication does not dissolve in liquids (Paarlberg & Balint, 1985). Give the medication before the feeding to ensure the proper dosage reaches the child's stomach. Viscous liquid medication (for example, valproic acid) may need to be diluted with water to prevent clogging the button. The feeding catheter should be rinsed with 5 to 10 cc of tap water after administering the medication.

If the button becomes plugged with medication, attach a 10 cc syringe containing 2 to 3 cc of water or air and gently try to push the plug through. If that method is unsuccessful, insert an 8 or 10 French suction catheter no more than 2 inches, and again gently try to dislodge the plug (see Table 3).

Reinsertion

The initial feeding button is usually inserted on an outpatient basis, for example, in a clinic, doctor's office or emergency room. Before going home, parents need instruction on how to reinsert the button. Parents could practice reinsertion on a model using a spare button and obturator. Printed guidelines would be beneficial to parents when at home to reassure them they are reinserting the button correctly.

If the button comes out, it is not an emergency. The stoma will remain open for several hours so that the button can be reinserted (Paarlberg & Balint, 1985). Parents need to be informed not to throw the button away if it comes out and it was functioning properly. The same button can be reinserted by the parents. If they are unsuccessful or uncomfortable with this procedure, the button may be reinserted by the physician or specially trained professional nurse. The steps for reinsertion of the feeding button are the same as the original insertion technique previously discussed.

Teaching & Emotional Support

Just because parents have cared for a child with a gastrostomy tube does not mean they will be comfortable with

this new feeding device. Learning about any new procedure or type of equipment takes time. Since most of these feeding devices are inserted on an outpatient basis, teaching strategies and emotional support for both parents and children must be provided in a relatively short period of time. As previously mentioned, offering the parents an opportunity to practice feeding and reinsertion of the button may help alleviate some of their fears and concerns. Preparing the child for insertion and use of the button depends on several factors, including the child's cognitive functioning and developmental level. The nurse should provide information and preparation based on an assessment of each individual child.

Parents need someone to call when questions arise; for example, a nurse on the floor, in the clinic, or in the emergency room. Another willing parent who has a child with a feeding button would be an excellent resource and support person. Written guidelines for reinsertion, feeding and troubleshooting are helpful to parents when they are home alone. It is reassuring to have written guidance when dealing with new procedures and equipment.

The gastrostomy feeding button is a relatively recent innovation in the administration of long-term enteral feedings. Therefore, evaluation of the button's effectiveness is just beginning, and there is a paucity of information regarding its use and maintenance. The guidelines presented will provide pediatric nurses and parents with an understanding of the function and care of the gastrostomy feeding button.



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1987 Book Award Contest

Pediatric Nursing announces its Second Annual Book Award Contest to recognize excellence in books published in the child health field. Publishers are invited to enter books published between January 1, 1987 and December 31, 1987. A check for \$10 (payable to *Pediatric Nursing*) should accompany each title submitted. All books postmarked by December 31 will be reviewed and evaluated by a panel of experts in pediatric nursing.

Four categories of book awards will be granted: (a) general textbook, (b) specialty area/child health, (c) child health care for the nonprofessional, and (d) special/other.

Evaluation criteria will include quality of writing style, comprehensiveness and timeliness of content, documentation through research, and relevance for professional nurses in child health care.

Award winners will be announced in the May/June 1988 issue of *Pediatric Nursing*.

Three copies of the books to be reviewed and the check for the appropriate fee should be mailed to:

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Please include the following information with the book: author(s), publication date, title, publisher's name and location, number of pages, price, and type of cover — hard or soft.