**MIC* Transgastric-Jejunal Feeding Tube**

**Endoscopic/Radiologic Placement**

**Figure 1**

**Description**

The Kimberly-Clark* MIC* Transgastric-Jejunal feeding tube (Fig 1) provides for simultaneous gastric decompression / drainage and delivery of enteral nutrition into the distal duodenum or proximal jejunum.

**Indications For Use**

The Kimberly-Clark* MIC* Transgastric-Jejunal feeding tube is indicated for use in patients who cannot absorb adequate nutrition through the stomach, who have intestinal motility problems, gastric outlet obstruction, severe gastro-esophageal reflux, are at risk of aspiration, or in those who have had previous esophagectomy or gastrectomy.

**Contraindications**

Contraindications for placement of a Transgastric-Jejunal feeding tube include, but are not limited to ascites, colonic interposition, portal hypertension, peritonitis and morbid obesity.

**Complications**

The following complications may be associated with any Transgastric-Jejunal feeding tube:
- Skin Breakdown
- Hypergranulation Tissue
- Perforation
- Stomach or Duodenal Ulcers
- Intraperitoneal Leakage
- Pressure Necrosis

**NOTE:** Verify package integrity. Do not use if package is damaged or sterile barrier compromised.

**Placement**

The Kimberly-Clark* MIC* Transgastric-Jejunal feeding tube may be placed percutaneously under fluoroscopic or endoscopic guidance or as a replacement to an existing device using an established stoma tract.

**CAUTION:** A GASTROPEXY MUST BE PERFORMED TO AFFIX THE STOMACH TO THE ANTERIOR ABDOMINAL WALL. THE FEEDING TUBE INSERTION SITE IDENTIFIED AND STOMA TRACT DILATED PRIOR TO INITIAL TUBE INSERTION TO ENSURE PATIENT SAFETY AND COMFORT. THE LENGTH OF THE TUBE SHOULD BE SUFFICIENT TO BE PLACED 10-15 CM BEYOND THE LIGAMENT OF TREITZ.

**CAUTION:** DO NOT USE THE RETENTION BALLOON OF THE FEEDING TUBE AS A GASTROPEXY DEVICE. THE BALLOON MAY BURST AND FAIL TO ATTACH THE STOMACH TO THE ANTERIOR ABDOMINAL WALL.

**Tube Preparation**

1. Select the appropriate size MIC* Transgastric-Jejunal feeding tube, remove from the package and inspect for damage.
2. Using the 6 ml Luer slip syringe contained in the kit, inflate the balloon with 5 ml sterile or distilled water through the balloon port (Fig 1E).
3. Remove the syringe and verify balloon integrity by gently squeezing the balloon to check for leaks. Visually inspect the balloon to verify symmetry. Symmetry may be achieved by gently rolling the balloon between the fingers. Reinsert the syringe and remove all the water from the balloon.
4. Using a 6 ml Luer slip syringe, flush water through both the gastric (Fig 1A) and jejunal ports (Fig 1B) to verify patency.
5. Lubricate the distal end of the tube with water-soluble lubricant. Do Not Use Mineral Oil Or Petroleum Jelly.

**Suggested Radiologic Placement Procedure**

1. Place the patient in the supine position.
2. Prep and sedate the patient according to clinical protocol.
3. Insure that the left lobe of the liver is not over the fundus or the body of the stomach.
4. Identify the medial edge of the liver by CT scan or ultrasound.
5. Insufflate the stomach with air using a nasogastric catheter, usually 500 to 1,000 ml or until adequate distention is achieved. It is often necessary to continue air insufflation during the procedure, especially at the time of needle puncture and tract dilation, to keep the stomach distended so as to oppose the gastric wall against the anterior abdominal wall.
6. Insufflate the stomach with air using a nasogastric catheter, usually 500 to 1,000 ml or until adequate distention is achieved. It is often necessary to continue air insufflation during the procedure, especially at the time of needle puncture and tract dilation, to keep the stomach distended so as to oppose the gastric wall against the anterior abdominal wall.
7. Choose a catheter insertion site in the left sub-costal region, preferably over the lateral aspect or lateral to the rectus abdominis muscle (N.B. the superior epigastric artery courses along the medial aspect of the rectus) and directly over the body of the stomach toward the greater curvature. Using fluoroscopy, choose a location that allows as direct a vertical needle path as possible. Obtain a cross table lateral view prior to placement of gastrostomy when interposed colon or small bowel anterior to the stomach is suspected. **NOTE:** PO/NG contrast may be administered the night prior or an enema administered prior to placement to opacify the transverse colon.
8. Prep and drape according to facility protocol.
**Gastroscopy Placement**

**CAUTION:** IT IS RECOMMENDED TO PERFORM A THREE POINT GASTROPEXY IN A TRIANGLE CONFIGURATION TO ENSURE ATTACHMENT OF THE GASTRIC WALL TO THE ANTERIOR ABDOMINAL WALL.

1. Place a skin mark at the tube insertion site. Define the gastroscopy pattern by placing three skin marks equidistant from the tube insertion site and in a triangle configuration.

**WARNING:** Allow adequate distance between the insertion site and gastroscopy placement to prevent interference of the T-Fastener and inflated balloon.

2. Localize the puncture sites with 1% lidocaine and administer local anesthesia to the skin and peritoneum.

3. Place the first T-Fastener and confirm Intragastic position. Repeat the procedure until all three T-Fasteners are inserted at the corners of the triangle.

4. Secure the stomach to the anterior abdominal wall and complete the procedure.

**Create the Stoma Tract**

1. Create the stoma tract with the stomach still insufflated and in apposition to the abdominal wall. Identify the puncture site at the center of the gastroscopy pattern. With fluoroscopic guidance confirm that the site overlies the distal body of the stomach below the costal margin and above the transverse colon.

**CAUTION:** AVOID THE EPICOLONARY ARTERY THAT COURSES AT THE JUNCTION OF THE MEDIAL TWO-THIRDS AND LATERAL ONE-THIRD OF THE RECTUS MUSCLE.

**WARNING:** Take care not to advance the puncture needle too deeply in order to avoid puncturing the posterior gastric wall, pancreas, left kidney, aorta or spleen.

2. Anesthetize the puncture site with local injection of 1% lidocaine down to the peritoneal surface.

3. Insert a .038” compatible introducer needle at the center of the gastroscopy pattern into the gastric lumen directed toward the pylorus.

**NOTE:** The best angle of insertion is a 45 degree angle to the surface of the skin.

4. Use fluoroscopic visualization to verify correct needle placement. Additionally, to aid in verification, a water filled syringe may be attached to the needle hub and air aspirated from the gastric lumen.

**NOTE:** Contrast may be injected upon return of air to visualize gastric folds and confirm position.

5. Advance a guidewire, up to .038”, through the needle and coil in the fundus of the stomach. Confirm position.

6. Remove the introducer needle, leaving the guidewire in place and dispose of according to facility protocol.

7. Advance a .038” compatible flexible catheter over the guidewire and using fluoroscopic guidance, manipulate the guidewire into the antrum of the stomach.

8. Advance the guidewire and flexible catheter until the catheter tip is at the pylorus.

9. Negotiate through the pylorus and advance the guidewire and catheter into the duodenum and 10-15 cm beyond the Ligament of Treitz.

10. Remove the catheter and leave the guidewire in place.

**Dilation**

1. Use a #11 scalpel blade to create a small skin incision that extends alongside the guidewire, downward through the subcutaneous tissue and fascia of the abdominal musculature. After the incision is made, dispose of according to facility protocol.

2. Advance a dilator over the guidewire and dilate the stoma tract to the desired size.

3. Remove the dilator over the guidewire, leaving the guidewire in place.

**Tube Placement**

**NOTE:** A peel-away sheath may be used to facilitate advancement of the tube through the stoma tract.

1. Advance the distal end of the tube over the guidewire, through the stoma tract and into the stomach.

2. Rotate the Kimberly-Clark* MIC* Transgastric-Jejunal tube while advancing to facilitate passage of the tube through the pylorus and into the jejunum.

3. Advance the tube until the tip of the tube is 10-15 cm beyond the Ligament of Treitz and the balloon is in the stomach.

4. Using a Luer slip syringe, inflate the balloon with 7-10 ml of sterile or distilled water.

**CAUTION: DO NOT EXCEED 20 ML TOTAL BALLOON VOLUME.**

5. Gently pull the tube up and away from the abdomen until slight tension is felt and the balloon contacts the inner stomach wall.

6. Gently slide the SECUR-LOK* external retention ring down the tube toward the abdomen until it rests 2-3 mm above the skin. Do not suture the ring to the skin.

7. Remove the guidewire.

**Verify Tube Position**

1. Verify proper tube placement radiographically to avoid potential complication (e.g. bowel irritation or perforation) and ensure the tube is not looped within the stomach or small bowel.

**NOTE:** The jejunal portion of the tube contains tungsten which is radiopaque and can be used to radiographically confirm position. Do not inject contrast into the balloon.

2. Flush the lumen to verify patency.

3. Check for moisture around the stoma. If there are signs of gastric leakage, check the tube position and external bolster placement. Add fluid as needed in 1-2 ml increments.

**CAUTION: DO NOT EXCEED 20 ML TOTAL BALLOON VOLUME.**

4. Check to assure that the external bolster is not placed too tightly against the skin and rests 2-3 cm above the abdomen.

5. Document the date, the type, the size and lot number of the tube, the fill volume of the balloon, skin condition and patient tolerance to the procedure. Start feeding and medication administration per physician orders and after confirmation of proper tube placement and patency.

**Radiologic Placement Through An Established Gastrostomy Tract**

1. Select the appropriate size MIC* Transgastric-Jejunal feeding tube and prepare according to the Tube Preparation directions listed above.

2. Under fluoroscopic guidance, insert a floppy-tipped guidewire, up to .038”, through the indwelling gastrostomy tube.

3. Remove the gastrostomy tube over the guidewire.

4. Direct the guidewire through the stoma and coil in the stomach.

5. Advance a .038” guidewire compatible flexible catheter over the guidewire until the catheter tip is at the pylorus.

6. Negotiate the pylorus and advance the guidewire into the duodenum. If the catheter is difficult to advance through the pylorus, reduce the length of the catheter coiled in the stomach. A rotational motion on the flexible catheter may allow easier passage over the guidewire.

7. Advance the guidewire and catheter to a point 10-15 cm beyond the Ligament of Treitz.

8. Remove the catheter and leave the guidewire in place.

**Tube Placement**

1. Advance the distal end of the tube over the guidewire and into the stomach.

2. Rotate the Kimberly-Clark* MIC* Transgastric-Jejunal tube while advancing to facilitate passage of the tube through the pylorus and into the jejunum.

3. Advance the tube until the tip of the tube is 10-15 cm beyond the Ligament of Treitz and the balloon is in the stomach.

4. Using a slip tip syringe, inflate the balloon with 7-10 ml of sterile or distilled water.

**CAUTION: DO NOT EXCEED 20 ML TOTAL BALLOON VOLUME. DO NOT USE AIR. DO NOT INJECT CONTRAST INTO THE BALLOON.**

5. Gently pull the tube up and away from the abdomen until slight tension is felt and the balloon contacts the inner stomach wall.

6. Gently slide the SECUR-LOK* external retention ring down the tube toward the abdomen until it rests 2-3 mm above the skin. Do not suture the ring to the skin.

7. Remove the guidewire.

8. Verify proper tube placement according to Verify Tube Position section above.

**Suggested Endoscopic Placement Procedure**

1. Select the appropriate MIC* Transgastric-Jejunal feeding tube and prepare according to the Tube Preparation directions listed above.

2. Perform routine Esophagogastroduodenoscopy (EGD). Once the procedure is complete and no abnormalities are identified that could pose a contraindication to placement of the tube, place the patient in the supine position and insufflate the stomach with air.

3. Transilluminate through the anterior abdominal wall to select a gastrostomy site that is free of major vessels, viscera and scar tissue. The site is usually one third the distance from the umbilicus to the left costal margin at the midclavicular line.

4. Depress the intended insertion site with a finger. The endoscopist should clearly see the resulting depression on the anterior surface of the gastric wall.

5. Prep and drape the skin at the selected insertion site.
Gastrostomy Placement

CAUTION: IT IS RECOMMENDED TO PERFORM A THREE POINT GASTROPEXY IN A TRIANGLE CONFIGURATION TO ENSURE ATTACHMENT OF THE GASTRIC WALL TO THE ANTERIOR ABDOMINAL WALL.

1. Place a skin mark at the tube insertion site. Define the gastrostomy pattern by placing three skin marks equidistant from the tube insertion site and in a triangle configuration.

WARNING: Allow adequate distance between the insertion site and gastrostomy placement to prevent interference of the T-Fastener and inflated balloon.

2. Localize the puncture sites with 1% lidocaine and administer local anesthesia to the skin and peritoneum.

3. Place the first T-Fastener and confirm Intragastric position. Repeat the procedure until all three T-Fasteners are inserted at the corners of the triangle.

4. Secure the stomach to the anterior abdominal wall and complete the procedure.

Create the Stoma Tract

1. Create the stoma tract with the stomach still insufflated and in apposition to the abdominal wall. Identify the puncture site at the center of the gastrostomy pattern.

WARNING: With endoscopic guidance confirm that the site overlies the distal body of the stomach below the costal margin and above the transverse colon.


WARNING: Take care not to advance the puncture needle too deeply in order to avoid puncturing the posterior gastric wall, pancreas, left kidney, aorta or spleen.

2. Anesthetize the puncture site with local injection of 1% lidocaine down to the peritoneal surface.

3. Insert a .038” compatible introducer needle at the center of the gastrostomy pattern into the gastric lumen directed toward the pylorus.

NOTE: The best angle of insertion is a 45 degree angle to the surface of the skin.

4. Use endoscopic visualization to verify correct needle placement.

5. Advance a guidewire, up to .038”, through the needle into the stomach. Using endoscopic visualization, grasp the guidewire withatraumatic forceps.

6. Remove the introducer needle, leaving the guidewire in place and dispose of according to facility protocol.

Dilation

1. Use a #11 scalpel blade to create a small skin incision that extends alongside the guidewire, downward through the subcutaneous tissue and fascia of the abdominal musculature. After the incision is made, dispose of according to facility protocol.

2. Advance a dilator over the guidewire and dilate the stoma tract to the desired size.

3. Remove the dilator over the guidewire, leaving the guidewire in place.

Tube Placement

1. Advance the gastric port of the tube over the guidewire, through the stoma tract and into the stomach.

2. Using endoscopic guidance, grasp the suture loop or the tip of the tube withatraumatic forceps.

3. Advance the Kimberly-Clark MIC Transgastric-Jejunal feeding tube over the guidewire and intragastrically. Continue to advance the tube using the forceps until the tip is positioned 10-15 cm beyond the Ligament of Treitz and the balloon is in the stomach.

4. Release the tube and withdraw the endoscope and forceps in tandem, leaving the tube in place.

5. Using a Luer slip syringe, inflate the balloon with 7-10 ml of sterile or distilled water.

CAUTION: DO NOT EXCEED 30 ML TOTAL BALLOON VOLUME. DO NOT USE AIR. DO NOT INJECT CONTRAST INTO THE BALLOON.

6. Remove the guidewire.

7. Gently pull the tube up and away from the abdomen until the balloon contacts the inner stomach wall and a slight tension is felt. The balloon should now abut the stomach wall.

8. Gently slide the SECUR-LOK external retention ring down the tube toward the abdomen until it rests 2-3 mm above the skin. Do not suture the ring to the skin.

Verify Tube Position

1. Verify proper tube placement radiographically to avoid potential complication (e.g. bowel irritation or perforation) and ensure that the tube is not looped within the stomach or small bowel.

NOTE: The jejunal portion of the tube contains tungsten which is radiopaque and can be used to radiographically confirm position. Do not inject contrast into the balloon.

2. Flush the gastric and jejunal lumens to verify patency.

3. Check for moisture around the stoma. If there are signs of gastric leakage, check the tube position and the external bolster placement. Add fluid as needed in 1-2 ml increments.

CAUTION: DO NOT EXCEED 20 ML TOTAL BALLOON VOLUME.

4. Check to make sure that the external bolster is not placed too tightly against the skin and rest 2-3mm above the abdomen.

5. Document the date, the type, the size, and lot number of the tube, the fill volume of the balloon, skin condition and patient tolerance to the procedure.

Endoscopic Placement Through An Existing Gastrostomy Tract

1. Select the appropriate MIC Transgastric-Jejunal feeding tube and prepare according to the directions in the Tube Preparation section listed above.

2. Following established protocol, perform routine Esophagogastroduodenoscopy (EGD). Once the procedure is complete and no abnormalities are identified that could pose a contraindication to placement of the tube, place the patient in the supine position and insufflate the stomach with air.

3. Manipulate the endoscope until the indwelling gastrostomy tube is in the visual field.

4. Insert a floppy-tip guidewire into the indwelling gastrostomy tube and remove the tube.

Tube Placement

1. Advance the Kimberly-Clark* MIC* Transgastric-Jejunal feeding tube over the guidewire and into the stomach.

2. Refer to step 2 in the Tube Placement section above and complete the procedure according to the steps listed.

3. Verify proper placement according to the directions in the Verify Tube Position section listed above.

Jejunal Feeding

1. Open the feeding port cover (Fig 1B) located at the top of the Transgastric-Jejunal Feeding Tube.

2. Using a catheter tip syringe flush the Jejunal port with 30 ml of sterile or distilled water.

3. Remove the syringe and insert the feed set into the Jejunal port. Use a firm 1/4 twist to secure the connection.

4. Open the feed clamp if present.

5. Flush the Jejunal and Gastric ports every 4-6 hours with at least 30 ml of water. Do not use force.

6. If formula is present in the gastric drainage, stop feeding and notify the physician or health care provider.

CAUTION: NEVER CONNECT THE JEJUNAL PORT TO SUCTION. DO NOT MEASURE RESIDUALS FROM THE JEJUNAL PORT.

Gastric Decompression

1. Open the gastric port and connect it to gravity drainage or low, intermittent suction to allow stomach contents or gas to escape.

2. Flush the gastric port every 4-6 hours with at least 30 ml of water.

CAUTION: DO NOT USE CONTINUOUS OR HIGH INTERMITTENT SUCTION. HIGH PRESSURE COULD COLLAPSE THE TUBE OR INJURE THE STOMACH TISSUE AND CAUSE BLEEDING.

Medication Administration

1. Use liquid medication when possible and consult the pharmacist to determine if it is safe to crush solid medication and mix with water. If safe, pulverize the solid medication into a fine powder form and dissolve the powder in water before administering through the feeding tube. Never crush enteric coated medication or mix medication with formula.

Using a catheter tip syringe flush the tube with the prescribed amount of water.

Tube Patency Guidelines

Proper tube flushing is the best way to avoid clogging and maintain tube patency. The following are guidelines to avoid clogging and maintain tube patency.

- Flush the feeding tube with water every 4-6 hours during continuous feeding, anytime the feeding is interrupted, before and after every intermittent feeding, or at least every 8 hours if the tube is not being used.
- Flush the feeding tube before and after medication administration and between medications. This will prevent the medication from interacting with formula and potentially causing the tube to clog.
• Use liquid medication when possible and consult the pharmacist to determine if it is safe to crush solid medication and to mix with water. If safe, pulverize the solid medication into a fine powder form and dissolve the powder in warm water before administering through the feeding tube. Never crush enteric-coated medication or mix medication with formula.

• Avoid using acidic irritants such as cranberry juice and cola beverages to flush feeding tubes as the acidic quality when combined with formula proteins may actually contribute to tube clogging.

General Flushing Guidelines

• Use a 30 to 60 cc catheter tip syringe. Do not use smaller size syringes as this can increase pressure on the tube and potentially rupture smaller tubes.

• Use room temperature tap water for tube flushing. Sterile water may be indicated when the patient is dehydrated or has renal failure and other fluid restrictions. However, individuals with renal failure and other fluid restrictions should receive the minimum flushing volume necessary to maintain patency.

• Do not use excessive force to flush the tube. Excessive force can perforate the tube and can cause injury to the gastrointestinal tract.

• Document the time and amount of water used in the patient’s record. This will enable all caregivers to monitor the patient’s needs more accurately.

Daily Care & Maintenance Check List

Assess the patient
Assess the patient for any signs of pain, pressure or discomfort.

Assess the stoma site
Assess the patient for any signs of infection, such as redness, irritation, edema, swelling, tenderness, warmth, rash, purulent or gastrointestinal drainage. If swelling or edema is present, consider using warm compresses to reduce discomfort.

Clean the stoma site
Use warm water and mild soap. Use a circular motion moving from the tube outwards. Clean sutures, external bolsters and any stabilizing devices using a cotton-tipped applicator. Rinse thoroughly and dry well.

Assess the tube
Assess the tube for any abnormalities such as damage, clogging or abnormal discoloration.

Clean the feeding tube
Use warm water and mild soap being careful not to pull or manipulate the tube excessively. Rinse thoroughly, dry well.

Clean the jejunal, gastric and balloon ports
Use a cotton tip applicator or soft cloth to remove all residual formula and medication.

Do not rotate the external bolster
This will cause the tube to kink and possibly lose position.

Verify placement of the external bolster
Verify that the external bolster rests 2-3mm above the skin.

Flush the feeding tube
Flush the feeding tube with water every 4-6 hours during continuous feeding. Anytime the feeding is interrupted, or at least every 8 hours if the tube is not being used. Flush the feeding tube after checking gastric residuals. Flush the feeding tube before and after medication administration. Avoid using acidic irritants such as cranberry juice and cola beverages to flush feeding tubes.

Balloon Maintenance

Check the water volume in the balloon once a week.

• Insert a Luer slip syringe into the balloon inflation port and withdraw the fluid while holding the tube in place. Compare the amount of water in the syringe to the amount recommended or the amount initially prescribed and documented in the patient record. If the amount is less than recommended or prescribed, refill the balloon with the fluid initially removed, then draw up and add the amount needed to bring the balloon volume up to the recommended and prescribed amount of water. Be aware as you deflate the balloon there may be some gastric contents that can leak from around the tube. Document the fluid volume, the amount of volume to be replaced (if any), the date and time.

• Wait 10-20 minutes and repeat the procedure. The balloon is leaking if it has lost fluid, and the tube should be replaced. A deflated or ruptured balloon could cause the tube to dislodge or be displaced. If the balloon is ruptured, it will need to be replaced. Secure the tube into position using tape, then follow facility protocol and/or call the physician for instructions.

   NOTE: Refill the balloon using sterile or distilled water, not air or saline. Saline can crystallize and clog the balloon valve or lumen, and air may seep out and cause the balloon to collapse. Be sure to use the recommended amount of water as over-inflation can obstruct the lumen or decrease balloon life and under-inflation will not secure the tube properly.

Tube Occlusion

Tube occlusion is generally caused by:

• Poor flushing techniques
• Failure to flush after measurement of gastric residuals
• Inappropriate administration of medication
• Pill fragments
• Viscous medications
• Thick formulas, such as concentrated or enriched formulas that are generally thicker and more likely to obstruct tubes

• Formula contamination that leads to coagulation
• Reflux of gastric or intestinal contents up the tube

To Unclog A Tube

1. Make sure that the feeding tube is not kinked or clamped off.
2. If the clog is visible above the skin surface, gently massage or milk the tube between fingers to break up the clog.
3. Next, place a catheter tip syringe filled with warm water into the appropriate adaptor or lumen of the tube and gently pull back on then depress the plunger to dislodge the clog.
4. If the clog remains, repeat step #3. Gentle suction alternating with syringe pressure will relieve most obstructions.
5. If this fails, consult with the physician. Do not use cranberry juice, cola drinks, meat tenderizer or chymotrypsin, as they can actually cause clogs or create adverse reactions in some patients. If the clog is stubborn and cannot be removed, the tube will have to be replaced.

Balloon Longevity

Precise balloon life cannot be predicted. Silicone balloons generally last 1-8 months, but the life span of the balloon varies according to several factors. These factors may include medications, volume of water used to inflate the balloon, gastric pH and tube care.

Warning: For enteral nutrition and/or medication only.

For more information, please call 1-800-KCHELPS in the United States, or visit our web site at www.kchealthcare.com.

Educational Booklets: “A Guide to Proper Care” and a Stoma Site and Enteral Feeding Tube Troubleshooting Guide is available upon request. Please contact your local representative or contact Customer Care.