

Product Adaptations in Pediatric Ostomy Care

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Overview

There are not as many ostomy product options for the pediatric population as there are compared to the adult patient population. In order to meet the unique needs of the pediatric population with ostomies, nurses need to be creative and adapt their practice by utilizing products intended for adults for the pediatric ostomy patient.

Purpose

The purpose of this paper is to demonstrate how an extended wear barrier ring can be effectively utilized to manage the pediatric patient with an ostomy. The barrier ring has been shown in clinical practice that it can help to maintain, in a neonate, a secure pouch seal and sometimes improve pouch adherence while protecting the fragile peristomal skin.

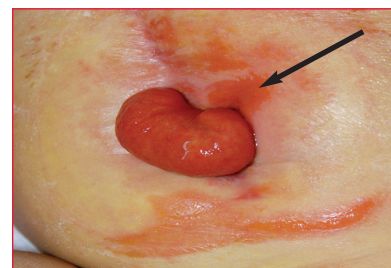
Case Study 1: Infant with Fistula

A full term infant was born with gastroschisis involving intestinal necrosis. At two months old, the newborn developed a small bowel obstruction. The patient underwent surgery when extensive enterolysis was performed. One month later, a small area on baby's abdominal incision line started draining green-colored fluid. This led to a small bowel fistula and the fistula site evolved into a stoma.

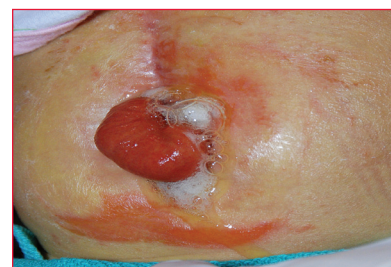
The stomal lumen was located at skin level to underside of stoma (Photo 1) and therefore it was difficult to achieve good seal of ostomy pouch and prevent skin breakdown. Peristomal skin became denuded due to attempt made to manage fistula with dressings and ostomy pouch with no extended wear barrier (Photo 2). The patient had frequent bleeding episodes from the stoma that required suturing to the mucosa to stop the bleeding (Photo 3).

A pediatric ostomy pouch was applied with an Adapt Barrier Ring. We were able to achieve 2-3 days wearing time with some mucosal bleeding still occurring. Peristomal skin improved with less denudement present (Photo 4).

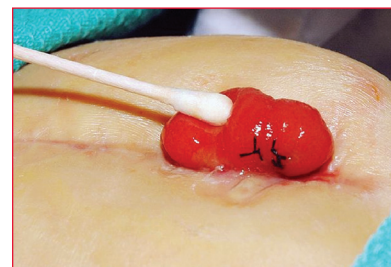
Case 1: Photo 1



Case 1: Photo 2



Case 1: Photo 3



Case 1: Photo 4



Positive Outcomes

The Adapt Barrier Ring applied onto the ostomy pouch facilitated pouch adherence allowing the peristomal (perifistula) skin to improve with less denudement. The extended wear barrier adhered to the denuded skin and therefore, when applied onto the ostomy appliance, it helped to increase wear time of the pouch. This offered good protection to the peristomal (perifistula) skin and therefore, some improvement to the skin with less denudement was demonstrated.

Case Study 2: Infant with Ileostomy

A full term infant was born with DiGeorge Syndrome. The patient underwent truncus arteriosus repair at two weeks old. The postoperative course was complicated by ischemic colon (necrotizing enterocolitis) requiring subtotal colectomy with an ileostomy (Photo 1).

We achieved 1-2 days wearing time of ostomy appliance to the ileostomy when ostomy pouch and a skin barrier paste were used. Wear time increased to 2-3 days using ostomy pouch with an extended wear barrier ring. Pouch removed on day 3. Note that the peristomal skin is very healthy with no redness or skin breakdown (Photo 2).



Case 2: Photo 1



Case 2: Photo 2

Positive Outcomes

The Adapt Barrier Ring increased wear time of the ostomy appliance while peristomal skin remained healthy. The extended wear barrier provides an additional option for nurses working with ostomies in the pediatric population. It demonstrates that it can increase wear time of the ostomy pouch, maintain healthy peristomal skin and thus provide a higher quality of life for infants with stomas and their caregivers.

Case Study 3: Infant with Double Barrel Colostomy

A full term infant was born with imperforated anus. At one day of age, the patient underwent surgery creating a descending colostomy with a mucous fistula. The patient tolerated the procedure well. The space between the colostomy stoma and the mucous fistula measured 1cm (Photo 1). The mucous fistula produced a moderate amount of serous mucous; therefore achieving pouch adherence was very difficult. Both stomas could not be incorporated into the pouching system as the colon distal to mucous fistula needed complete rest with no stool passing through.



Case 3: Photo 1

An Adapt Barrier Ring was applied between the two stomas to offer good peristomal skin protection and increase wear time of the pouching system (Photo 2). The barrier ring was flattened prior to application so that it did not have a higher profile than the stoma which could contribute to the pouch leaking.



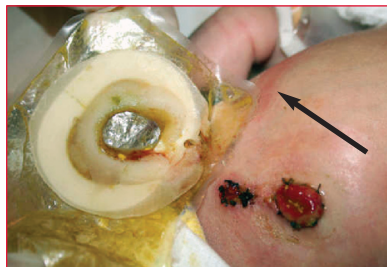
Case 3: Photo 2

Paste was applied lateral to the stoma since leakage never occurred in this area, therefore, an extended wear barrier was not required there (Photo 3). Leakage always occurred near the mucous fistula due to the effluent it produced, causing pouch barrier to wear away.



Case 3: Photo 3

After 2 days wearing time the pouch was still intact. The infant had sensitive skin to adherent products. Distant peristomal skin reddened due to irritation from the pouch barrier. Skin also reddened (as indicated) proximal to the pouch from tape utilized for the mucous fistula dressing. Peristomal skin was less red immediately around the stoma where the Adapt Barrier Ring and paste were applied (Photo 4).



Case 3: Photo 4

Infant was discharged from the hospital with 1½ to 2 days wear time with the Adapt Barrier Ring and Pouchkins Newborn Pouch (Photo 5). An attempt was made, upon discharge, by baby's mom, to use only barrier paste and no extended wear barrier ring and as a result the wear time was decreased to one day.



Case 3: Photo 5

Positive Outcomes

The Adapt Barrier Ring helped to absorb moisture from the mucous fistula and therefore increased wear time of the pouch and protected the immediate peristomal skin.

Case Study 4: Infant with Jejunostomy

A 3331 grams, 41 weeks male infant diagnosed with superior mesenteric artery and vein thrombosis. Patient was taken to surgery three days after birth to remove ischemic and gangrenous small bowel. Surgical procedures included an exploratory laparotomy; extensive small bowel resection (30cm); intestinal derotation; gastrostomy; and creation of proximal duodenostomy.

The WOC nurse was consulted a week later due to abdominal incision dehiscence. Assessment shows loosening of sutures, non-viable stoma with sloughy mucosa and wound necrosis. The full thickness wound measured 12cm with widest width at right lateral aspect of 1.5cm and at left lateral aspect of 0.6cm. There is depth of 0.8cm to the left lateral aspect of the open incision (Photo 1).



Case 4: Photo 1

Pouching of ostomy was not optimal at this time. The goal was to initiate topical wound care, protecting periwound skin from stool drainage. A skin barrier ointment was applied to the wound periphery. Also, an occlusive petrolatum gauze was placed over the wound, but not sealing the stoma, to keep stool from contaminating wound. The nursing staff changed the dressing every 12 hours and as needed.

Two days later, the necrotic stoma sloughed off during a dressing change. The fascia was viable and a retracted ostomy could not be visualized. The infant was taken back to surgery three months later for an ostomy revision. Surgical procedures included an exploratory laparotomy; extensive lysis of adhesions, limited bowel resection with multiple anastomosis; and creation of a jejunostomy and mucous fistula (Photo 2).



Case 4: Photo 2

Postoperatively, the patient had a budded ostomy that was in a deep abdominal fold, with the os slanted towards 12 o'clock position. The staff was unable to attain a consistent seal over the stoma. There was pouch leakage two to three times in a 12 hour shift. The baby was in pain from peristomal erosion and fungal rash to surrounding skin and groin area.

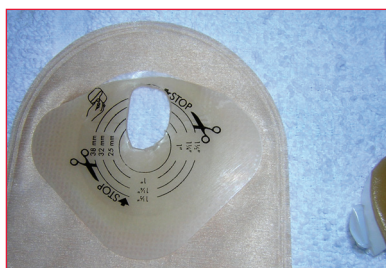
The goal was to relieve infant's discomfort, improve skin condition and increase wear time. First, the peristomal skin was treated via crusting with ostomy powder and an alcohol free skin protectant (Photo 3). An alcohol free, moldable Adapt Barrier Ring was utilized to assist with creating an even abdominal topography and fill in the abdominal crease at 9 o'clock (Photo 4). Next, the ostomy appliance was off-set to seal only the jejunostomy (Photo 5, 6).



Case 4: Photo 3



Case 4: Photo 4



Case 4: Photo 5



Case 4: Photo 6

The moldable Adapt Barrier Ring was placed also around the custom cut wafer opening. Careful attention was taken to flatten the barrier ring on the wafer, to prevent contact pressure (Photo 7).



Case 4: Photo 7

Positive Outcomes

Wear time increased with daily and sometimes every other day pouch changes. The patient's skin improved greatly and the application process was pain free. This pouching process was utilized until patient was surgically closed two months later (Photo 8).



Case 4: Photo 8

Case Study 5: Preterm Infant with Gastrocutaneous Fistula

A 2167 grams, 33 weeks male infant diagnosed with malrotation and mid gut volvulus. Patient had emergency surgery four days later. During the exploratory laparotomy, two-thirds to three-quarters of small bowel was resected, the proximal and distal bowel was clipped and a laparoscopic appendectomy and duodenocolonic dissociation or LADD's procedure was performed.

Within a month and a half, the infant underwent several additional surgeries including exploratory laparotomies, bowel lavage and resection, re-anastomosis and gastric tube placement.

The WOC nurse was consulted a month later for management of a peri-tubular skin infection and effluent leaking around gastric tube. The site cultured positive for MRSA and there is full thickness injury around the g-tube from the drainage. Several attempts were made to place a larger tube and to discontinue the g-tube temporarily in order for the opening to contract (Photo 1). Both attempts were unsuccessful and the patient eventually developed a gastro-cutaneous fistula.



Case 5: Photo 1

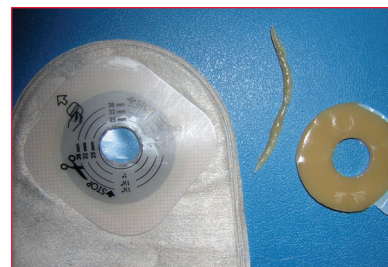
Conservative management with dressings was suggested by the surgeon. Applications of compression dressing, alginates and a skin barrier ointment were initiated. The baby's skin condition worsened and there was pain due to increased fistula output. Staff care at bedside also increased.

The WOC nurse obtained permission from the surgeon to start pouching the gastrocutaneous fistula (Photo 2).



Case 5: Photo 2

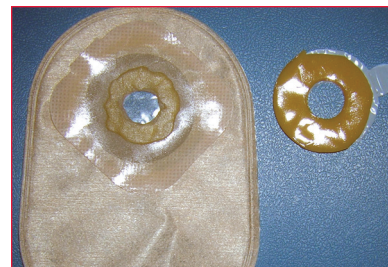
The goal of this approach was to relieve patient discomfort, improve skin condition and decrease staff time at bedside. First, skin care was achieved via crusting method with an alcohol free skin protectant and ostomy powder. Next, a pediatric ostomy appliance was placed with the use of an alcohol free moldable barrier ring. The moldable Adapt Barrier Ring was placed around the custom cut opening, and flattened to prevent contact pressure from occurring peristomally (Photo 3, 4,5).



Case 5: Photo 3



Case 5: Photo 4



Case 5: Photo 5

Positive Outcomes

Pouch adherence was maintained for four days. The patient's skin improved greatly (Photo 6). The application process was painless to the patient and staff care time at bedside decreased. The infant was taken to surgery for closure of gastrocutaneous fistula (Photo 7), after two weeks of successful pouching management.



Case 5: Photo 6

Case 5: Photo 7



The initial plan of care included crusting the peristomal skin with ostomy powder and an alcohol free skin protectant. Next, a moldable barrier ring was applied to the ostomy wafer, around the custom cut opening. Careful attention was taken to flatten the barrier ring, preventing contact pressure peristomally (Photo 3). Gentle stretching of the abdominal skin allowed better contact of the wafer around the stoma, minimizing creases (Photo 4).

Case Study 6: Preterm Infant with Prolapse and Ileostomy

A 750 grams, 27 weeks premature male infant baby "B" of twin birth, diagnosed with necrotizing enterocolitis. The patient had surgery a week later which included an exploratory laparotomy; small bowel resection with end-ileostomy and Hartmann pouch. Five months later he was readmitted for surgical management of a prolapsed stoma (Photo 1). Surgery included resection of 65 cm of small bowel, and end ileostomy.

Case 6: Photo 1



After the revision, there were multiple creases peristomally and at the left lower abdominal quadrant. This obstacle prevented the pouch from adhering well.

The WOC nurse was consulted due to the pouch leaking at least three times a day. Frequent pouch changes caused trauma to the stoma mucosa and skin. The patient developed granulomas to the mucosa and peristomal skin erosion (Photo 2).

Case 6: Photo 2



Case 6: Photo 3



Case 6: Photo 4



Positive Outcomes

Pouch adherence was attained with the utilization of the moldable Adapt Barrier Ring. The WOC nurse changed the appliance every other day in order to assess the peristomal skin. There was complete healing of peristomal skin after a week of pouch change (Photo 5). The appliance remained intact on a three day schedule change.

Case 6: Photo 5



Case Study 7: Preterm Infant with Ileostomy and Mucous Fistula

34 1/7 gestation female neonate was admitted from an outside hospital with abdominal distension and diffuse pain. KUB showed dilated loops of bowel with possible obstruction. She was taken to the OR and was found to have malrotation of the bowel with volvulus and distal ileal atresia. The surgeons removed 65 cm of necrotic bowel and created an ileostomy and mucous fistula.

On post-op day #2, patient was started on TPN and on post-op day #7 she began oral feedings of breast milk. On average this infant was found to have ostomy output of 50% of oral feeds and that increased when fluid challenged to 80% of oral intake. The effluent was high in gastric acids and caustic to skin, resulting in peristomal breakdown. The pouch required changing, due to leakage, every 2 to 3 hours. The pouching procedure was complicated by an incision next to the stoma, a mucous fistula and deep skin fold (Photo 1).

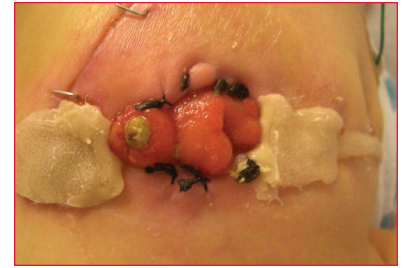


Case 7: Photo 1

A piece of Adapt Barrier Ring was rolled and placed in the skin fold at 3 o'clock. Another piece was placed just left and lateral to the mucous fistula to level that pouching surface (Photo 2). A similar technique was used on the right lateral peristomal surface, covering the incision staples. Stoma paste was put into a 3cc syringe and then applied just lateral to the stoma and mucous fistula to seal the space from effluent (Photo 3). A thin hydrocolloid was then placed over the peristomal surface (Photo 4).



Case 7: Photo 2



Case 7: Photo 3



Case 7: Photo 4

A Pouchkins Newborn Pediatric Pouch was then placed over the hydrocolloid (Photo 5).



Case 7: Photo 5

Positive Outcomes

Using this technique, the pouching procedure decreased in frequency from every 2–3 hours to every 1 to 2 days, until ileostomy takedown at age 3 months.

Case Study 8: Preterm Infant with Ileostomy and Mucous Fistula

A baby girl was born at 24 6/7 weeks gestation with a birth weight of 406gm. She was transferred to our hospital on day of life #6 for intestinal perforation. This neonate also came to us with diagnosis of respiratory distress syndrome, patent ductus arteriosus, hypotension, and thrombocytopenia. Admission physical noted a grossly distended and discolored abdomen in an infant who was otherwise pink and well perfused. Shortly after arrival she was taken to the OR and found to have two isolated ileal perforations. An ileostomy and mucous fistula were performed.

The WOCN nurse was consulted when the pouch was leaking and requiring replacement every 1–2 hours. On exam she was noted to have a deep wound between the two stomas and another at 9 o'clock. There was also partial thickness skin loss noted at 6 o'clock (Photo 1).



Case 8: Photo 1

An Adapt Barrier Ring was placed between the two segments of bowel and a piece of wound dressing was placed over the partial thickness wound (Photo 2).



Case 8: Photo 2

With the pouching surface now leveled, a thin hydrocolloid was placed over the peristomal surface it and a Pouchkins Newborn Pouch was then applied (Photos 3 and 4).



Case 8: Photo 3



Case 8: Photo 4

Positive Outcomes

Pouch change frequency was reduced to a daily procedure and the baby required no pouch change in the 31 hours before her death due to cardiac complications.

Conclusions

Product innovations and technology continue to create better solutions for managing difficult stomas and providing a higher quality of life for infants with stomas. Ultimately, the beneficiary of new innovations is our patients, however staff and family also respond positively. In some cases, these solutions have resulted in changes in facility protocols in the NICU such as the elimination of the use of skin barrier pastes which contain alcohol.

Some of the key benefits demonstrated in these case studies were:

- Enhancement in the pouching system wear time
- Protection of skin that is at risk from contact with corrosive drainage
- Improvement of skin that was damaged due to contact with corrosive discharge without evidence of skin stripping on removal
- Ability to flatten the barrier ring to prevent pressure and so that it provides a lower profile than the stoma
- Decreased pain and a higher quality of life for neonates and preterm infants with ostomies, wounds and/or fistulae
- Decreased nursing time devoted to pouching procedures due to improved barrier adherence
- Elimination of an alcohol based paste as a caulk.

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