Chapter 7:

Recognising, preventing and managing stoma, peristomal skin and systemic complications

Stoma and peristomal skin complications are also observed in neonates and children and it is imperative to know how to manage them.

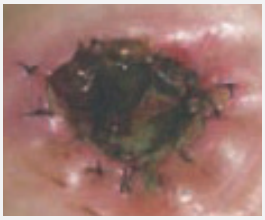
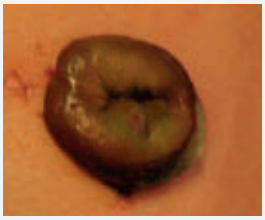
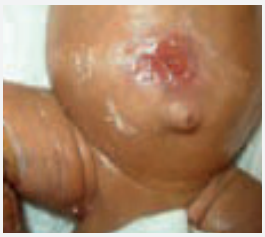
Risk factors influencing stoma and peristomal complications include:

- immature neonate skin; See Section A, Chapter 3. Skin characteristics of premature neonates, neonates and children;
- underdevelopment of abdominal musculature may lead to peristomal hernia;
- poor siting and stoma construction. This is especially the case with neonates, as surgery is emergent and often in unfavourable conditions.

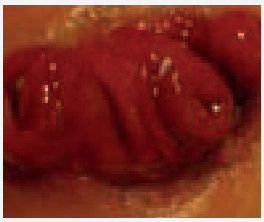
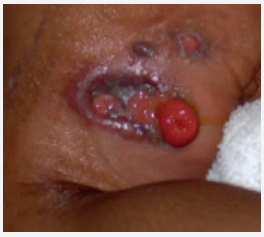
Definitions

Urgent action required	Child must be referred to the stoma nurse or surgeon urgently.
Needs review	The problem can be solved easily but needs a follow-up.
Non-urgent	There is a problem needing to be addressed but not urgently.

Stoma complications

Complications	Description	Management	Precautions
Haemorrhage	Blood is coming from the opening of the stoma.	Consult the surgeon or the stoma nurse urgently.	
  **Total necrosis**	Persistent necrotic tissue is observed suggesting that the fascia is affected.	When the fascia is affected, a second operation is necessary.[31]	
Read more in the glossary **Total mucocutanous separation**	Total separation of the stoma at the suture line.	Urgent, call the surgeon.	Risk of peritonitis.
 **Flat or retracted stoma**	Stoma is at skin or below skin level and may be secondary to excessive tension of the mesentery. The depth of retraction may increase when the patient is seated.[35] Related factors: Short mesentery, rapid weight gain, obesity, surgical technique, excessive tension in the suture at the fascia level, malnutrition, immunosuppression.[36] In neonates, abdominal distension may cause this complication.	Creation of a flexible convexity, if the suture line is healed. If the stoma is in a deep crease, use a flexible one-piece stoma product. When it is impossible to keep a stoma product on the skin and the peristomal skin cannot be protected appropriately, refer to the surgeon to know if it is possible to modify or reverse the stoma. Depending on the length of time the stoma will be needed, closure of the stoma may solve the problem. In cases of long-term stomas, re-operation may be necessary. If unable to apply pouch, protect the peristomal skin and collect the effluent with fluffy gauzes or other absorbent product.	

Stoma complications

Complications	Description	Management	Precautions
Blockage	• Mostly seen with ileostomies • Less or no stool in the pouch • Change of stool consistency that may be liquid • Abdominal distension • Abdominal cramping • Oedema of the stoma • Nausea • Vomiting May be secondary to high fibre or high residue food that has not been chewed enough.	Monitor closely and seek medical advice if: • symptoms aggravate; • the child goes more than 8- 12 hours without stools, or; there is a change from normal output. • the child is vomiting. Modify opening of the skin barrier in case of stoma oedema. Abdomen massage. Warm bath. Dilation of the stoma. Irrigation of the bowel under physician's order. Education.	
Read more in the glossary **Fistulas**  **Multiple fistulas**	Abnormal connection between two epithelium-lined surfaces.	Conservative management if no stoma pouch can stay on long enough: • Zinc oxide + fluffy gauze to be changed when soiled. • Surrounding skin can be protected with a thin hydrocolloid or a no-sting liquid skin protector.	
 **Pyoderma gangrenosum** Loss of epithelium, irregular borders, bleeding and pus, pain, difficulty to maintain appliance adherence.	Painful ulcerations frequently associated to Crohn's disease.	Must be referred to the gastro-enterologist for systemic therapy. Topical treatment: • Tacrolimus ointment • Hydrocortisone • Absorbent dressing under stoma product	This skin problem may also be observed in other body parts (e.g., inguinal fold).

Stoma complications

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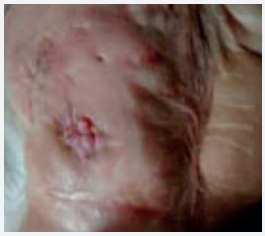
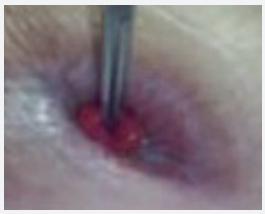
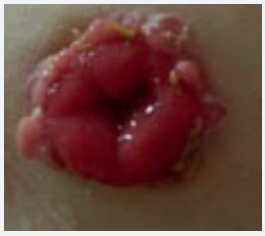
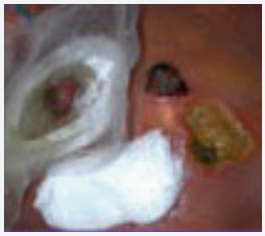
  **Stenosis (Urinary stoma)**	Narrowing of the stoma at skin or fascia level. Usually secondary to peristomal skin hyperplasia.	Dilation or surgical revision. Check the cutting technique to make sure that the opening is not cut too large. Educate parents/caregivers about proper cutting technique. Refer to Hyperplasia.	Check that the stoma is adequately functioning.
 **Overgranulation**	Overgrowth of the stoma tissue due to excessive exposure to effluent.[32] This occurs more frequently in young patients and those with urostomies less than one cm wide.[33] An inaccurate opening or ill-fitting stoma pouch can lead to leakage or abrasion to the muco-cutaneous junction. These can make the skin susceptible to granuloma formation.[34]	Optimise device adjustment to minimise trauma and contact with effluent. Careful cleansing because of associated pain. Treatment: Apply silver nitrate for 5 seconds. Treat once a week for 4 weeks. Commercial tape impregnated with steroid fludroxycortide can be used to treat the granuloma. It is ideal to apply under the stoma product as the pouch will adhere to the tape.	Overgrowth tissue may bleed during the stoma hygiene and stoma product change. It is advisable to take extreme care during these manoeu-vres.
 **Partial necrosis**	Grey, dark brown or black discol-ouration of all or part of the stoma due to: - inadequate blood supply - exces-sive dissection of the mesentery. - traction of the mesentery. - major oedema of the bowel. Stoma is dry and firm. Evolution: The necrotic tissue becomes thin-ner, sloughs and may produce an unpleasant odour.	The degree of necrosis is variable and can be assessed by passing a small, lubricated glass tube into the stoma and inspecting the mucosa with a pen light.[30] This technique depends on the size of the stoma, and should be carried out under the supervision of the surgeon. Plastic tubes can also be used ,if avail-able. Usually the necrotic tissue debrides spontaneously with time. As long as the stoma is patent and healthy at the base, no further debridement is required.	

Stoma complications

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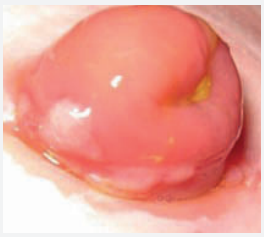
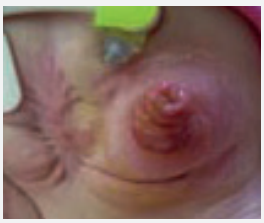
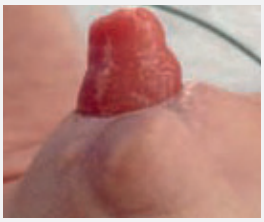
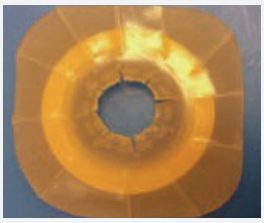
 **Laceration of the stoma**	Appears as white, ulcer-like markings on the stoma. Possibly due to trauma or ill-fitting stoma product. Also occurs as the result of very active toddlers. Poor cutting technique.	Check the cutting technique. Educate parents/caregivers. Haemostasis (gentle compression) if bleeding. Apply stoma powder on the cut to support healing.	Ensure there are no sharp edges on the skin barrier.
  **Parastomal hernia**	Defect in the fascia that allows loops of intestine to protrude into the area of weakness.[37] Aggravated by increased abdominal pressure (e.g., crying).	One-piece pouching system or two-piece with a floating flange. Feather/petal the barrier for more flexibility.  Creative hernia belts	Since the stoma is usually temporary, re-operation is usually not considered. However, it is important to check for any signs of complications, such as: • stoma patency. • change in colour; or • discomfort.
Read more in the glossary **Suture granuloma; multiple granulomas**	Inflammatory reaction often secondary to suture material. The granuloma may bleed and be painful.	This can be treated in three ways: • Use of silver nitrate application(s) to granuloma(s); • Use of a steroid tape applied under the stoma product; or • Excision of suture material with the surgeon's approval.	
 **Partial mucocutaneous separation**	Partial separation of the stoma at the suture line, caused by: • poor healing; • tension; • infection; or • surgical technique.	In case of leakage, fill the defect with an absorbent dressing (i.e. powder, mixture of powder and stoma paste, wound paste, hydrofiber, calcium alginate) and apply the stoma product. The skin barrier is applied on top of the dressing. In some cases, a transparent dressing or a thin hydrocolloid product can be applied over the wound before applying the stoma product.	Monitor and document the evolution of the separation. If healing is delayed notify the surgeon.

Stoma complications

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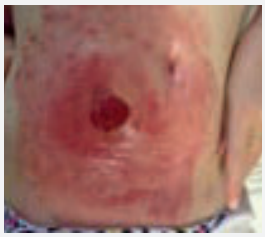 Peristomal skin fungal infection. Papules, redness and satellites lesions are observed, the skin is itchy and burning.	The most common cause of fungal infection in patients with stomas is the over-growth of a Candida (usually C. Albicans) • Pustules or papules • Diffuse erythema macera-tion • Satellite lesions • Pruritus and burning sen-sation around the stoma.	Take a complete patient history. Identify and correct the cause. Check the stoma product to make sure that it fits well to prevent leakage. Prevention: Thoroughly dry the skin before applying the pouch. After bathing with a pouch on, towel dry the skin barrier, pouch and skin very well to prevent any trapping of moisture. Use a pouch covered with fabric or cover it with a cotton lining. Put the pouch outside the nappy. Topical treatment: Apply an antifungal cream or powder when changing the appliance. Make sure that the cream is well penetrated to prevent interference with the stoma product adhesion. When applying antifungal powder, fix it with a dab of water or alcohol-free skin sealant. Antifungal powder is preferred to antifungal cream. In severe cases, the prescription of systemic antifungals may be required.[39]	Patients at risk of developing fungal infection: • Under antibiotic therapy; • Immunosuppressed. Continue the use of the antifungal product seven days after the disappear-ance of clinical signs of fungal infection. Allergic reactions sometimes result from a misuse of supporting products.[38]

Stoma complications

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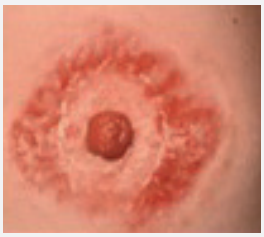
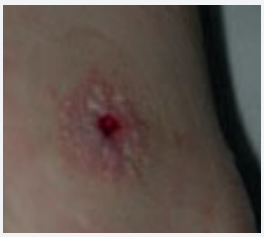
 **Allergy** Allergic reaction to one of the components of the stoma product. Usually the affected area corresponds exactly to the area covered by the allergenic component. Skin appears red, itchy, scaly and inflamed. Once skin sensitivity develops, it may become a chronic problem.	Usually allergy to sealants, barriers, tapes, solvents, powders, pastes or pouch fabric or materials.	Identify and eliminate the allergenic product. Allergy history Skin patch test to determine the allergen. If it is impossible to modify the stoma product, apply a layer of alcohol-free liquid skin protector. Avoid the use of supporting products, unless absolutely necessary. If they are necessary, ensure they are used correctly (e.g., let the skin barrier wipe dry before placing the stoma product). Cover the area affected by allergy with a thin hydrocolloid and apply the stoma product over it. For severe cases, consult with a physician for possible topical steroid treatment.	Allergic reactions sometimes result from a misuse of support products[38]
Folliculitis Inflammation of hair follicles usually caused by staphylococcus aureus.[39] • Erythema • Sometimes pustular lesions • Superficial or deep (May extend to the hair bulb).	• Traumatic hair removal. • Shaving too closely. • Excessive rubbing and cleansing of the peristomal skin.	• Review hair and pouching removal technique. • Re-instruct pouching removal technique. • Avoid blade-type razor; use of scissors is recommended. • Antibiotherapy. • Education.	Obviously observed in teenagers.
 **Hyperkeratosis** • Thickened, peristomal skin, whitish to greyish • Stoma product adherence issue • Pain and bleeding may be observed	Too large cutting of the skin barrier.	• Assess the cutting technique • Education • Increase oral fluids: • acidity, Vitamin C, cranberry concentrate • Increase urine acidity Topical treatment: • Soak with a solution of water and vinegar (1:1). • Soak duration: 15 to 20 minutes. • Thoroughly rinse with clear water. • Repeat at each appliance change. • Vesicostomy without stoma product: once a day.	

Stoma complications

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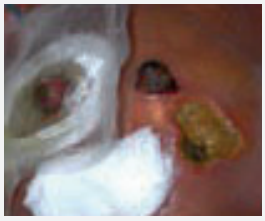
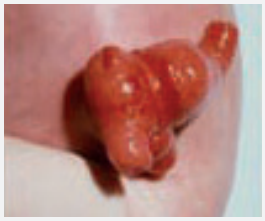
 This is partial necrosis and has already been addressed previously	Partial		
 **Prolapse**	Protrusion of the stoma through the abdominal wall in a telescopic fashion. Frequent in diseases of the small bowel, especially in the case of a loop ileostomy.	Reduction of the prolapse. • Lay the patient down. • Reassure the parents /caregiver. • Use a larger pouch to contain the stoma. You need to modify the cut of the opening of the skin barrier by cutting radial slits to enable it to slip over the stoma. Important: Reseal the skin barrier once it is on the skin. Educate the family/caregiver: Parents or caregivers must be advised to contact the surgeon/stoma care nurse for reduction of the prolapse. Some prolapses cannot be reduced, but if the bowel is healthy and well-functioning, that is not a problem. If surgery presents a risk for the child, or if the child is booked for surgery in the near future, the prolapse may be left as is. It is important that the family knows when they should contact surgeon/stoma nurse. Tip: Use powdered sugar or Xylomethazoline 1% nose spray/drops on the prolapse, and then contact the stoma nurse/surgeon.	Caution: Check the colour of the prolapsed stoma. It should be red-pink. Make sure the bowel is still functioning as well.
Consult the surgeon urgently if: • the colour of the stoma is abnormal (Example: dark red). • the stoma is not functioning.			

Stoma complications

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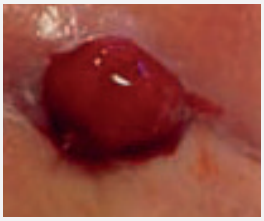
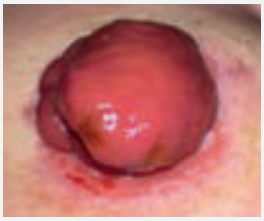
 **Bleeding**	Blood is seen in the pouch or is present on the skin at pouch change. Small amount of bleeding from the stoma is normal.	Local pressure. If superficial bleeding is not self-limited, apply direct pressure with cold compresses.[29] Check the size of the opening of the skin barrier and assess the application and removal of the stoma product. Educate parents/caregivers about cutting of the opening and way to put on and remove the stoma product.	

Peristomal skin complications

Complications	Causes	Management	Precautions
Erythema with peristomal skin loss: • Crusting technique: Apply a thin layer of stoma powder followed by a layer of alcohol-free liquid skin barrier. Repeat the application 3-4 times. • Apply the stoma product as usual, with stoma paste if needed.			
Erythema without peristomal skin loss: • Apply a mixture of stoma paste and stoma powder around the opening of the solid skin barrier. • Apply the stoma product.			
 **Redness, erythema** • With or without loss of epithelium • Burning, tingling • Discomfort	Potential causes: 1. Use of a pre-cut opening that is too large or cutting an opening too large in the stoma product. 2. Prolonged wear-time. 3. Liquid and corrosive stools, (acid pH). 4. Flat or retracted stoma in a skin fold. 5. Fistula at the base of the stoma.	• Check cutting technique. If inadequate, re-educate • Inform about the signs indicating that the stoma product must be changed. • The use of a flexible convexity can help prevent leakage of stool or urine under the skin protective barrier. • Conservative management with zinc oxide paste and gauze if the stoma cannot be pouched. • In the case of a fistula or when the erythema cannot be resolved, surgery can be considered.	Make sure that the suture line is healed before applying a flexible convexity.

Systemic complication

Complications	Signs and symptoms	Management
Dehydration	• Crying without tears • Dry mucous membranes • Sunken fontanels • Dry nappies, Less diuresis > 1ml/kg/h • Irritability • Tachycardia	Notify the doctor, replace fluid loss intravenously according to medical order: • Rectum: > 20 mg/kg/day • Colostomy: > 20-30 mg/kg/day • Ileostomy: > 40-50 mg/kg/day
Electrolyte imbalance Observed with ileostomy/ jejunostomy		Regular blood work (electrolytes) and supplement as required (IV, oral or enteral)

29 Husain & Cataldo, 2008; WOCN, 2011
30 WOCN Core Curriculum Ostomy Management, Wolter Kluwer, Phil, 2016, Ed. J Carmel, J Colwell and M. Goldberg p. 193
31 "Reoperation to resect the necrotic portion may be necessary if the bowel below the fascial level becomes necrotic and a new ostomy will need to be reconstructed." (WOCN p. 76)
32 Sung, Kwon, Jo & Park, 2010
33 Sung et al., 2010
34 C Lyon, 2001
35 Butler, 2009; Colwell, 2004
36 Bafford&Irani, 2013; Black, 2009; Butler, 2009; Jordan & Burns, 2013
37 WOCN Core Curriculum Ostomy Management, Wolter Kluwer, Phil, 2016, Ed. J Carmel, J Colwell and M. Goldberg p. 197
38 WOCN, 2010
39 C. Lyon 2009