

Newsletter

Nutritional support and additional benefits for infants with stomas

Mapping unexplored areas

Coloplast®
Professional

Mucous fistula refeeding has emerged as a way of addressing nutritional and developmental needs of infants with stomas. How does this practice actually work – and what does the literature and the practitioners have to say about this treatment option? This article shares insights from our recent survey.

Common complication with premature infants

Stoma formation may be a necessary treatment option in premature infants. Unfortunately, stoma surgery may lead to further complications.

According to one study, 6 per cent of infants with birth weight below 1500 grams developed intestinal infarction, known as Necrotizing Enterocolitis (NEC). And 56 per cent of these infants needed intestinal resection and stoma formation.¹

In most cases, stoma formation is an acute procedure performed after removing the necrotic part of the intestine. While the length of this part of the intestine varies from patient to patient, the lower part of the intestine may be unaffected. Following the surgical procedure, the infant will often have two stomas: a producing stoma (proximal) and a mucous fistula, the distal part of the bowel connected to the rectum. Since the lower part of the intestine is still functioning, the stoma can be reversed once the infant is stable.

While intestinal resection and stoma formation are necessary, several unwanted side effects may arise.

When the lower intestine is detached from the digestive system, it doesn't receive the nutrients it needs from chyme – which can ultimately lead to atrophy of the intestine.

The lower intestine also supports the infant's nutritional uptake, biliary salt turnover and fluid balance – and these functions may be compromised if the lower intestine is left unused.²

Mucous fistula refeeding: the benefits and the barriers

One way of preventing these side effects is through a procedure called mucous fistula refeeding.

It refers to the process of taking chyme produced by the upper stoma and transferring it to the lower, distal part of the intestine.^{3,4}

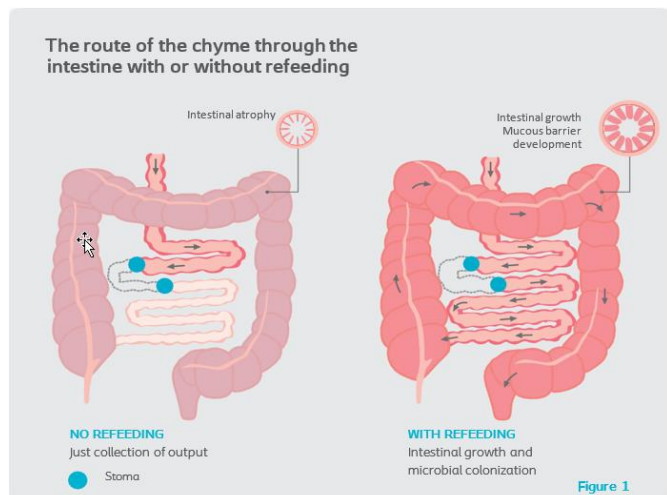
To learn more about the pros and cons of this procedure, we conducted an online survey among 30 physicians (including neonatologists and gastrointestinal surgeons) in the US, UK, Canada, Italy and Germany⁵ and combined this with a systematic literature search.^{2-4, 6-15} Using a five-point scale ('very unimportant', 'unimportant', 'neither/nor', 'important', 'very important'), the physicians were asked to evaluate different statements on the possible benefits as well as the risks and obstacles involved when performing mucous fistula refeeding.

What is mucous fistula refeeding?

The process of taking chyme produced by the upper (proximal) stoma and transferring it to the lower (distal) part of the intestine.³⁻⁴

Our findings revealed that mucous fistula refeeding has a number of significant benefits⁶.

- Less fluid and nutritional complications: By providing the distal intestine with nutrition, refeeding helps to reduce



the number of nutritional complications, e.g. those related to parenteral nutritional support and fluid losses.^{2, 3, 7}

- Fewer associated complications: With less parenteral nutritional support needed, we see a reduction in cholestasis too.^{2, 9}
- Higher success in re-anastomosis (stoma reversal): Infants who receive refeeding have shown a higher success rate when the stoma is reversed and the intestine reconnected.^{2, 9}
- Increased growth rate: Infants who receive refeeding show a significantly higher growth rate.^{2, 3, 7, 8}
- ≥ 80 per cent of the physicians surveyed stated that refeeding was 'important' or 'very important' for improving the infant's growth.⁵
- ≥ 50 per cent of the physicians surveyed stated the practice was 'important' or 'very important' for immune system development and survival rate.⁵

Despite the reported benefits associated with refeeding, the procedure is not yet common practice. Literature on the subject and the physician survey identified three main barriers to widespread adoption:

- Complications: Some of the articles reported a few incidents of major complications (e.g. intestinal rupture or intestinal bleeding); others described concerns related to intestinal bacterial overgrowth, the time the output stayed in the bag,⁸ and possible sepsis through the introduction of pathogenic bacteria.^{10, 12}
- Appliances: More than 30 per cent of the physicians surveyed highlighted the lack of a good ostomy appliance for refeeding. If it were available, ≥70 per cent would prefer a sterile stoma bag for refeeding.⁵
- Shortage of time: 20 per cent of physicians felt the refeeding procedure was too time-consuming for nurses to perform.⁵

What is chyme?

Chyme is partly digested food which, in the case of infants, consists of breast milk. Chyme helps the lower intestine by:

- Stimulating intestinal growth;
- Transferring antibody IgA and bacteria to the lower intestine, which may help immune system development; and
- Colonizing it with bacteria from the mother and from the upper intestine

Future prospects?

For refeeding to become a widespread practice, healthcare professionals will have to be convinced that the benefits of the practice outweigh the risks as well as the extra time needed for nursing. According to our physician survey, this appears to be the case.

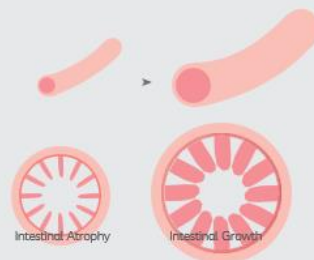
- 80% expect refeeding to be practiced more often in the future
- 53% believe the benefits of refeeding outweigh the risks, whereas 10% do not. 37% said that it depends on the situation.⁵

For the procedure to become widespread, however, more evidence is needed. The physicians surveyed expected future studies to demonstrate the positive impact refeeding can have on growth, immune system development, and mortality for premature infants with stomas.

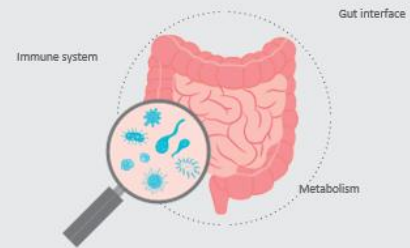
There is another fact that is hugely important for the adoption of the procedure, and that is the presence of best practice guidelines.^{16, 17} Hospitals will need to discuss and prepare such guidelines to help minimize any possible risks or concerns related to the procedure.

The 3 main benefits to mucous fistula refeeding is ensuring nutritional, antibody and microbial transfer to the lower part of the intestine¹⁸

1 Stimulates intestinal growth



2 Colonizes lower intestine with bacteria from upper/ascending stoma



3 Antibody and bacteria transfer from breast milk



- BREAST MILK**
- Extracellular vesicles
 - Prebiotics
 - Probiotics
 - Cytokines
 - Antigens
 - Cells
 - Antibodies

Intestinal immunity of the child

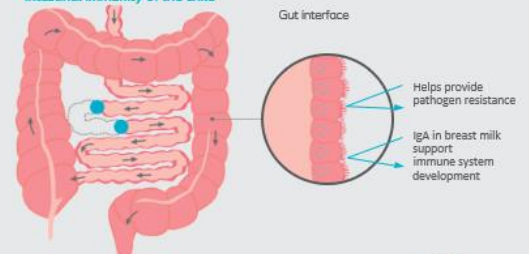


Figure 2

References:

1. Hein-Nielsen AL, Petersen SM, Greisen G, Unchanged incidence of necrotizing enterocolitis in a tertiary neonatal department, Dan Med J 2015; 62(7): A5091
2. Lau CT, Fung ACH, Wong KKY et al, Beneficial effects of mucous fistula refeeding in necrotizing enterocolitis neonates with enterostomies, Journal of Pediatric Surgery 2016, doi. org10.1016/j.pedsurg.2016.09.010
3. Gause CD., Hayashi M., Haney C, Mucous fistula refeeding decreases parenteral nutrition exposure in postsurgical premature neonates, Journal of Pediatric Surgery 2016, dxdoi. org/10.1016/j.jpedsurg.2016.06.018
4. Al-Harbi K, Walton J.M, Gardner V. et al., Mucus Fistula Refeeding in Neonates With Short Bowel Syndrome, Journal of Pediatric Surgery 1999;34(7): 1100-1103
5. Coloplast, Physician Survey of neonatal stoma care and refeeding practices, Data-on-file (VV-0203544)
6. Coloplast, Literature Review Report on mucous fistula refeeding (VV-0203544)
7. Koike Y, Uchida K, Nagano Y et al, Enteral refeeding is useful for promoting growth in neonates with enterostomy before stoma closure, Journal of Pediatric Surgery 2015; doi. org/10.1016/j.pedsurg.2015.08.058
8. Wong KKY., Lan LCL., Lin SCL. et al., Mucous Fistula Refeeding in Premature Neonates With Enterostomies, Journal of Pediatric Gastroenterology and Nutrition 2004; 39:43-45
9. Haddock CA, Stanger JD, Albersheim SG et al, Mucous fistula refeeding in neonates with enterostomies, Journal of Pediatric Surgery 2015;50: 779-782
10. Pataki I, Szabo J, Varga P et al, Recycling of bowel content: The importance of the right timing, Journal of Pediatric Surgery 2013; 48:579-584
11. Richardson L., Baberjee S., Rabe H., What is the Evidence on the Practice of Mucous Fistula Refeeding in Neonates With Short Bowel Syndrome?, Journal of Pediatric Gastroenterology and Nutrition 2006; 43:267-270
12. Madan JC., Salari RC., Saxena D, et al. Gut Microbial colonisation in premature neonates predicts neonatal sepsis, Arch Dis Child Fetal Neonatal Ed, 2012;97:F456-F462
13. Puppala BL, Mangurten HH, Kraut JR et al, Distal Ileostomy Drip Feedings in Neonates with Short Bowel Syndrome, Journal of Pediatric Gastroenterology and Nutrition 1985; 4:489-494
14. Schafer K, Zachariou Z, Loffler W, et al., Continuous extracorporeal stool-transport system, Pediatr Surg Int (1997) 12: 73-75
15. Gardner VA., Walton J. Chessell L., Advances in Neonatal Care 2003; 3(6): 258-271
16. Cameron G., Ensenat, Peliowski, Enterostomy Refeeding, Neonatal Nursery Policy & Procedures Manual, Covenant Health 2012.
17. Trevor Mann Baby Unit RSCH, Protocol for the Recycling of Stoma losses, Brighton and Sussex University Hospitals NHS Trust 2010.
18. Xiao-Zhong Huang, Li-Bin Zhu, Zhong-Rong Li, Jing Lin. Bacterial colonization and intestinal mucosal barrier development, World J Clin Pediatr 2013 November 8; 2(4): 46-53

Coloplast develops products and services that make life easier for people with very personal and private medical conditions. Working closely with the people who use our products, we create solutions that are sensitive to their special needs. We call this intimate healthcare. Our business includes ostomy care, continence care, wound and skin care and urology care. We operate globally and employ more than 10,000 employees.

The Coloplast logo is a registered trademark of Coloplast A/S. © 2018-09
All rights reserved Coloplast A/S, 3050 Humlebaek, Denmark. PM-06452