Novel treatment (new drug/intervention; established drug/procedure in new situation)

Closure of a large high-output gastrocutaneous fistula with combined postpyloric feeding and aggressive medical therapy

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Summary

Widening of the exit site of a percutaneous gastrostomy tube is a rare but difficult to manage complication, which leads to significant morbidity as a result of caustic material leak and associated cutaneous injury. Such defects fail to close with conservative measures such that invasive (surgical or endoscopic) intervention is often required. The authors present a 49-year-old woman with neurological dysphagia, 2 years after gastrostomy tube insertion with several months' history of leakage and widening of the hole at the exit site. Following gastrostomy tube removal, the patient was left with a large, high-output gastrocutaneous fistula which was treated aggressively with measures to reduce gastric discharge including 'nil-by-mouth', bypassing the stomach with distal feeding, administration of a somatostatin analogue, high-dose proton pump inhibitor and prokinetics with the aim of preoperatively downsizing the wound. This novel approach led to complete closure of the large gastrocutaneous fistula, obviating the need for surgical intervention.

BACKGROUND

Oropharyngeal dysphagia secondary to neurological disease is a common indication for long-term feeding via percutaneous gastrostomy tubes. Enlargement of the gastrostomal orifice resulting in leakage of gastric contents is a rare complication which causes significant morbidity including: cutaneous injury, infection, dehydration and electrolyte imbalance and ultimately loss of access for enteral nutrition. Rarely (4.5% of cases¹), after gastrostomy extubation, a communication between skin and stomach, termed as gastrocutaneous fistula persists. Fistula formation due to epithelialisation of the fistula tract has been shown to be associated with the length of time the tube is in place.² Conservative management using pharmacological agents to inhibit gastric discharge are often unsuccessful in healing the fistula when used alone. Several authors have described more invasive endoscopic^{3–6} and surgical approaches to fistula closure. However, many patients who require gastrostomy feeding have multiple comorbidities including respiratory failure secondary to progression of neurological disease which render them unsuitable for invasive treatment. Such patients require optimal medical and nutritional support to give them the best possible chance of wound healing. Here, we describe a novel approach to conservative management of a gastrocutaneous fistula in a patient that was unlikely to be fit for general anaesthesia and predicted to require surgical closure of the wound with an unexpected positive outcome.

CASE PRESENTATION

A 49-year-old female patient with an 8-year history of progressive motor neurone disease with bulbar involvement (immobile tongue, anarthria) and progressive oropharyngeal dysphagia was referred to the nutritional support team 2 years previously. After detailed swallowing assessments by speech and language therapists she was

started on a pure diet and recommended for radiologically guided insertion of gastrostomy feeding tube in order to meet her nutritional requirements and administer medication. The gastrostomy procedure was successful and straightforward with no immediate complications. Despite her increasing disabilities (immobility—requiring hoisting) she continued to be managed as an outpatient with the care of her husband, community nursing and dietetics support.

Sixteen months after the radiologically inserted gastrostomy procedure, both patient and carers noticed that the exit site of the gastrostomy had started to leak fluid and that the hole had been increasing in size. The tube continued to be used for feeding and the exit site required more frequent dressing than previously. The peristomal symptoms persisted with increasing leakage and skin excoriation and she presented to a gastroenterology medical ward at her local district general hospital 2 months later with cellulitis at the exit site requiring antibiotics. At this stage, a decision was taken to replace the existing gastrostomy tube with a larger diameter tube secured with balloon inflation. Despite this, the gastrostomy exit site continued to expand and discharge gastric contents. Four months later, she was admitted electively to the tertiary centre for removal of the gastrostomy tube and further assessment with a view to re-siting. On examination after removal of the gastrostomy tube a large defect (51 mm×30 mm) with visible gastric lumen at the skin exit site (gastrocutaneous fistula) was seen. The skin surrounding this fistulous opening was excoriated without signs of infection. A stoma bag was fitted over the fistulous site and the output was measured. The output of the gastrocutaneous fistula was high, with 800 ml of gastric fluid draining within the first 12 h and a decision was made to hold off resiting the gastrostomy tube until the fistula had healed.

TREATMENT

The initial management on day 1 by the medical team included traditional measures to reduce gastric discharge. The patient was kept nil-by-mouth, started on intravenous fluids with electrolyte monitoring, put on double her preadmission dose of omeprazole intravenously (increase from 20 to 40 mg once daily) and regular prokinetics (metaclopramide 10 mg three times a day). Microbiology culture and sensitivity results from a swab taken at the wound site grew a fully sensitive *Staphylococcus aureus* in addition to group G Streptococci for which she was prescribed an appropriate antibiotic regimen. On day 4 she was reviewed on the nutrition support team ward round where the wound was re-examined and had not decreased in size with the above measures (figure 1) and topical treatment with orasheive powder was introduced. The gastroenterologist subsequently increased the dose of omeprazole further to 40 mg twice daily and added octreotide 50 µg three times a day. In addition to optimising medical therapies a decision was made regarding a non-oral approach to feeding with the aim of bypassing the stomach to improve chances of wound closure, which in view of the high-output fistula, size of the defect and duration of tube feeding appeared to be slim without surgical intervention. Postpyloric enteral feeding was selected and the naso-jejunal feeding tube with bridal, was inserted under fluoroscopic guidance on day 9 of admission. Between days 4 and 9 the patient was given interim peripheral total parenteral nutrition (TPN) via a mid-line until the radiology appointment. Once the naso-jejunal tube was positioned at the duodeno-jejunal flexure and postpyloric feeding established, TPN was discontinued (day 10) and medications were also converted from intravenous to naso-jejunal administration.

Figure 1 Pretreatment image—large gastrocutaneous fistula (51 mm×30 mm) excoriated and depressed peristomal skin. Photograph was taken on day 4 postgastrostomy tube removal.

OUTCOME AND FOLLOW-UP

On day 11 the gastrocutaneous fistula was re-examined by the nutrition support team. At this stage, the patient had received 3 days naso-jejunal feeding, 4 days of TPN prior to this, 11 days; nil-by-mouth, high-dose proton pump inhibition and prokinetics with 7 days of octreotide. The size of the fistula had significantly improved to less than half its original size (20 mm×20 mm) and no further changes to feeding regimen or medications were made at this stage. On review a week later (day 18) the gastrocutaneous fistula had decreased further in size to 5 mm×5 mm and the fistula output had decreased to 150–200 ml per 12 h. In light of this progress the patient was discharged home with stoma care, naso-jejunal feeding, octreotide injections and high-dose omeprazole to continue for 6 weeks in total. A week after completing medical therapy (day 56) the patient was followed up in a gastroenterology clinic. The wound which was by now dry, had completely healed (figure 2) and the stoma bag was removed.

DISCUSSION

This case describes a strategic approach to medical management of a large, high-output gastrocutaneous fistula which was predicted to require invasive management. Early optimisation of medical therapy in combination with nutritional support led to an unexpected successful outcome for this patient who was clearly a poor surgical candidate. Patients with high-output enterocutaneous fistulae (>500 ml/24 h) have been shown to be less responsive to conservative measures and there are no previously published cases describing successful closure of a gastrocutaneous defect such as this, with the combination of optimal medical therapy and postpyloric feeding.

In terms of the approach to nutrition, the aims were to replenish fluid losses while limiting gastric discharge, with the patient being kept 'nil-by-mouth' and alternative nutrition being cautiously started once the patient's condition had stabilised. The choice of 6 weeks of postpyloric feeding in this particular case in combination with medical treatment appears to have been key in the patient's successful outcome. Interestingly, there is only one previously published series of five gastrocutaneous fistula patients in the postpyloric feeding literature from a small study by a Malaysian group. Similar to the outcome in this current case report, the authors reported that in all five patients treated with naso-jejunal feeding there was complete healing of gastrocutaneous fistulae. Unfortunately, the adjunctive medical therapies which these patients received during their conservative management were not documented in the report.⁷

In addition to distal feeding, our patient was supported by a combination of pharmacological agents to facilitate healing of the fistulous tract. Proton-pump inhibitors have a well-documented role in reducing gastric discharge and fistula output^{8 9} and therefore converting the patient to high dose early on and hence increasing the pH of gastric discharge may have been a factor in the positive outcome. Similarly, prokinetics such as metoclopramide is often used in this context to reduce gastric discharge but with limited evidence base. Octreotide has been shown in several clinical trials to have value in that it does reduce the output of gastrointestinal fistulae in this setting¹⁰ and

Figure 2 Follow-up image—taken after 6 weeks of postpyloric feeding and medical therapy (octreotide, high-dose proton pump inhibitor, prokinetics and antibiotics) showing complete healing of the fistula. Photographs courtesy of Medical Illustrations department, Salford Royal Foundation Trust.

promotes fistula healing.¹¹ In addition to the above medications, prompt diagnosis and treatment of wound infection with appropriate antibiotics according to culture and sensitivity was an important step in the management of our patient and the successful outcome.

Learning points

- ▶ In the context of a leaking, widened entry site of a percutaneous gastrostomy tube, replacement with a larger gastrostomy tube is often counterproductive.
- ▶ When withdrawing percutaneous gastrostomy tubes, particularly if the tube has been in place long term, the rare complication of gastrocutaneous fistula should be kept in mind.
- ▶ Even in large gastrocutaneous fistulae there is a role for strategic conservative management which may prevent the need for invasive management. Early optimisation of medical therapy including initiation of somatostatin analogue is important in limiting gastric discharge and preventing further damage at the fistula site.
- ▶ Nutritional support with postpyloric enteral feeding seems to be very effective and should be considered in combination alongside medical therapies for patients with gastrocutaneous fistulae.
- ▶ Regular examination of fistula site by nutritional support teams during 6 weeks of conservative management provides opportunities for clinicians to make an informed decision regarding the need for invasive management.

Acknowledgements The authors thank Dr John Ealing and Dr Hisham Hamdallah and staff in the Neurology department who participated in the clinical care of the patient.

Competing interests None.

Patient consent Obtained.

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Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Vasant DH, Lal S, Blackett BD, Paine PA. Closure of a large high-output gastrocutaneous fistula with combined postpyloric feeding and aggressive medical therapy. *BMJ Case Reports* 2012;10.1136/bcr-2012-007267, Published XXX

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