CASE REPORT

Over-the-scope-clip system secured nasojejunal tube feeding in refractory hyperemesis gravidarum

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SUMMARY

Hyperemesis gravidarum (HG) is a severe form of nausea and vomiting in pregnancy. It complicates up to 2% of all pregnancies and can be associated with adverse outcomes. Its management commonly involves a combination pharmacotherapy, however, the efficacy of such treatment is limited. Supplemental nutrition is often required in refractory cases. Enteral route is preferred over parenteral, given the high rate of intravenous catheter-related complications. Enteral feeding tube placement can be challenging and is commonly thwarted by dislodgement. We present a pharmacotherapy refractory HG case where the over-the-scope-clip (OTSC) system was successfully used for durable mucosal fixation of the nasojejunal feeding tube.

BACKGROUND

Nausea and vomiting is common in pregnancy and usually self-limiting. Severe symptoms leading to dehydration, weight loss, metabolic and nutritional disorders are known as hyperemesis gravidarum (HG). The reported prevalence is up to 2%.¹ It can be associated with adverse pregnancy outcomes for both mother and the fetus.

Treatment ranges from dietary modifications through to pharmacotherapy, including antiemetics. Refractory cases may require intravenous hydration, electrolyte and micronutrient replenishment often leading to prolonged hospital admissions.² Glucocorticoids are used in desperation.³

When nutritional support is deemed necessary, enteral feeding is preferred over parenteral due to the intravenous catheter-related complications.^{4 5} All types of temporary feeding tubes are prone to dislodgement. Nasojejunal tube (NJT) is considered to perform better than nasogastric tube (NGT) in a vomiting patient. However, NJT dislodgement is also common. This is particularly relevant to a vomiting patient such as our HG cohort.⁶ Overcoming this obstacle can be challenging. Endoscopic techniques with percutaneous approach⁷ such as percutaneous endoscopic gastrostomy or jejunostomy (known as PEG, PEG-J or PEJ) significantly reduce this problem, but come with the risks of more invasive procedure such as infection, bleeding and organ perforation. Some clinicians have even resorted to surgical jejunostomy.⁸

Endoscopic NJT placement with mucosal clip fixation is a reasonably common practice.⁹ Its effects are, however, only temporary, lasting from days to few weeks. HG patients may on the other

hand require several months of feeding and hence may require more durable NJT fixation.

The over-the-scope clip (OTSC) by Ovesco Endoscopy AG (Tuebingen, Germany) may well deliver this quality (figure 1). Its use is primarily in management of gastrointestinal haemorrhage and perforation.¹⁰ As opposed to standard mucosal clips, which are small enough to pass through the endoscope's working channel, the OTSC is bigger and sits on a plastic hood affixed to the endoscope tip. The clip is deployed by a string release after suctioning the target tissue into the plastic hood (figure 2). Due to its size and shape, it allows for deeper and wider seating within the gut wall. This in turn leads to significantly longer duration of fixation. The OTSC fixes a loop of non-absorbable suture which is tied through the fenestration near the tip of the NJT and thus securing it to the mucosa in the distal duodenum/proximal jejunum. When no longer required, the NJT is then removed endoscopically by severing the suture loop with argon plasma coagulation.

We present a case of refractory HG managed with an endoscopically secured NJT, using the durable OTSC system. To the best of our knowledge, this technique has not been described in the setting of HG patients.

CASE PRESENTATION

This 30-year old petite Fijian Indian woman had a history of recalcitrant HG in her first pregnancy. It included four hospital admissions and seven clinic reviews initiated at 6 weeks gestation. During the following 4 weeks, she lost almost 11% of her weight, from 47 down to 42 kg. Management included intravenous rehydration, antiemetics and an attempted NGT, which was dislodged on the day of insertion due to persistent emesis. Total parenteral nutrition (TPN) was initiated and continued for a week until eventually the pregnancy was surgically terminated at 10 weeks. Following counselling, the patient made this difficult decision due to ongoing hyperemesis, which quickly settled following the termination.

Five months later, her second planned pregnancy was following a similar course with the first of several admissions to hospital at 5 weeks and 5 days gestation, complaining of severe hyperemesis. She weighed 47 kg at that point and this was her normal prepregnancy weight. Initial management included a combination of intravenous rehydration and antiemetics (metoclopramide, ondansetron and hyoscine patch). On her second presentation a week

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Figure 1 Over-the-scope clip.

later (at 6 weeks and 4 days), she weighed 44 kg, a 6% weight loss. In consultation with the dietician and gastroenterologists, the decision was made for NJT placement as she did not tolerate the NGT in her previous pregnancy. Unfortunately, this NJT was dislodged again due to ongoing emesis on the same day. Further antiemetic was added (rectal prochlorperazine) with some improvement of her symptoms. She gained 2 kg over the course of this 5-day admission and was discharged weighing 46 kg.

Unfortunately, she was readmitted 2 days later (at 7 weeks and 4 days) with severe refractory hyperemesis, weighing 43 kg. Intravenous methylprednisone 16 mg three times a day was initiated, but this led to little improvement. TPN was then commenced only to be discontinued a week later following deranged liver biochemistry.

TREATMENT

At 9 weeks, a further NJT (Cook NJFT-10) was inserted and secured to the distal duodenal mucosa with a nylon 4-0 suture and the Ovesco OTSC system size 12 clip. After the suture was threaded through the distal end of the NJT and knotted to form a loop, the NJT was placed in a through-the-scope manner into the distal duodenum and the endoscope was carefully withdrawn. The OTSC system was then loaded onto the endoscope and after reintubation of the duodenum, the clip was deployed to attach the suture loop to the duodenal wall. NJT feeding was gradually progressed from 50 to 68 mL/h (Nutrison Multi-fibre). The patient was discharged home on oral antiemetics and steroids at 11 weeks, weighing 47 kg (her prepregnancy weight).

The patient was readmitted at 12 weeks with increasing vomiting, weighing 46 kg. She had voluntarily stopped the steroids, which were planned to be slowly weaned. These were recommenced and antiemetics were continued. The NJT remained in situ and the feeding continued. She was discharged 3

weeks later complaining only of morning sickness. Her discharge weight was 46.5 kg.

Enteral feeding continued in the community until 18 weeks for a total of 9 weeks since the NJT placement. The initial rate was 80 mL/h of continuous feeds, later reduced to 68 mL/h to promote appetite and increase her oral intake. In the last 2 weeks of enteral feeding, the patient was tolerating oral diet without sickness and only continuing NJT feeds overnight from 20:00 to 7:00 at a rate of 68 mL/h. She did not require any further admissions but was reviewed weekly as an outpatient until 20 weeks.

NJT removal was postponed until most of her antiemetics and steroids were weaned off by 22 weeks. Only ondansetron was continued for persisting mild morning sickness. The NJT was removed at 23 weeks endoscopically using an argon plasma coagulator to divide the nylon suture. The OTSC clip was left in the mucosa. The NJT had remained in situ for a total of 14 weeks.

OUTCOME AND FOLLOW-UP

No further admissions were required due to hyperemesis, only routine antenatal outpatient reviews took place. The patient's weight at 38 weeks was 53.9 kg, a 6.9 kg increase from her booking weight of 47 kg. There was normal fetal growth on serial scans throughout the pregnancy, until a drop in interval growth was noted between the 36 and 38-week growth scans. Delivery was via caesarean section for fetal distress in early labour following spontaneous rupture of membranes at 39 weeks. The baby's birth weight was 2500 g (13th centile on customised growth chart) and Apgar score was 9/10/10. Breastfeeding was initiated and the patient was discharged home with her newborn on day 4. The infant was well at 12 months, achieving all milestones with growth above the 50th centile.

DISCUSSION

Supplemental nutrition is often used in refractory HG cases. The enteral route is preferred, given frequent intravenous catheter-related complications.^{4 5} Feeding tube dislodgement is common.⁶ Some have chosen to secure the NJT, and mucosal fixation by mucosal haemostatic clips is well known.⁸ However, its durability is limited and unpredictable (ranging from only days to few weeks).

Patients with HG may require several months of enteral feeding. The OTSC system may well provide the extended duration of mucosal fixation that our cohort of patients needs. It can be suited for prolonged treatment, 14 weeks in our case.

There are a few alternatives to endoscopic mucosal fixation technique including percutaneous endoscopic placement such as PEG, PEG-J, PEJ⁹ or surgical jejunostomy.⁷ These, however, are more invasive with the inherent risk of potentially serious consequences.

Figure 2 Schematic diagram of over-the-scope clip application.

We postulate that OTSC application for NJT placement in HG patients could outweigh its cost by reducing the length of hospital stay, frequent readmissions and need for repeated endoscopic procedures when dealing with recurrent catheter dislodgement.

Learning points

- ▶ Enteral feeding is an effective and safe way to provide nutrition in cases of severe hyperemesis gravidarum (HG).
- ▶ Nasojejunal tube (NJT) dislodgement is common and durable mucosal fixation is often required.
- ▶ The use of an established technique (Ovesco over-the-scope clip) in a novel indication for long-term NJT fixation may provide sustained enteral nutrition in this difficult HG cohort.
- ▶ Further data are needed, particularly in regards to the durability of this method of fixation and risks of complications.

Contributors KJ and AT are both first authors as they have contributed equally to analysing data and writing this case report. RC and KJ are the gastroenterologists who performed the procedure described in the case. FL and AT were the obstetricians and gynaecologists caring for the patient in this pregnancy but also in her past one. All authors have substantial contributions to the case in joint specialist conception and planning. They have approved the case report and are accountable for all aspects of it.

Competing interests None declared.

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