

Laparoscopic Trans-anastomotic Removal of Eroded MiniMizer Gastric Ring Causing Full-thickness Erosion and Bleeding: A Rare but Morbid Complication

Edward Y Li, Sean SW Park, Kenneth Wong

Department of General Surgery, Gosford, New South Wales, Australia.

Corresponding Author:

Dr Edward Li
Email: edward.y.li@gmail.com

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Abstract

Background: Devices such as silicone rings and silastic bands are recent advances in bariatric surgery as adjuncts to laparoscopic gastric sleeve and Roux-en-Y bypass in order to assist weight loss and reduce rates of dumping syndrome. **Case Report:** We describe a rare complication of full thickness erosion and bleeding in a 43-year-old patient, three years post MiniMizer band insertion who required laparoscopic and endoscopic assisted removal of this band. **Conclusion:** The band was not visualised laparoscopically and we did not have specialist equipment for endoscopic removal and hence present a novel method for endoscopic guided gastrotomy and removal.

Keywords: Bariatric Surgery, Dumping Syndrome, Laparoscopic Surgery, Roux-en-Y Anastomosis, Weight Loss.

Background

Laparoscopic sleeve gastrectomy and Roux-en-Y gastric bypass are the two most commonly performed bariatric procedures in Australia [1]. In recent years, an adjunct restrictive silastic band or silicone ring devices (MiniMizer ring) placed on the gastric pouch has gained much popularity to assist weight loss maintenance through improved restriction and reduction of post-operative dumping syndrome [2]. This is on the notion that pouch dilatation can be responsible for insufficient weight loss and/or weight regain in the long-term [3]. In particular, MiniMizer ring is commonly implanted as it requires only very limited dissection at the lesser curvature, adding minimal time to duration of surgery [4]. Although there is a growing body of evidence that these rings are associated with improved excess weight loss in long-term [3,5,6], it comes at the cost of potential band-related complications such as vomiting, band migration, erosion and bleeding, which are reported up to 7% of the cases [3,6,7]. Therefore, surgeons

need to be aware of potential complications from these devices and be able to manage them with appropriate utilisation of endoscope and surgery.

Case Report

A 43-year-old female presented to our emergency department with two days of abdominal pain and melena, associated with significant hemodynamic instability. Her background includes a previous sleeve gastrectomy which was later converted to a Roux-en-Y bypass for weight regain with placement of a MiniMizer gastric ring 3 years ago. Resuscitation including blood products were given. At urgent endoscopy, her MiniMizer ring was found to have eroded into her gastric lumen, just proximal to her gastro-jejunostomy, causing bleeding with a visible vessel within an ulcer which was treated with adrenaline and gold probe. Despite this, she continued to have ongoing bleeding in our intensive care unit, requiring six units of packed cells transfusion. On this basis, she was taken for laparoscopic removal of her MiniMizer ring.

At laparoscopy, despite extensive adhesiolysis around the liver and gastric pouch, the ring was not visible. There was a lot of inflammatory tissue in the area between the liver, gastro-jejunostomy and remnant stomach. Intra-operative gastroscopy was performed in order to identify the position of the eroded ring intra-luminally and under laparoscopic vision, we could identify the light of the gastroscope. A gastrotomy was then made with sharp diathermy and extended with Ligasure device to involve the gastro-jejunostomy. The buckle of the ring was visible intra-luminally and was cut with scissors and retrieved. After haemostasis was achieved with diathermy the gastrotomy was closed with laparoscopic continuous 3-0 absorbable V-lock sutures. A leak test with gastroscopy confirmed no leak, a patent gastro-jejunostomy and satisfactory haemostasis intra-luminally. The patient was discharged twelve days later on a normal diet and no further transfusion requirement whilst in hospital.

Discussion

Common complications of silastic rings are related to obstruction and migration [1,8]. In previous case reports detailing removal of migrated rings, the rings are usually easily visible on laparoscopy with minimal adhesiolysis [1,8]. As far as we are aware there is only one case report published of erosion and bleeding caused by silastic rings. The case described by Franco-Martinez *et al.* showed erosion of a ring into the bypassed stomach of a patient who had a Fobi-pouch operation, a variation to the Roux-en-Y gastric bypass, requiring resection of the stomach [9]. In our case we were able to avoid resection and the greater morbidity associated with it.

Tan *et al.* [8] proposed an algorithm detailing determination of migration versus erosion with gastroscopy and endoscopic removal as first line followed by diagnostic laparoscopy and removal if endoscopy was unsuccessful. In our



Fig.1: Endoscopic visualisation of the completely eroded MiniMizer ring.

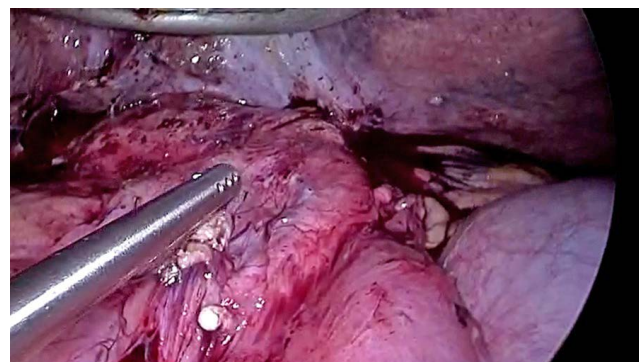


Fig.2: Laparoscopic examination of the gastric pouch surrounded by inflammatory tissue.



Fig.3: Intraluminal removal of the MiniMizer ring after gastrotomy.

case the band was unable to be safely removed with endoscopy or laparoscopy alone. Endoscopically the buckle was not fully visible. Endoscopic retrieval of bands is ordinarily achieved with JAG wire and cutting the band requires a manual

Soehendra lithotripter which was not available with us and we were not familiar with the use of these instruments. We were also wary of laparoscopic removal as we did not want to disrupt any phlegmonous tissue associated with erosion. The significant fibrotic tissue surrounding the remnant stomach and gastrojejunostomy site also made it impossible to identify the position of the ring via laparoscopy alone. With the aid of intra-operative gastroscopy, we were able to identify that the ring was proximal to the gastrojejunostomy site and achieved intraluminal retrieval of the ring via laparoscopy.

Conclusion

We present this case report to highlight this morbid complication of a silastic band 3 years post-operatively and to also present a novel method for intra-luminal removal in a case where endoscopic or laparoscopic retrieval was not possible as independent methods. As evidenced in this case, visualisation of these rings when eroded may not always be possible. Compared to gastric laparoscopic bands, which normally have a port and tubing that can guide approximate location of the band, silastic rings are small and can be difficult to be visualised in the setting of partial or complete erosion with inflammatory tissue around the gastric pouch. This approach provides insight into safe laparoscopic removal of completely eroded silastic rings where inflammatory tissue obscures visualisation of relevant anatomy.

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