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Trans-thoracic peri-oesophageal adjustable band for intractable reflux



Mark Simon X. Kusel*, Jeremy T.H. Tan

Sir Charles Gairdner Hospital, Hospital Avenue, Nedlands, Western Australia 6009, Australia

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ABSTRACT

INTRODUCTION: Gastric bands for obesity have the beneficial side-effect of improving reflux symptoms in patients; however placement of these on patients with multiple prior abdominal surgeries can be challenging.

PRESENTATION OF CASE: We present two cases where gastric bands were placed in a peri-oesophageal position via a left thoracotomy due to multiple previous abdominal surgeries in an attempt to treat their intractable reflux.

DISCUSSION: At three month follow up, both patients have reported improvement in their symptoms of GORD.

CONCLUSION: A peri-oesophageal position adjustable gastric band is a possible solution for patients with intractable reflux and hostile abdomens.

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1. Introduction

Laparoscopic adjustable gastric banding for obesity has the beneficial side-effect of improving the reflux symptoms of patients known to have gastro-oesophageal reflux disease (GORD) pre-operatively [1–3]. Patients with recurrent hiatal hernias and/or reflux symptoms despite multiple previous anti-reflux operations remain a challenge. Often the abdominal route may have been used more than once either laparoscopically, open or both. In addition, mesh may have been used at the hiatus at a previous operation making dissection around the gastro-oesophageal junction (GOJ) difficult and hazardous. In such cases, a *trans*-thoracic approach is attractive as it approaches the GOJ through a fresh field. The Belsey Mark IV procedure is the most commonly used *trans*-thoracic approach for anti-reflux surgery. Its use in previous failed gastro-oesophageal surgery enables full mobilisation of the oesophagus as well as complete vision of the upper stomach [4]. We present two cases demonstrating the novel approach of *trans*-thoracic combined peri-oesophageal adjustable band insertion and Belsey Mark IV repairs for the treatment of intractable GORD.

2. CASE 1

The first patient is a 67 year old man who first presented to our institution with a large intra-thoracic stomach secondary to a type 3 hiatus hernia and a laparoscopic adjustable gastric band (LAGB) at the GOJ, in the chest (see Figs. 1 and 2). He recounted that he had previously had 2 abdominal anti-reflux operations and two open

incisional hernia repairs. His last operation was the insertion of the LAGB, which was done as an open procedure. He presented with dysphagia and chest pain.

Given his multiple previous abdominal operations, the decision was made to perform a Belsey Mark IV procedure and to remove the band. This was done and the patient's dysphagia and chest pain settled, however, he then promptly regained 20 kg. In addition he developed intractable reflux, despite high dose proton pump inhibitors and pro-kinetics. He complained that the reflux was so severe he had resorted to sleeping in a chair and this was affecting his quality of life. He also developed a recurrent incisional hernia in his abdominal midline laparotomy wound. We were persuaded to insert a peri-oesophageal adjustable "gastric" band via a left thoracotomy because the patient was keen for another band to be inserted, and because it was felt that the abdomen would still be too hostile. We explained that we did not think the band would help him to lose any weight in a peri-oesophageal location, but that it might help improve his reflux symptoms.

As such, his left postero-lateral thoracotomy wound was re-opened and a peri-oesophageal Cousin Bioring band (Cousin – Biotech, France) was inserted around the distal oesophagus without any anchoring sutures. The port was placed just cephalad to the costal margin in the mid-clavicular line.

Post-operatively he has had satisfactory control of his reflux and the band has been filled to 6.5 mL to maintain this control. He remains on 40 mg Proton Pump Inhibitor (PPI) twice daily. He has not lost any weight. At 8 months follow up the patient complained of minimal reflux with symptoms only every 2–3 days.

3. CASE 2

The patient is a 76 year old man with a past history of paroxysmal atrial fibrillation and prostate cancer treated with open

* Corresponding author. Fax: +61 8 9383 2740.

E-mail address: simonkusel@gmail.com (M.S.X. Kusel).



Fig. 1. CT revealed a type 3 hiatal hernia with his LAGB on his intra-thoracic stomach.

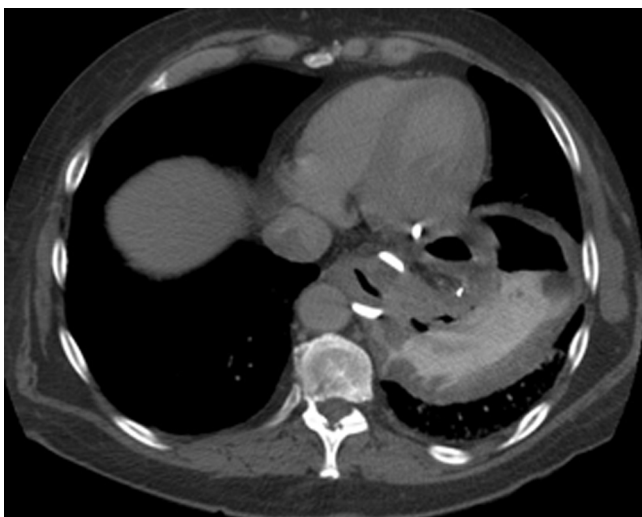


Fig. 2. CT revealed a type 3 hiatal hernia with his LAGB on his intra-thoracic stomach.

prostatectomy. He underwent a laparoscopic hiatal hernia repair with an anterior 180° fundoplication with Physiomesh (Ethicon Endosurgery, USA) to the hiatal repair. He sustained a recurrent hiatal hernia with reflux and a second laparoscopic repair was attempted. This had to be converted to an open procedure because of inadvertent perforation of the posterior aspect of the GOJ during the dissection and mobilisation of the oesophagus. Firstly, the perforation was repaired before the hiatus was again repaired and reinforced with Surgisis (Cook Medical, USA) mesh given the contamination with gastric contents. Finally a posterior 270° wrap was performed.

This repair unfortunately also failed and he presented with a recurrent hiatal hernia and reflux several months later (Fig. 3).

Given the numerous previous abdominal approaches, it was decided a Belsey Mark IV procedure would be performed. However, at thoracotomy, the oesophagus and GOJ could only be mobilised over the anterior 180° section and although we could sling the oesophagus, we could not mobilise the posterior part of the GOJ to reduce it into the chest nor free the crura posteriorly to do a

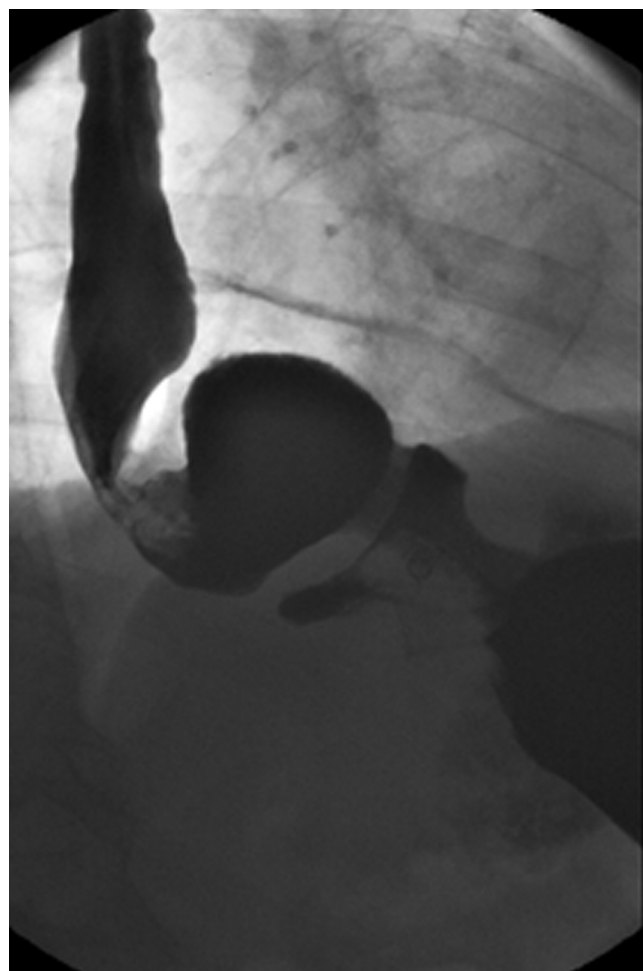


Fig. 3. Barium swallow showing hiatal hernia and reflux prior to Belsey Mark IV procedure and Gastric Band.

hiatal repair. As such, we performed as much of the Belsey Mark IV procedure as we could over the anterior 180 degree section of the GOJ, and inserted a peri-oesophageal Swedish Adjustable Gastric Band (Ethicon Endosurgery, USA) around the lower oesophagus, without any anchoring sutures. There was still a small, unreduced hiatal hernia posteriorly. The port was placed once again over the left costal margin. 4 mL of fluid was left in the balloon of the band.

Post-operatively, he had one transient episode of atrial fibrillation, but reported that his reflux symptoms had resolved. At his three month follow-up he had minimal to no complaints of reflux. Further follow up at 18 months revealed no worsening of symptoms. In between however, he had some dysphagia when the band was over-tightened. This resolved with loosening of the band. He prophylactically remains on 40 mg PPI once daily.

4. Discussion

Using a prosthesis as an anti-reflux device brings back bad memories for some, of the Angelchik device, a bulky, curved silicone strip which was maintained in a ring shape with a Dacron tape (Fig. 4). It was prone to cause dysphagia, erosion, migration and the tape would sometimes break. Certainly, LAGBs are known to be prone to slippage, erosion, leaks from the balloon and infection, as well as port or tubing problems. However, these complication rates do seem to be lower than for the Angelchik prosthesis, which had complication and removal rates of up to 77% and 24% respectively and are no longer used [5–7]. Maxwell-Armstrong et al. found that 20 of



Fig. 4. The now rarely used Angelchik device.

26 traceable participants who still had the device in situ, reported dysphagia at a mean follow up period of 102 months.

The revision rates for laparoscopic adjustable gastric bands of up to 24.4% in some series, have seen it become less popular as a weight loss device in recent years [8]. One beneficial side-effect of LAGBs however, is the fact that they do seem to reduce GORD when positioned and inflated correctly [1–3]. Retroflexed endoscopic views of patients with functional LAGBs show the impression of the band holding the GOJ at an oblique angle, with a small lumen. This may be how an optimally functioning LAGB prevents reflux. Although complication rates for LABGs are significant, this data relates to an intra-abdominal position around the stomach and a thoracic, peri-oesophageal position is yet to be studied.

It was felt that this effect could be replicated to prevent reflux even with the band in a peri-oesophageal location, just proximal to the GOJ, in patients who had failed other more conventional anti-reflux approaches. Certainly, some surgeons recommend Roux-en-Y gastric bypass as a salvage anti-reflux operation, but this necessitates operating via the often hostile abdomen and having to approach a scarred and fibrotic GOJ from below the diaphragm. We elected not to do this in our two cases.

A study of the mechanism of GORD by Samelson et al. revealed that gastric wall tension is of major significance in lower oesophageal sphincter (LOS) opening and that interruption of wall tension to the LOS reduced the opening and thus reflux [9]. The Angelchik device works by this mechanism of interrupting the transmission of gastric wall tension to the LOS. We theorise that through this same mechanism, the use of peri-oesophageal adjustable bands has alleviated their reflux symptoms in our two patients.

5. Conclusion

Initial results at three months postoperatively on our cases are encouraging with both patients reporting less frequent and severe symptoms of GORD. At 8 months follow up, both patients continued to be pleased with their outcomes with minimal symptoms. With our 2nd case now 18 months post procedure and without problems, the results are encouraging. We have emphasised to our patients that the band in the peri-oesophageal location will not lead

to weight loss, but the advantage is that, being adjustable, reflux control can be obtained by merely adjusting the band as needed, in the hope of obviating the need for any further surgery. Furthermore, avoiding the use of anchoring sutures may avoid band erosion. However, this procedure would be relatively contra-indicated in patients with oesophageal dysmotility, and in patients with large, non-reduced, hiatus hernias.

We propose that an adjustable “gastric” band in the peri-oesophageal position is a novel idea which may be a solution to patients with intractable reflux and hostile abdomens.

Patient consent

Fully informed patient consents have been obtained for the case report.

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Nothing to declare.

Author contributions

Both authors have made substantial contributions to the preparing of the manuscript, analysis, and reviewing prior to submission.

Jeremy T H Tan was the surgeon responsible for operating on the cases described.

Guarantor

Both authors Mark Simon Kusel and Jeremy T H Tan.

Conflict of interest

None

Ethical approval

None.

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