

To the Editors:

Initial experience and outcomes of peroral endoscopic myotomy for the treatment of oesophageal achalasia in a tertiary care centre

S U Dassanayake¹, N Fernandopulle², K Gunaratne¹, N M Navarathne¹

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Introduction

Oesophageal achalasia is a rare motility disorder characterized by the absence of oesophageal peristalsis and failure of the lower oesophageal sphincter to relax, resulting in dysphagia and regurgitation.

Established endoscopic therapies are endoscopic balloon dilatation and botulinum toxin injection. The surgical procedure of choice is a laparoscopic Heller myotomy (LHM), which is not demonstrably superior to endoscopic balloon dilatation in terms of remission rates at five years [1].

The technique of endoscopic myotomy through a sub-mucosal tunnel was first developed by Pasricha *et al.* in 2007 [2]. The first human study on peroral endoscopic myotomy (POEM) was reported by Inoue *et al.* in 2010 [3]. The procedure garnered significant interest as it had potential "surgical efficacy with the recovery profile of an endoscopy". Over 4000 cases have since been reported.

Recent cost-utility analyses have found peroral endoscopic myotomy to be more cost effective than botulinum toxin injection and endoscopic balloon dilatation, as well as being equivalent to laparoscopic Heller myotomy [4].

Method

This initial report includes 12 consecutive patients, who had oesophago-gastro-duodenoscopy, high resolution manometry and timed barium swallow prior to their diagnosis.

Patients were placed on a clear liquid diet and had an oesophago-gastro-duodenoscopy 24 hours before the procedure. Antibiotics and double dose proton pump inhibitors were administered intravenously on the day.

Oesophago-gastro-duodenoscopy was performed under general anaesthesia in the supine position using a high-resolution endoscope (GIF-H180J, Olympus) with carbon dioxide insufflation. Mucosotomy was carried out approximately 8-10 cm proximal to the gastro-oesophageal junction following a sub-mucosal "lift" in the 5-o'clock position. A submucosal tunnel was created down to the lesser curvature of the stomach using a combination of blunt dissection with an angled cap and electrocautery with a multifunctional probe (HybridKnife, Erbe). Coagulating forceps (Coagrasper; Olympus) were used on larger sub-mucosal vessels. The muscle layer and sling fibers of the lower esophageal sphincter were dissected using the multifunctional probe, from approximately 5 cm above the lower esophageal sphincter extending 2-3 cm into the gastric cardia. The smooth passage of the endoscope through the gastro-oesophageal junction was confirmed. The mucosal incision was closed with standard endoscopic haemoclips (Resolution, Boston Scientific). All procedures were performed by a single endoscopist (NN).

A clear liquids diet was commenced 24 hours after the procedure and converted to a pureed diet the next day, which was continued for 1 week. Follow-up was arranged at 2 weeks, 1 month and 3 months.

Written informed consent for publication was obtained from all patients.

Results

Patient characteristics

There were 8 males and 4 females. The mean age was 37.5 years (range 16 - 55), and the mean weight was 67.9 kg (range 57 - 83) before peroral endoscopic myotomy and 73.1 kg (range 63 - 88) 3 months after peroral endoscopic

¹National Hospital of Sri Lanka, ²Department of Surgery, Faculty of Medicine, University of Colombo, Sri Lanka.

Correspondence: SUD, e-mail: <Uditha.das@gmail.com>. Received 10 July 2018 and revised version accepted 18 August 2018.



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myotomy ($P=0.116$). Five patients had received prior treatment for achalasia with endoscopic balloon dilatation ($n=4$) or botulinum toxin injection ($n=1$). Mean pre-treatment Eckardt score was 6.6 and the mean duration of symptoms was 16 months (11-26).

Procedure-related parameters and hospital stay

Mean procedure time was 114 minutes (range 65-188) with a decrease in operating time with subsequent procedures. Mean length of the endoscopic myotomy was 9.6cm (range 8-12).

Complications

Two patients developed minor subcutaneous emphysema, and three others developed CO_2 pneumoperitoneum which required needle decompression in one case. Another patient developed a right sided pneumothorax which required an intercostal tube insertion during POEM. The tube was left in situ for 24 hours. There were no cases of clinically significant bleeding or oesophageal perforation. The average hospital stay was 3.6 days (range 3-6).

Follow up

Treatment success, as defined by a post-myotomy Eckardt score ≤ 3 , was achieved in all cases at 3 months follow up. Mean Eckardt scores were 1.9 at 1 month ($P < 0.001$) and 1.1 at 3 months (range 0-3; $P < 0.001$).

Only 1 out of the 12 patients had reflux requiring acid suppression therapy at 3 months. Routine oesophago-gastro-duodenoscopy carried out after 1 month did not demonstrate any cases of erosive oesophagitis.

Discussion

The success rate on Eckardt scoring after 3 months is comparable to rates reported in large meta-analyses (around 98%), although longer term follow up is necessary to comment on overall success [4]. There is evidence to support that this is sustained over 12 months, but longer term data are still emerging [4].

The observed well-known procedural complications were managed successfully with no or minimal intervention. There are no recorded cases of converting to open surgery or mortality in peroral endoscopic myotomy [5].

Although there is evidence of a learning curve, there is no consensus on the minimum number of procedures required to consider an endoscopist competent in peroral endoscopic myotomy.

A recent meta-analysis reported risk of symptomatic reflux (8.5%), macroscopic oesophagitis (13%) and abnormal pH studies (47%) [6]. The observed rates in our series were lower, but the numbers are small and routine post-procedure pH studies were not performed due to cost concerns.

The average length of stay in hospital was comparable to larger studies [6]. It would be ideal to perform peroral endoscopic myotomy as a day procedure.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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