Esophageal Per Oral Endoscopic Miotomy (POEM) for Achalasia: First Case Reported in Eastern Europe

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ABSTRACT

Traditional endoscopic treatment of achalasia consists of endoscopic balloon dilatation with the inconvenience of the recurrence of symptoms and the necessity of repeated sessions. Surgical laparoscopic procedure has been advocated to be more efficient especially in young patients because it sections the lower oesophageal sphincter via a transabdominal approach. The long term most severe complication has been refractory reflux oesophagitis due mainly to the alteration of the oesogastric antireflux anatomy (Hiss angle). Surgical myotomy was classically associated with an antireflux procedure. Peroral endoscopic myotomy (POEM) via a mucosal orifice is as efficient as surgical myotomy but the antireflux anatomy of gastroesophageal junction is not altered, so the reflux symptoms are reduced. Second, POEM is mini invasive in comparison with laparoscopic surgery. The paper presents our first and successful case of this endoscopic surgical procedure in a 41 year old patient.

Key words: achalasia – dysphagia – peroral endoscopic myotomy.

CASE REPORT

We present the first case of achalasia treated by us with the new technique of per oral endoscopic miotomy (POEM).

A female patient, 41 years old, was admitted to the Regional Institute of Gastroenterology, Cluj Napoca on October 31, 2013 having grade 3 dysphagia for the last two months, nocturnal caught, nausea, regurgitation, retrosternal pain, and 4 kg weight loss. Physical exam detected pale skin and mucosae, BMI 27.5kg/m², no other abnormalities. Laboratory tests revealed an iron deficiency anemia with no mineral and vitamin disturbance. Barium transit revealed an iron deficiency anemia with no mineral and vitamin disturbance. Laboratory tests revealed an iron deficiency anemia with no mineral and vitamin disturbance. Laboratory tests revealed an iron deficiency anemia with no mineral and vitamin disturbance. Laboratory tests revealed an iron deficiency anemia with no mineral and vitamin disturbance. Laboratory tests revealed an iron deficiency anemia with no mineral and vitamin disturbance. Laboratory tests revealed an iron deficiency anemia with no mineral and vitamin disturbance. 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The diagnosis established was type II achalasia with an Eckardt score of 7.

After the informed consent was signed the procedure was initiated.

TECHNIQUE

The patient was intubated and general anesthesia was given. The upper digestive endoscopy was performed by using an endoscope Olympus Exera III GIF 190. Carbon dioxide insufflation was used throughout the procedure. The cardia was identified at 39 cm from the dental arcade. Above 10 cm (29 cm from the dental arcade), a submucosal injection of 10ml of saline and diluted indigo carmine solution was made. A plastic cap (Fuji DH-28GR) was attached at the tip of the endoscope to facilitate the visibility and the working space and to prevent the injury of mucosa by the knife and coagulation current. With a triangle knife (Olympus TT-Knife, Olympus, KD-640L) a small incision was created using spray coagulation current (Erbe 300 D), in order to introduce the tip of endoscope in the submucosal space. Repeated injections of 10 ml saline solution with indigo carmine were made in order
to create a space between the mucosal layer and the muscular layer to allow the dissection. The solution was injected into the submucosal space with a spray catheter originally used for chromoendoscopy (Olympus, PW-5L-1).

Gradually the submucosal tunnel was created, always using the triangle knife and spray coagulation (Erbe 300 D, 20 Watt). The tunnel was prolonged from the point of entry in the submucosa at 29 cm from the dental arcade (DA) up to 3 cm underneath the Z line into the subcardial space (42 cm from DA) (Fig. 2). The dissection was performed continually under endoscopic control. The transparent cap was now very important to form the operatory space in front of the scope tip. The blood vessels could be distinguished and coagulated in advance to prevent bleeding.

After the submucosal tunnel was completed, an incision was made 1 cm beneath the mucosal orifice into the circular fibers of muscular esophageal layer using the same triangle knife and spray coagulation (Erbe 300 D, 20 intensity). From this incision, the muscular circular layer was carefully cut under endoscopic control (Figs. 3, 4). High definition scope is very important because it allows an excellent image for the precision of the procedure. We took great care not to touch the longitudinal layer in order to prevent perforation. The circular muscle layer was cut up to 2-3 cm underneath the cardia. Incidental bleeding was stopped by using Coagrasper forceps (Olympus, FD-410LR). The integrity of the mucosal layer was periodically checked.

After the muscle section the cardia tonus and the space between the endoscope and cardia in retroversion was checked to confirm the efficacy of the myotomy. Easy cardia passage and a small space between cardia and endoscope in retroversion represented confirmation that the myotomy is sufficient.

The mucosal defect was closed by 10 metallic clips applied very close one to each other (Fig. 5): after clipping we carefully checked both parts of the closure to confirm the firm closure of the mucosal incision. We did not change the cap for the closure procedure. To facilitate this, it is recommended to use an oblique transparent cap (Olympus, MH 588).

The total operative time was 105 minutes.

In the second day the esophageal transit was examined with gastrographin. No fistulous trajects and no pneummediastinum were detected. The esophageal caliber was diminished and the passage of contrast through the cardia was normal (Fig. 6). The endoscopy detected a normal cardia passage and no mucosal defects. The patient received for 4 days intravenous antibiotics; 24 hours after procedure, oral liquid food intake was permitted. On the 4th day the patient was discharged home with no

Fig. 1. Barium esophageal transit: aspect characteristic for achalasia.

Fig. 2. Submucosal access. On the left the mucosal layer, in centrum the submucosal space and on the right the muscular layer.

Fig. 3. Cutting of circular inner muscle: the triangle knife on the left side.

Fig. 4. The miotomy of circular muscle: on the left the submucosal space, in the middle the circular inner muscle partially cut and on the right side the longitudinal inner muscle and the mediastinum.
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symptoms. No perioperative and postoperative complications and no reflux symptoms were noted. Posttreatment Eckardt score was 1.

The control manometry will be performed at 28 days after procedure.

DISCUSSION

Peroral endoscopic miotomy is a new endoscopic technique for treating achalasia. It was first developed by Prof. Inoue H and his team [1]. Worldwide, more than 800 patients have been treated with this technique so far [2]. In Europe there are some centers which have more than 30 cases treated already [2]. This technique has been demonstrated to have an excellent efficacy and a safe outcome. The risk of perioperative complications and gastroesophageal reflux disease is low. Long term efficiency remains to be proven.

In a prospective, international, multicenter study conducted on 70 patients who underwent POEM at 5 centers in Europe and North America, symptom remission was noted in 97% of the patients, symptom scores were reduced from 7 to 1 (P < .001) and lower esophageal sphincter pressures from 28 to 9 mm Hg (P < .001). The follow-up evaluation at 6 and 12 months detected a rate of symptom remission of 89% and 82%, respectively [4].

The time required to complete the procedural steps of submucosal access and myotomy decreases with experience. Prior endoscopic treatment, symptom duration, and esophageal width were all shown to independently predict longer duration of the procedure [5].

Complications that can occur during the procedure included: cutaneous emphysema, pneumothorax, aeroperitoneum, hemorrhage or mucosal injury. Most common postoperative complications mentioned are the following: pneumothorax, subcutaneous emphysema, mediastinal emphysema, delayed hemorrhage, pleural effusion, minor inflammation or segmental atelectasis of the lungs and aeroperitoneum. Some complications might also occur during follow-up, such as stricture of mucosa and dehiscence at the mouth of the tunnel with food retention [6]. All complications can be resolved through traditional treatment. Sometimes additional surgery is needed.

CONCLUSIONS

We have described the first case of per oral endoscopic myotomy reported in Eastern Europe. POEM is feasible and can provide good results with acceptable risk of complications. Subsets of patients with achalasia are likely to benefit from this novel endoscopic approach to achalasia therapy.

Conflicts of interest: None to declare.

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REFERENCES