Transoral Treatment of Achalasia: Combining Submucosal Myotomy with Transoral Anterior Fundoplication

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Objective

Both SAGES and the American Gastroenteroloists Association (AGA) now recommend laparoscopic myotomy combined with anterior fundoplication for the treatment of achalasia. Recently, a new method for trans-oral long submucsal myotomy – (POEM™) has been shown to be a relatively safe and effective method to treat achalasia. However, like laparoscopic myotomy alone, the procedure often results in severe gastroesophageal reflux (GERD).
Recently, FDA approved a method for transoral stapled anterior fundoplication (SRS™) for the treatment of GERD. The SRS™ device enables a single operator, with establlished skills in advanced endoscopic procedures, to staple the fundus of the stomach to the esophagus 2-4 cm above the gastroesophageal junction, in an anterolateral semicircle using two or three quintuplets of standard 4.8mm titanium "B" shaped surgical staples. The stapling restores the angle of His and the gastroesophageal flap valve mechanism, thereby creating an effective reflux barrieir, anatomically and functionally similar to laparoscopic anterior fundoplication. The objective of the present study was to test the feasibility of combining the two procedures, thereby achieving a completely transoral myotomy with anterior fundoplication, functinally equivalent to the standard laparoscopic operation for achalasia.

DESCRIPTION OF THE METHOD

The experiment was performed on a swine model at a laboratory certified according to the Israeli Animal Welfare Act. After induction of general anesthesia. A standard gastroscope was inserted into the stomach, and an overtube was slided into the mid-esophagus. A submucosal tunnel, starting about 5 cm above the GE junction and extending to 2 cm below it, was created, and the circular layer of esophageal muscle was incised using the POEM electrode. Following the myotomy, the SRS stapler was inserted through the overtube, and the fundus of the stomach was stapled over the myotomy, using three quintuplets of staples, in a semi-circle. At the end of the procedure, the animal was sacrificied, and the stomach with the distal esophagus were dissected out carefully, and examined macroscopically.

RESULTS

Macroscopically, the resulting fundoplication covered the distal half of the myotomized muscle, including the gastric part. No perforation was observed. The macroscopic apearance was similar to that of a standard anterior fundoplication

CONCLUSIONS / EXPECTATIONS :

It is feasible to combine the two procedures, at least in the swine model, and add a transoral reflux barrier to the submucosal myotomy. If the aganglionic segment is short (<3cm) it is possible to cover all the myotomized esophagus with the fundus, which may

reduce the risk of perforation. It is probably easier to to ensure that the myotomy is on the side of the esophagus covered by the fundic flap perform the stapling first, and start the myotomy between the two topmost quintuplets,. Although further experiments are needed to optimize stapling location vis-a-vis the myotomy site, the combined procedure may enable the operator to achieve a result which is similar to the standard laparoscopic operation for achalasia, without violating the abodominal cavity, and without any incisions.