

Opinion

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How I teach it - a didactic approach to laparoscopic surgery at the esophagogastric junction

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How to cite this article: Herbella FAM, Katayama RC. How I teach it - a didactic approach to laparoscopic surgery at the esophagogastric junction. *Mini-invasive Surg* 2019;3:22. <http://dx.doi.org/10.20517/2574-1225.2019.19>

Received: 1 Jul 2019 **Accepted:** 12 Jul 2019 **Published:** 23 Jul 2019

Science Editor: Giulio Belli **Copy Editor:** Cai-Hong Wang **Production Editor:** Jing Yu

Abstract

We present an alternative didactic approach to the esophagogastric junction through an active liver retraction with a laparoscopic palpator. We believe this didactic approach is not necessarily carried by a well-trained team. However, it is a minor modification of the standard operation that has advantages on surgical training in academic centers.

Keywords: Laparoscopy, stomach, esophagus, esophagogastric junction

INTRODUCTION

Laparoscopic surgery of the esophagogastric junction (EGJ) is a common procedure for a great number of antireflux operations had already been performed^[1]. In addition, the surgical treatment of achalasia^[2], esophageal neoplasms^[3] and certain modifications of bariatric operations^[4] are included in the laparoscopic procedures of the EGJ as well. The classical disposition of the ports for laparoscopic surgery of the EGJ comprises 5 ports. Liver retraction is usually accomplished through the use of dedicate retractors inserted in the right flank and the retractor is frequently kept static. Alternatively, liver retraction may be obtained through a port in the epigastrium with the aid of a simple stick (palpator)^[5] or a Nathanson retractor^[6].

We present an alternative didactic approach to the EGJ through an active liver retraction with a laparoscopic palpator.



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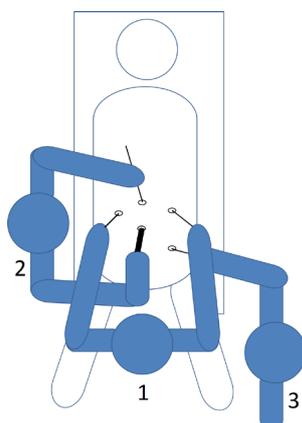


Figure 1. Ports placement for operations on the esophagogastric junction. Liver retraction is moved from the right flank of the classic approach to the epigastrium in the proposed didactic technique

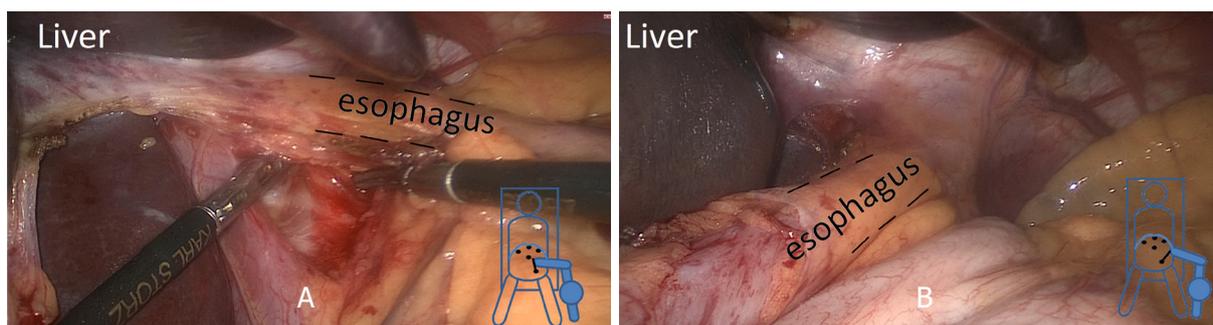


Figure 2. Esophageal exposition based on pre-taught hand positions of the second assistant. Exposure of the right side of the esophagus - Position A, and exposure of the left side of the esophagus - Position B

METHOD

Ports are placed in a similar fashion to the classic approach with the exception of the liver retraction port that is moved from the right flank to the epigastrium, closing to the xyphoid appendix [Figure 1].

The surgeon (chief resident/fellow) stands between the legs of the patient, with the first assistant to the right of the patient and the second assistant to the left of the patient. The first assistant (attending) holds the camera and a palpator (or an irrigator/aspirator although fatigue is stronger with this instrument). The assistant is sited to prevent their elbows to touch surgeon's arms.

The second assistant (2nd/3rd year resident) holds the EGJ with the aid of a Babcock or later on a Penrose drain encircling the esophagus. The assistant is instructed at the beginning of the operation to place the EGJ either in "position 1" or "position 2" as required. Position 1 exposes the right side of the esophagus pointing the tip of the Babcock at the left inguinal area of the patient. Oppositely, position 2 exposes the left side of the esophagus pointing the tip of the Babcock at the right inguinal area of the patient [Figure 2].

The palpator is active and used for liver retraction [Figure 3], exposure [Figure 4], as an extra hand to allow the surgeon to work by both hands [Figure 5] and as a pointing device to communicate instructions and show anatomic structures [Figure 6]. The palpator may be replaced by other instruments to allow suction [Figure 5] or hold a knot during tying to prevent a slip knot.

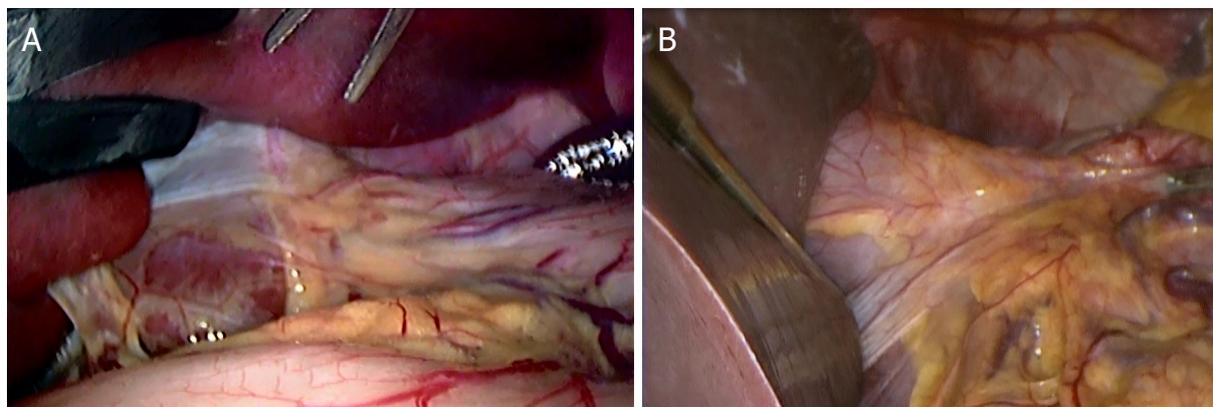


Figure 3. Exposure of the esophagogastric junction and liver retraction with the conventional approach using a liver retractor through a right flank port A and the didactic approach with a palpator through an epigastric port B

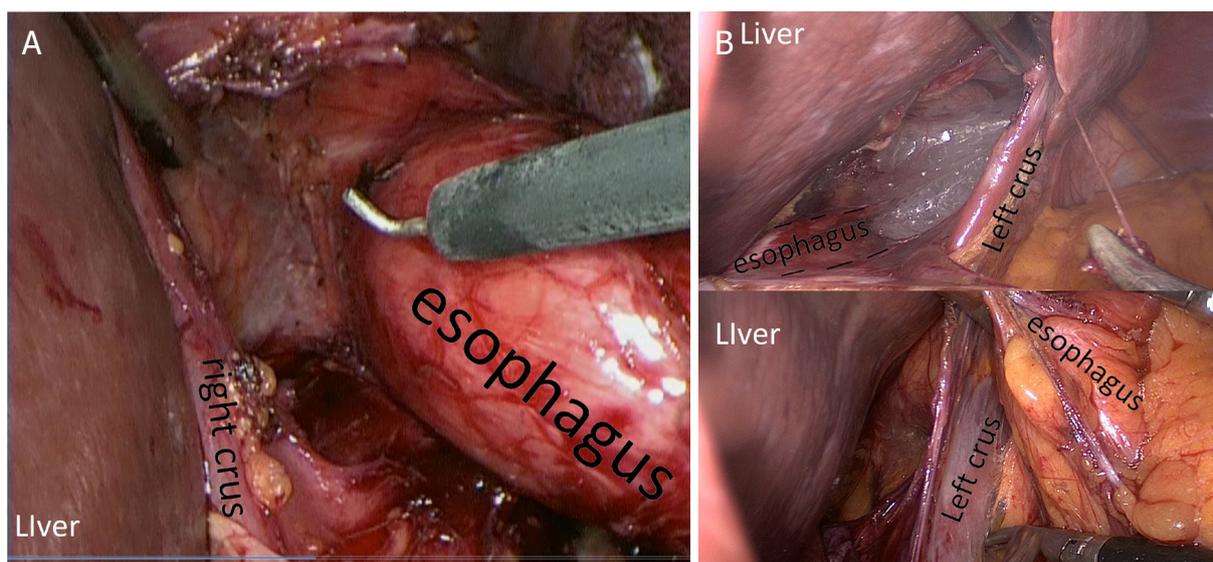


Figure 4. Dissection of the distal esophagus and esophageal hiatus with the aid of a palpator. Retraction of the right A or left crus during dissection B

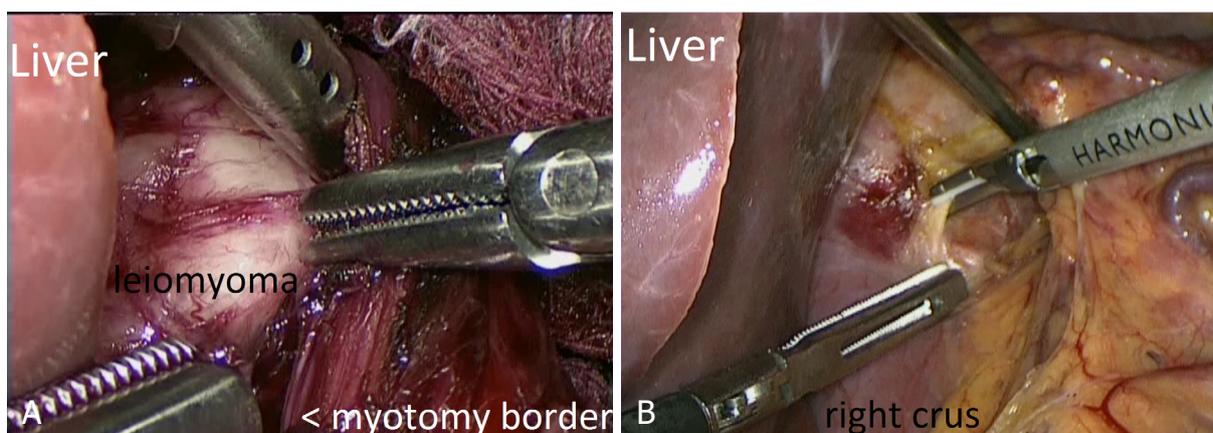


Figure 5. Palpator replaced by a suction/irrigation to help maintain a blood free surgical field and act as a third hand to allow the surgeon to work by both hands during a leiomyoma enucleation A or hiatal hernia repair B

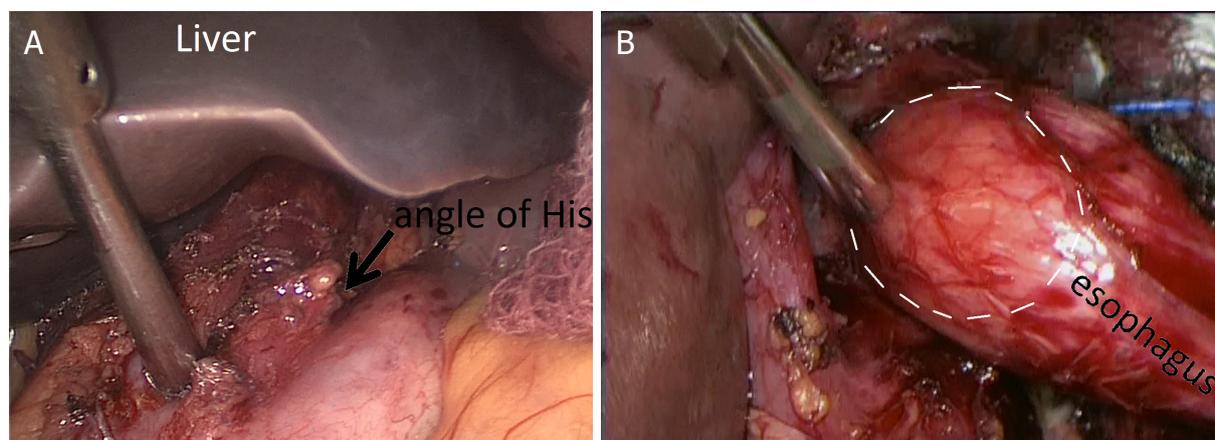


Figure 6. Palpator as a pointing device indicates the lowermost point for a cardiomyotomy A and an the identification of an esophageal leiomyoma (dotted circle) B

The hiatus and the esophagus are initially approached through the right side after opening of the gastrohepatic ligament. The palpator may be used to retract the right arm of the crus or the esophagus, allowing the learning surgeon to have both hands free for dissection. Similarly, the esophagus is dissected from the hiatus circumferentially in a clockwise direction [Figure 4].

CONCLUSION

Operations on the esophagogastric junction in our university are entirely performed by a 4th year resident under direct supervision of a senior attending that acts as the first assistant in this didactic approach. This approach was feasible for all cases of Nissen fundoplication or Heller's myotomy with exposure comparable to the classic approach [Figure 2]. In some cases of large, steatotic livers, the exposure may be cumbersome. In these cases, however, the palpator is kept immobile pushing the left lobe of the liver against the diaphragm above the esophageal hiatus. The advantages of a mobile stick are lost but the operation can be carried on similarly to the classic approach.

We believe this didactic approach is not necessarily carried by a well-trained team. However, it is a minor modification of the standard operation that has advantages on surgical training in academic centers.

DECLARATIONS

Authors' contributions

Made substantial contributions to conception and design of the study and performed data analysis and interpretation: Herbella FAM, Katayama RC

Availability of data and materials

Not applicable.

Financial support and sponsorship

None.

Conflicts of interest

Both authors declared that there are no conflicts of interest.

Ethical approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

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