

One size fits all: laparoscopic Heller's myotomy for the treatment of achalasia irrespective of the degree of dilatation

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ABSTRACT

Laparoscopic Heller's myotomy is the most common surgical procedure to treat achalasia. It is the most accepted therapy for non-advanced stages of the disease. In the setting of advanced disease with marked esophageal dilatation or sigmoid-shaped esophagus the ideal surgical procedure is debatable. Esophagectomy is believed by several authors to be the operation of choice in these cases. Others; however, opt for less invasive alternatives. Laparoscopic Heller's myotomy has been shown to be a safe and resourceful alternative in end-stage achalasia as well.

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INTRODUCTION

Achalasia is a rare neurodegenerative primary esophageal motor disorder characterized by abnormal lower esophageal sphincter relaxation and aperistalsis^[1]. The disease may be idiopathic^[2] or secondary to Chagas' disease - a tropical disease common in Latin America^[3], although both forms have distinct etiology they share the same pathophysiology. End-stage disease with marked esophageal dilatation or sigmoid-shaped esophagus is; however, more frequent in Chagas' disease patients [Figure 1]^[4].

The degree of esophageal dilatation is used to grade

the severity of the disease and may be used as a guide to tailor treatment according to some authors^[5]. There is no consensus on the threshold of esophageal diameter to consider the disease as end-stage. While some adopt the limit in 6 cm^[6], others prefer 7 cm^[7]. In Brazil, 4 different stages of esophageal dilatation are considered^[8] and end-stage disease is defined by diameter over 10 cm^[9].

Laparoscopic Heller's myotomy (LHM) is the most common surgical procedure to treat achalasia. It is the most accepted therapy for non-advanced stages of the disease^[10]. In the setting of advanced disease



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Figure 1: Massive dilated megaesophagus in a patient with Chagas's disease esophagopathy

with marked esophageal dilatation or sigmoid-shaped esophagus the ideal surgical procedure is debatable^[9]. Esophagectomy is believed by several authors to be the operation of choice in these cases^[11]. However, others advocate for less invasive alternatives^[6].

This review discusses the role of LHM as the preferred treatment for achalasia irrespective of the degree of esophageal dilatation.

LAPAROSCOPIC HELLER'S MYOTOMY ROLE IN NON-ADVANCED ACHALASIA

LHM was described in the early 1990s^[12,13] and since became a widely accepted procedure for non-advanced achalasia^[14]. Forceful pneumatic dilatation of the cardia is also a widespread primary therapy^[15] but recent meta-analyses showed inferior results to dilatation as compared to LHM^[10,16]. Indeed, a shift to LHM to endoscopic dilatation has occurred^[17]. LHM is associated to low rates of complications, null mortality, and excellent and long-lasting outcomes superior to 90% of dysphagia relief in most series^[18-20]. LHM is still the gold-standard treatment for non-advanced achalasia that must be used to compare the outcomes of other treatments such as the newly developed peroral endoscopic myotomy (POEM)^[21,22].

LAPAROSCOPIC HELLER'S MYOTOMY ROLE IN END-STAGE ACHALASIA

Esophageal dilatation is more frequent in Chagas' disease esophagopathy compared to idiopathic achalasia with esophageal diameter over 10 cm found from 10% to 37% of the cases^[4]. This observation may explain the lack of international literature on the treatment for massive dilated esophagi. Moreover, end-stage achalasia is defined by esophageal dilatation superior to 10 cm in Brazil, thus esophagi between 6-10 cm will not be defined as advanced in the Brazilian series and will probably undergo a LHM.

Esophageal resection is the procedure historically established for end-stage achalasia in Latin America as well as globally^[11,23-27]. The number of esophagectomies for the treatment of achalasia has been decreasing after the 1990s^[28] in favor of less invasive methods since esophagectomy is associated with significant complications and mortality^[29]. Moreover, surgical risk is directly linked to the degree of esophageal dilatation^[30]. Minimally invasive techniques decreased morbidity although they are still especially considering achalasia is a benign disease^[31]. Other conservative surgical techniques were tried to minimize complications, such as cardioplasty + gastrectomy (Holt and Large procedure, known in Brazil as Serra-Dória operation^[32-34]), esophageal mucosectomy and endomuscular gastric tube reconstruction^[35] and laparoscopic cardioplasty^[36,37]. Long term results for these procedures in a significant number of patients are lacking.

Few series evaluated the results of LHM for the treatment of end-stage achalasia [Table 1]. Some advocate LHM as the primary option for advanced diseases based on the idea that an esophagectomy could be avoided. Others believe that a massive and tortuous esophagus does not empty well if only the obstacle at the esophagogastric junction is alleviated^[45-47] and found worse results for LHM when the esophagus is dilated^[48,49].

There are no prospective comparative studies comparing LHM with other techniques for end-stage achalasia. Some authors show similar outcomes (complications and dysphagia control) for LHM irrespective of the degree of esophageal dilatation^[9,38,42,45]. In general, excellent results may be obtained from 54-100% of the cases, with an average of almost 80% [Table 1].

LHM is not more demanding in patients with massive dilated esophagus^[38]. A careful dissection of the

Table 1: Results for laparoscopic Heller's myotomy in patients with end-stage achalasia

Author	n	Follow-up (months)	Mortality (%)	Good and excellent results for dysphagia relieve (%)
Patti <i>et al.</i> ^[6] 1999	19	NR	0	91.5
Herbella <i>et al.</i> ^[38] 1999	12	40	0	97.6
Faccani <i>et al.</i> ^[39] 2007	33	89	0	69.7
Mineo and Pompeo ^[40] 2004	14	85	0	72
Gaissert <i>et al.</i> ^[41] 2006	12	154	0	54
Schuchert <i>et al.</i> ^[31] 2008	22	31.6	0	NR
Sweet <i>et al.</i> ^[42] 2008	12	45	0	91
Scott <i>et al.</i> ^[43] 2009	4	NR	0	100
Shuchert <i>et al.</i> ^[44] 2009	24	30.5	0	62.5
Pantanali <i>et al.</i> ^[9] 2013	11	31.5	0	72.8
Average	16	83	0	79.3

NR: not reported

mediastinal esophagus allows a straightening of the axis of the organ facilitating esophageal emptying^[42,44].

Finally, LHM does not preclude a subsequent reoperation with a different technique. Recurrent dysphagia after LHM may be treated by endoscopic dilatation^[50], POEM^[50,51], redo LHM^[50], cardioplasty with or without gastrectomy^[33,34,36], or esophagectomy^[10,50]. If a bigger operation is needed, the patient would need a better overall clinical and nutritional status.

CONCLUSION

LHM is a valuable therapy for advanced achalasia although data comes from retrospective case series. The procedure is associated with a low rate of complications and good/excellent results in the majority of patients. LHM is not technically more demanding and it does not preclude a subsequent reoperation with a different technique if necessary.

DECLARATIONS

Authors' contributions

Acquisition of data, drafting the article, analysis and interpretation of data, final approval of the version to be published: L.M. Del Grande

Conception and design, acquisition of data, analysis and interpretation of data, drafting the article, final approval of the version to be published: F.A.M. Herbella

Analysis and interpretation of data, review for intellectual content, final approval of the version to be published: M.G. Patti

Acquisition of data, final approval of the version to be published: F. Schlottmann

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There are no conflicts of interest.

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Ethics approval

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