

Laparoscopic Heller's Myotomy for Treatment of Achalasia in the Caribbean

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ABSTRACT

The aim of this study is to examine the effectiveness with which Heller's myotomy can be performed laparoscopically in a Caribbean setting as a treatment for achalasia. Sixteen consecutive patients treated by the same surgeon were studied. Postoperative questionnaires that assessed symptomatology, complications and overall patient satisfaction with the procedure were utilized. The mean length of myotomy was 6cm and none was converted to an open procedure. The mean age of the eleven female and five male patients was 38.4 years. The mean duration of follow-up was 16.7 months. Symptoms showed an overall 71.2% improvement postoperatively ($p < 0.001$). Fifteen patients reported being satisfied with their operation with only one being dissatisfied. Intra-operative complications occurred in three patients. Estimated blood-loss (EBL) was minimal in each case. Intra- and postoperative mortality was zero. Laparoscopic Heller's myotomy can be effectively performed in local settings and should be considered as an alternative to the open approach in the treatment of all surgically-fit achalasia patients.

La Miotomía de Heller por vía Laparoscópica para el Tratamiento de la Acalasia en el Caribe

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RESUMEN

El objetivo de este estudio es examinar la efectividad con que la miotomía de Heller puede realizarse laparoscópicamente en un contexto caribeño como tratamiento para la acalasia. Se estudiaron dieciséis pacientes consecutivos, tratados por el mismo cirujano. Se utilizaron cuestionarios postoperatorios que evaluaron la sintomatología, las complicaciones y la satisfacción general del paciente con el procedimiento. La longitud promedio de la miotomía fue 6 cm y ninguno se convirtió en un procedimiento abierto. La edad promedio de las once pacientes hembra y los cinco pacientes varones fue 38.4 años. La duración promedio del seguimiento fue 16.7 meses. Los síntomas mostraron una mejora global de 71.2% postoperatoriamente ($p < 0.001$). Quince pacientes informaron estar satisfechos con su operación, en tanto que sólo uno manifestó descontento. Complicaciones intraoperatorias y postoperatorias ocurrieron en tres pacientes. La pérdida de sangre estimada (PSE) fue mínima en cada caso. La mortalidad, tanto intraoperatoria como postoperatoria, fue cero. La miotomía de Heller por vía laparoscópica puede realizarse de manera efectiva en escenarios locales y debe ser considerada como una alternativa al abordaje abierto en el tratamiento de todos los pacientes de acalasia sometibles a cirugía.

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INTRODUCTION

Achalasia is a disorder characterized by a failure of relaxation of the lower oesophageal sphincter (LES) and aperistalsis of the oesophagus. Its symptoms include dysphagia, odynophagia and regurgitation. The underlying pathology is an irreversible degeneration of the oesophageal myenteric

plexus. It is a rare disorder with incidences in the United Kingdom (UK) and United States of America (USA) of approximately 0.5/100 000 (1). In the Caribbean, no precise published figures are available. Heller's myotomy has been proven to improve oesophageal functioning and to relieve the symptoms of achalasia significantly. In addition, a minimally invasive approach has been shown to have equivalent success rates to an open approach but with lower morbidity (2, 3). This study seeks to measure the success of laparoscopic Heller's myotomies as treatment for achalasia patients in Trinidad and Tobago.

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SUBJECTS AND METHODS

This study comprises 16 consecutive patients who had undergone laparoscopic Heller's myotomy by the senior author. The mean age was 38.4 (range 16–73) years with 11 (69%) females. All were symptomatic for a mean duration of 5.5 years (range 1–13) and had a definite diagnosis of achalasia. Prior to surgery, all patients were investigated by various combinations of endoscopy, barium swallow or manometry. In addition, four patients had previous balloon dilatation, three had botulinum injections and four patients had previously used pharmacological therapies. This study was approved by the Ethics Committee of the San Fernando General Hospital.

All procedures were performed by the senior author using a laparoscopic approach (4). The patients were anaesthetized with care to prevent aspiration (Sellick's manoeuvre). They were then placed on stirrups and the abdomen entered using a Hassan open technique at the umbilicus. A 12 mm working port was placed in the left subcostal area with a 5 mm trocar inserted approximately 10–15 mm lateral and inferior to this. A 5 mm trocar was also placed in the right subcostal area at the mid-clavicular line. Another 5 mm port was inserted high in the epigastrium to be used for liver retraction which was achieved using a toothed grasper to the right crus.

The area of *pars flaccida* was opened with the Harmonic Scalpel™ and the lesser omentum opened to the right crus. The vagal branch to the oesophagus and the small accessory left hepatic branch were sacrificed in most cases. The oesophagus was completely mobilized at the gastro-oesophageal (GE) junction again using the Harmonic Scalpel™. Both vagus nerves were preserved. The oesophagus was cleared anteriorly well into the mediastinum. The myotomy was then started and extended up the oesophagus for about 6cm until bulging mucosa was visualized. Great care was taken to avoid perforation during the myotomy.

Routine endoscopy was not done as this was not available. A posterior wrap was performed after mobilizing the greater curve and ligating the short gastric arteries. A partial wrap (Toupet 270 degree) was done in 10 and a full 360 degree wrap in one.

Pre-operative measurements consisted of identifying the common symptoms associated with the disorder and then quantifying them as scores. This was accomplished using a self-designed questionnaire. Symptoms were scored according to their frequency on a scale of 0 to 4, with 0 representing 'more than once daily' and 4 representing 'never'; a lower score reflected a higher frequency of symptoms.

Postoperative symptomatology was assessed in identical fashion. The questionnaires were administered via telephone at a mean time of 16.7 months postoperatively. The questionnaires also contained information about pre-operative investigations, pre- and postoperative medications and a score (similar to that described) that reflected patient

satisfaction with the operation.

Statistical software package used for the analysis was Statistical Package for the Social Sciences (SPSS version 9.0). The data totals for symptoms, social/emotional functioning and QOL were found not to fit within a normal distribution curve and therefore the data were analyzed using non-parametric methods. The chosen test, the Wilcoxon signed-rank test (Wilcoxon matched-pairs test) was used to analyze paired data and found to be appropriate. Differences were considered to be significantly different from 0 (*ie* no change in score) if two-tailed *p* values were equal to or less than 0.05.

RESULTS

With a mean duration of follow-up of 16.7 months, 15 of the 16 patients reported improvements in symptoms. Dysphagia, pain associated with eating and regurgitation were present in all patients pre-operatively; respiratory symptoms were present in 12 patients (75%). Dysphagia was adequately palliated in 81.3% of patients, improving by an average of 2.25 points on the 0–4 scale. Odynophagia, regurgitation and respiratory symptoms were resolved in 85% of patients postoperatively. The relative increases in the scores for spe-

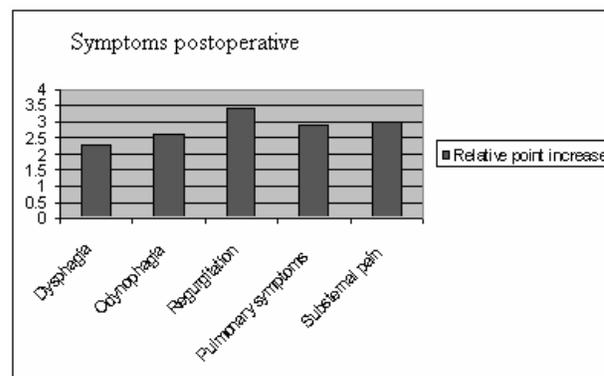


Fig. 1: Improvement of specific symptom scores following surgery.

cific symptoms are shown in Figure 1. The mean pre-operative weight loss was 13.79 kg (range 25 kg); postoperatively, the average weight gain was 11.71 kg (range 30 kg) within the mean follow-up period. The total symptom score showed a 71.2% improvement. The average operation satisfaction score was 3.56, with only one patient (6.25%) being dissatisfied with the procedure at 12 months postoperatively.

In total, seven patients had attempted pre-operative procedures to treat their symptoms – endoscopic balloon dilatation (four patients) and botulinum injections (three patients); all considered them unsuccessful. Only four patients reported using pharmacologic therapy pre-operatively (including calcium channel blockers, nitrates and prokinetic agents).

The average duration of operation was 2.3 hours and the average postoperative stay was five days (range 2–17)

with 14 of the 16 patients being discharged after two days. No procedure was converted to open laparotomy. There was no intra- or postoperative mortality. Intra-operative complications occurred in only three patients. The three patients that had intra-operative complications suffered oesophageal mucosal perforations. These were manifested on the second day postoperatively by increasing pain, shortness-of-breath and tachycardia. Gastrograffin swallow was used to confirm leaks. They were all taken back to the operating room and the perforations repaired laparoscopically with sutures and omental flaps. Two of the three patients recovered uneventfully. The third patient had a persistent leak and formed a fistula. Total Parenteral Nutrition (TPN) was commenced but due to inadequate facilities, a decision was made to perform oesophago-gastrectomy. The patient recovered well, regaining all of her lost weight. Estimated blood loss (EBL) was minimal in every case. All data comparisons were calculated with p values of < 0.001 . Figure 2 shows the changes in symptom scores following surgery.

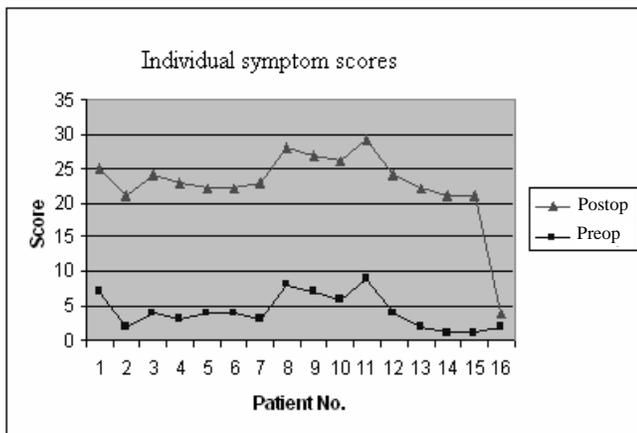


Fig. 2: Graph showing changes in symptom scores for each patient before and after surgery. No = number.

DISCUSSION

Achalasia is a disease in which symptoms can be treated but the underlying pathology cannot be reversed. Indeed, the exact factors that cause the neuronal degeneration remain unknown. Restoration of proper oesophageal functioning is an elusive goal. As such, treatment is directed toward palliation of the symptoms that result from impaired oesophageal motility. The commonest symptom remains dysphagia (6) which is usually progressive and eventually encompasses both liquids and solids. Pain associated with eating which in our study was broken down into odynophagia (62.5%), epigastric pain (50%) and chest pain (44%) together with regurgitation are the other common presenting complaints. Regurgitation was so severe that 10 of the patients complained that it occurred following every meal. Respiratory complaints encountered in this study were nocturnal cough (62.5%) and sleep suffocation/ disturbance

(43.8%). Stridor, associated with these respiratory symptoms, has also become a recognized feature of the disorder (7). Weight loss occurs in most patients because of the impaired ability to consume nutrition.

Using symptomatology as a direct reflection of the disease, and hence the success of the operative intervention, the questionnaire was constructed based on conventional symptomatology, and the scale of measurement was comparable to other conventional instruments (8). The role of postoperative telephone interviews in acquiring information in these types of studies has been shown to be acceptable (5). Thus, we consider the symptom score results to be accurate indices in this study. Heller's myotomy is the treatment of choice for achalasia (9). Traditionally, in Trinidad and Tobago, this procedure has been performed successfully via open thoracic or abdominal approaches. However, only recently has the laparoscopic approach been utilized; minimally invasive surgery remains an emerging modality within the Caribbean. Katilius *et al* described a study in which patients undergoing laparoscopic myotomies had comparable success rates with superior recoveries to those having undergone open myotomies. The conclusion was that laparoscopic procedures were preferable to open approaches for achalasia (3). The complications and effectiveness of the operations described here are comparable to those of international studies. Ibanez *et al* described a study similar to the present one in which there was zero mortality, no conversions to laparotomy and all of the patients reported being satisfied with the results of their operation (10).

There was no reported gastro-oesophageal reflux disease (GERD) in any of the patients postoperatively. Gastro-oesophageal reflux disease is a known possible side-effect of the Heller's procedure as the myotomy predisposes to its occurrence. Several studies suggest the role of concomitant fundoplication with Heller's myotomy to reduce the incidence of postoperative reflux (4, 11). Of the 16 patients in the present study, 11 had fundoplications (10 Toupet and 1 Nissen).

It is interesting to note that myotomy palliated symptoms in all four of the patients who had previously undergone endoscopic dilatation and two of the three patients who had had botulinum injections. It was also effective in treating symptoms in those patients that had previously only been treated pharmacologically. The relative success of the Heller's procedure compared to other conventional forms of therapy serves to enhance its reputation as a salvage procedure (12) but its role as an initial treatment remains debatable.

In conclusion, we found that laparoscopic Heller's myotomy procedures can be safely and efficiently performed in a local setting. Because of its low rate of complications and mortality, and its effectiveness in addressing achalasia symptoms, it should be considered a viable or even preferable alternative to the open procedure.

REFERENCE

1. Mayberry JF. Epidemiology and demographics of achalasia. *Gastrointest Endosc Clin N Am* 2001; **2**: 235–48.
2. Dang Y, Mercer D. Treatment of esophageal achalasia with Heller myotomy: retrospective evaluation of patient satisfaction and disease-specific quality of life. *Can J Surg* 2006; **49**: 267–71.
3. Katilius M, Vilanovich V. Heller myotomy for achalasia: quality of life comparison of laparoscopic and open approaches. *JSLs* 2001; **3**: 227–31.
4. Abir F, Modlin I, Kidd M, Bell R. Surgical treatment for achalasia: current status and controversies. *Dig Surg* 2004; **3**: 165–76.
5. Cowgill SM, Villalodid D, Al-Saadi S, Hedgecock J, Rosemurgy AS. Postmyotomy recollection of premyotomy symptoms of achalasia is very accurate, supporting longitudinal studies of symptom improvement. *Surg Endosc* 2007; **21**: 2183–6.
6. Adler DG, Romero Y. Primary esophageal motility disorders. *Mayo Clin Proc* 2001; **76**: 195–200.
7. Didelescu C, Dinu M. Respiratory manifestations in esophageal disease. *Pneumologia* 2007; **56**: 38–40.
8. Decker G, Borie F, Bouamrène D, Veyrac M, Guillon F, Fingerhut A et al. Gastrointestinal quality of life before and after laparoscopic Heller myotomy with partial posterior fundoplication. *Ann Surg* 2002; **236**: 750–8.
9. Ozawa S. Endoscopic surgery for benign esophageal disease. *Kyobu Geka* 2006; **59**: 781–9.
10. Ibanez M, Butte JF, Pimentel F, Escalona A, Perez G, Crovari F et al. Laparoscopic Heller myotomy for esophageal achalasia. *Rev Med Chil* 2007; **135**: 464–72.
11. Villegas L, Rege RV, Jones DB. Laparoscopic Heller myotomy with bolstering partial posterior fundoplication for achalasia. *J Laparoendosc Adv Surg Tech A* 2003; **13**: 1–4.
12. Rosemurgy A, Villalodid D, Thometz D, Kalipersad C, Rakita S, Albrink M et al. Laparoscopic Heller myotomy provides durable relief from achalasia and salvages failures after botox or dilation. *Ann Surg* 2005; **241**: 733–5.