

LAPAROSCOPIC CARDIOMYOTOMY WITH FUNDOPPLICATION IN NON ADVANCED MEGAESOPHAGUS

Cardiomiectomia com funduplicatura videolaparoscópica no tratamento do megaesôfago não avançado

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HEADINGS - Esophagus. Esophageal achalasia. Chagas cardiomyopathy. Fundoplication.

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ABSTRACT - Background - The chagasic megaesophagus is progressive esophageal motility dysfunction. Its main symptoms are dysphagia, regurgitation and weight loss. Cardiomyotomy associated with fundoplication is used as treatment for advanced megaesophagus since decades ago. **Aim** - To evaluate the results obtained with cardiomyotomy associated with laparoscopic fundoplication for the treatment of non-advanced megaesophagus. **Method** - A retrospective study with analysis of the results obtained with this operation for the treatment of megaesophagus grade I and II was done. Were evaluated the weight loss, time and intensity of symptoms, operative time, conversion rate, complication rate, length of hospitalization. **Results** - Were operated 68 patients, 34 men. The majority (42%) had severe symptoms. The average length of symptoms was 9.27 years. The mean weight loss was 5.1 kg. Chagas serology was positive in 88.13%. The average operation time was 190 minutes. There was one conversion to laparotomy. The median length of hospital stay was three days. The complication rate was 4.4%. The improvement in symptoms was observed in 92% of patients. **Conclusion** - The laparoscopic treatment of non-advanced megaesophagus by cardiomyotomy associated with fundoplication was found to be safe and effective method. Has a low complication rate and good results in short follow-up.

RESUMO - Racional - O megaesôfago chagásico é disfunção da motilidade esofágica de caráter progressivo. Seus principais sintomas são disfagia, regurgitação e perda de peso. A cardiomiectomia associada à funduplicatura é usada como tratamento para o megaesôfago não avançado há algumas décadas. **Objetivo** - Avaliar os resultados obtidos com a cardiomiectomia associada à funduplicatura por videolaparoscopia para o tratamento do megaesôfago não avançado. **Método** - Estudo retrospectivo com análise dos resultados obtidos com essa operação para tratamento do megaesôfago graus I e II. Avaliou-se perda ponderal, tempo e intensidade dos sintomas, tempo operatório, taxa de conversão, índice de complicações, tempo de internação. **Resultados** - Foram operados 68 pacientes, sendo 34 homens. A maioria (42%) apresentava sintomas intensos. O tempo médio de sintomas foi de 9,27 anos. A perda ponderal média foi de 5,1 kg. Sorologia para Chagas foi positiva em 88,13%. O tempo médio de operação foi de 190 minutos. Houve uma conversão para laparotomia. A mediana do tempo de internação foi de três dias. A taxa de complicações foi de 4,4%. A melhora dos sintomas foi observada em 92% dos pacientes. **Conclusão** - O tratamento videolaparoscópico do megaesôfago não-avançado pela cardiomiectomia associada à funduplicatura mostrou-se método seguro e eficaz. Apresenta baixo índice de complicações e bons resultados no seguimento a curto prazo.

INTRODUCTION

Chagasic megaesophagus is an esophageal motility dysfunction progressive in nature. It is uncommon in the world with high incidence in Brazil. It is estimated that about 10 million Brazilians are affected by Chagas disease and 5% of these have megaesophagus¹².

The disease is insidious and presents as main symptoms dysphagia, regurgitation and weight loss, interfering significantly with the feeding habits and nutritional status^{9,11}.

In the diagnosis of megaesophagus contrast radiography of the esophagus and endoscopy are needed. The barium swallow is important to choose the surgical option². The radiological classification Lauer-Oliveira Rezende, evaluates and ranks the megaesophagus in groups, according to the dilatation and esophageal motor activity. Upper endoscopy should be performed to evaluate the esophageal mucosa and rule out other concomitant diseases such as cancer of the esophagus¹⁷.

The operation of Heller, proposed by Gottstein (1901) and performed by Heller in 1913 in Germany, is the incision of the muscular layer of the esophageal wall, front and back, 8 cm in length, crossing the esophagogastric junction with a minimum cut the gastric wall, leaving the mucosal layer exposed. Despite its simplicity and effectiveness, cardiomyotomy was not immediately accepted as a solution for the surgical treatment of achalasia.

Several modifications of the original technique have been proposed by Heller. One of the most important is due to a Brazilian surgeon, Oliveira Mattos (1938), which withdrawal the muscle layer exposing the submucosa of the anterior wall of the esophagus. This technique has been used by many surgeons, and called cardiomyectomy.

Currently, the operation consists of a modified Heller myotomy reaching the esophagus in 6 cm and 2 cm below the gastroesophageal junction with the addition of a partial anti-reflux valve¹⁷. Cardiomyotomy is usually used in cases of non-advanced megaesophagus.

With the advent of laparoscopic surgery, the cardiomyotomy and fundoplication as much as in achalasia in chagasic megaesophagus has been held with all its inherent advantages: shorter hospital stay, postoperative period more comfortable for the patient, early mobilization and absence of extensive abdominal scar²⁰.

Pinotti et al.¹⁷ described an anti-reflux procedure in which the gastroesofagopexy covers the posterior, left lateral and anterior esophagus

surfaces.

The purpose of this study was to evaluate the results associated with cardiomyotomy described by Pinotti fundoplication by laparoscopy for the treatment of non-advanced megaesophagus.

METHOD

Was performed a retrospective analysis of patients operated on between May 2000 and September 2010 in the Service of General Surgery, University Hospital of Brasília, by collecting data from the files of the Department of Medical Archives of the University Hospital of Brasília.

The diagnosis of achalasia was made in accordance with the clinical history, barium swallow and endoscopy. The patients received a radiological classification Lauer-Rao-Oliveira and patients with non-advanced megaesophagus underwent fundoplication cardiomyotomy associated with the technique recommended by Pinotti et al.¹⁷.

Data were collected regarding age, gender, symptoms, weight loss, diagnostic tests, comorbidities, operative time, intraoperative or postoperative length of postoperative hospital stay, time of onset of diet and postoperative follow-up. The length of stay was considered from the day of operation until the day the patient discharged from the hospital.

Were analyzed the time and intensity of symptoms, operative time, conversion rate, complication rate and length of stay. Dysphagia was classified as mild to solid food, moderate to intense to soft foods and liquids. The postoperative follow-up included clinical assessment and endoscopy. It was based on clinical assessment, a total improvement for patients without dysphagia and weight recovery, partial improvement with mild dysphagia without weight loss, and no improvement for persistence of symptoms with weight loss. Patients were instructed to return at the clinic after 10 days, six months and annually.

Were included patients classified as non-advanced megaesophagus using the radiological Rao classification and who had complete information in medical records. Thus, were included 68 patients with chagasic or idiopathic megaesophagus.

RESULTS

Of the 68 patients 34 were men. The average age was 53.5 years, ranging between 14 and 72. Chagas disease represented 88.13% of patients. Megaesophagus grade II represented

80.59%. The average duration of symptoms was 9.27 years. Dysphagia was present in all patients, most had severe dysphagia (Figure 1). The mean weight loss was 5.1 kg.

The average duration of surgery was 190 min (60-280). The average time of eating was 1.45 days. The median length of hospital stay was three days (2-38).

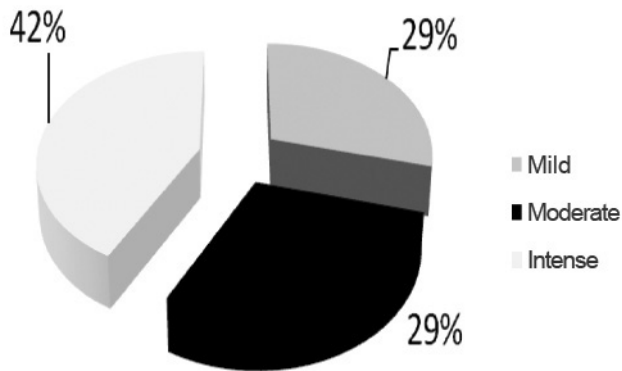


FIGURE 1 – Extension of dysphagia among 68 patients

The average duration of surgery was 190 min (60-280). The average time of eating was 1.45 days. The median length of hospital stay was three days (2-38). The complication rate was 4.4%, being observed in three patients. One had gastrointestinal bleeding on 13th day after surgery, being re-operated and performed Thal's cardioplasty²⁵. Another patient had surgical site infection in 8th day after surgery and was treated conservatively. The third patient had inadvertent perforation of the gastric mucosa and evolved with fistula and intra-abdominal abscess, being re-operated with suture and drainage of the abdominal cavity, remaining hospitalized for 38 days. There was one conversion to laparotomy because of perforation of the gastric fundus using forceps traction during mobilization. Mortality was zero in this series.

Follow-up after one year of operation was performed in 70% of patients. The improvement in

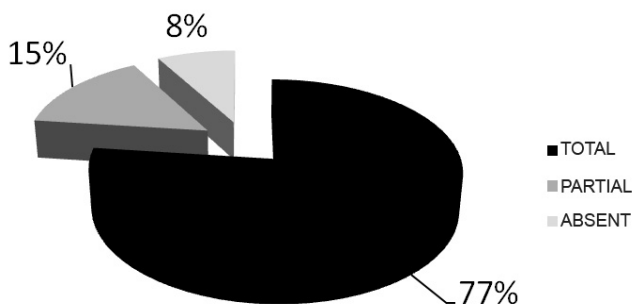


FIGURE 2 – Clinical outcome after surgery for one year in relation to dysphagia

symptoms was observed in 92% of patients (Figure 2).

Endoscopy was performed in 37%, and in one patient moderate esophagitis was observed; in another occurred difficulty to get the cardia. In all others, endoscopy showed no changes.

DISCUSSION

Chagas disease - parasitic infection by *Trypanosoma cruzi* -, is characterized by destruction of ganglion cells of the smooth muscle of the myenteric plexus, resulting in motor dysfunction and progressive dilatation of the esophagus²², progressive and irreversible.

Esophageal achalasia is a premalignant lesion, appearing carcinoma in 1% to 10% of patients, after 15 to 25 years²² of its appearance.

Chagasic megaesophagus reaches approximately 80% of patients undergoing operations in Brazil^{15,18}. In other countries the cause is idiopathic⁸. In this series 88.13% of the patients had chagasic megaesophagus. Data reported in the literature showed that 79.23% had positive serology for Chagas disease¹².

The incidence of Chagas disease is higher in men with 40 or more years⁵. In this study, 50% of patients were male and older than 40 years.

The diagnosis of achalasia is accomplished by means of contrast radiography and endoscopy. Barium swallow is indispensable, since it indicates the type of operation to be performed due to the degree of megaesophagus². In this paper, contrast radiography and endoscopy were performed preoperatively in all cases.

The esophageal manometry was not performed preoperatively in a systematic way, since the clinical history and esophagogram were considered sufficient for the diagnosis of achalasia. Crema et al.⁶ conducted a study showing that manometry is not necessary in all patients, since the radiological study of megaesophagus is sufficient for the diagnosis.

Surgery is recognized as the most effective form of treatment and longer lasting results, but is accompanied by some morbidity, although in a small percentage¹². The technique that presents the best results and safety, with a lower rate of complications, is cardiomyotomy^{11,16}. The laparoscopic treatment of achalasia has been adopted since 1991. Previous studies comparing it with the one made by laparotomy is shorter hospital stay, earlier return to work and less postoperative pain^{1,8}.

Cardiomyotomy associated with fundoplication reduces the rate of gastroesophageal reflux, but its use remains controversial. In recent work, Torquato et al. made comparisons of results between

the exclusive operation of Heller and Heller with Dor fundoplication. They concluded that fundoplication protects against gastroesophageal reflux, as observed rates of 47.6% without valve operation and 9.1% with the valve²³. Lopes et al.¹³ in experimental paper showed that myotomy provides the appearance of reflux and that after the completion of the fundoplication, the zone of high pressure is restored and becomes competent to prevent gastroesophageal reflux¹³. The experience at the University Hospital of Brasilia supports the idea of making anti-reflux valve after cardiomyotomy for all patients.

The operating time is longer in laparoscopy and laparotomy conversion rate can vary from 1.5% to 22%, especially at the beginning of the experience^{4,21}. Rossetti et al.²¹ reported 1.5% rate of conversion to laparotomy and morbidity of 2.1%, with length of stay of 3.6 days²¹. Lopes et al. showed the mean length of stay from 2.54 to 3.32 days (laparoscopy to laparotomy), which was statistically significant in shortening the time of hospitalization without compromising the end result in dysphagia improvement¹³. In this study the median length of stay was three days, ranging between 2 to 38, and the conversion rate was 1.4%, which is consistent with other studies.

The more frequent intraoperative complication was perforation of esophageal or gastric mucosa, found in 25% of patients operated by laparoscopy²⁴. In this paper, only one patient had perforation of the mucosa and evolution with intra-abdominal abscess.

The beginning of the diet, on average, was 1.45 days in this study. Madureira et al. reported average of 1.6 days of starting the diet and no mortality¹⁴. Surgical treatment gives good results in the short and long term being able to modify the quality of life scores and the data of the lower esophageal sphincter pressure significantly¹⁴. Previous studies have shown significant rate of dysphagia after surgery, less than 20%^{3,7,10}. In this study, clinical follow-up after a year found the rate of 15% of patients reporting improvement and 8% reporting partial and no improvement in symptoms of dysphagia. Rosemurgy et al.¹⁹ conducted follow-up of 31 months and showed that 95% of patients had symptoms less than once a week, 86% considered the result satisfactory or better and 92% said they would retry the operation, showing good results in long term. Most of the patients in this service live in other Brazilian states, which affect the postoperative follow-up.

CONCLUSION

The laparoscopic treatment of non-advanced

megaesophagus cardiomyotomy associated with partial fundoplication (Pinotti technique) is safe and effective method, having a low complication rate and good short-term results.

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