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EVALUATION OF COMPLICATIONS OF TRANSMEDIASTINAL ESOPHAGECTOMY IN THE SURGICAL TREATMENT OF RELAPSED MEGAESOPHAGUS

Análise das complicações da esofagectomia transmediastinal no tratamento cirúrgico do megaesôfago recidivado

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ABSTRACT - *Background* - The best option for the treatment of patients with achalasia and recurrent symptoms after previous treatment, has always been very controversial. In literature review, there is no surgical technique considered the best to deal with this condition. The idea to use a more selective treatment with transmediastinal esophagectomy without thoracotomy in patients with advanced megaesophagus in relapsed cases after prior cardiomyotomy can be considered. ***Aim* -** To evaluate the results of transmediastinal esophagectomy in recurrent megaesophagus regarding local and systemic complications. ***Methods* -** Thrity two patients were treated with recurrent symptoms after previous surgery to achalasia and indication for esophagectomy with gastric transmediastinal transposition through the posterior mediastinum for grade IV megaesophagus. They were 25 men (78.1%) and seven women (21.9%), aged from 34 to 72 years. All underwent previous myotomy varying from five to 39 years to the day of transmediastinal esophagectomy. ***Results*** - Some patients had complications. Among these, eight had pulmonary infection (25.0%) resulting in good outcome to the specific clinical treatment; two died due to hemodynamic effect caused by injury to the azygos vein and the other due to trachea injury; nine (28.1%) had cervical esophagogastric anastomotic dehiscence doing well with conservative treatment. Of the 21 patients in whom monitoring was carried out in the long term - six months to 14 years -, 17 reported good swallowing solids and pastes, four (19.0%) had gastroesophageal reflux with clinical improvement with specific medical treatment. ***Conclusions* -** Transmediastinal esophagectomy, although providing adequate swallowing in most cases, is a procedure of high morbidity. This technique should not be recommended as first treatment option for relapsed megaesophagus.

HEADINGS – Esophagectomy. Esophageal ahalasia.

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RESUMO - *Racional* - A melhor opção para o tratamento dos pacientes com megaesôfago e recidiva de sintomas após tratamento prévio sempre foi muito controversa. Em resultados de trabalhos analisados, não há seleção da técnica cirúrgica mais adequada para a doença. Assim, surge a ideia de se realizar um estudo mais seletivo com esofagectomia transmediastinal sem toracotomia em pacientes com megaesôfago avançado recidivado após cardiomiotomia prévia. ***Objetivo* -** Avaliar os resultados da esofagectomia transmediastinal no megaesôfago recidivado quanto às complicações sistêmicas e locais. ***Método* -** Trinta e dois pacientes foram atendidos todos com recidiva de sintomas após operação prévia e indicação para esofagectomia transmediastinal com transposição gástrica pelo mediastino posterior por apresentarem megaesôfago grau IV. Dos 32 pacientes, 25 eram homens (78,1%) e sete, mulheres (21,9%), com idade entre 34 a 72 anos. Todos foram submetidos à miotomia prévia com tempo variável de 5 a 39 anos até a realização da esofagectomia transmediastinal. ***Resultados* -** Alguns pacientes apresentaram complicações. Dentre eles oito com infecção pulmonar (25,0%) resultando em boa evolução ao tratamento clínico específico; dois evoluíram para óbito devido a repercussão hemodinâmica causada por lesão de veia ázigos e o outro por lesão de traqueia; nove (28,1%) com deiscência da anastomose esofagogástrica cervical evoluindo bem com tratamento conservador. Dos 21 pacientes nos quais se realizou o acompanhamento em longo prazo, seis meses a 14 anos, 17 referiram boa deglutição para sólidos e/ou pastosos; quatro (19,0%) apresentaram refluxo gastroesofágico com melhora ao tratamento clínico. ***Conclusões* -** A esofagectomia transmediastinal, apesar de proporcionar deglutição adequada na maioria dos casos, é procedimento de grande morbidade. Ela não deve ser indicada como primeira opção no tratamento do megaesôfago avançado recidivado.

DESCRITORES - Esofagectomia. Acalásia esofágica.

INTRODUCTION

Despite the successful government programs conducted in the control of its vector, Chagas disease is still quite prevalent in Latin America. The numbers of infected people is around 16 to 18 million individuals and over 100 million are at risk of contracting the disease[13,14].

Megaesophagus - one of the manifestations of this chronic disease - is present in 8 to 40% of the patients with the disease, causing great socioeconomic problem in our country. By presenting as a chronic and progressive disease, mainly affects the nutritional status and, in this way, compromises the quality of life by the presence of dysphagia[16,18]. So, is important to conduct effective therapy with low morbidity in restoring swallowing.

Surgery is the best treatment to provide relief of symptoms and improvement of nutritional status. This becomes evident in the non advanced megaesophagus without prior treatment, in which the myotomy with fundoplication - conservative and not complex operation - provides better results compared to other techniques[7,9,15].

In the advanced megaesophagus without prior treatment, the therapy of choice has been esophagectomy without thoracotomy or esophageal mucosal resection with preservation of the muscular layer, with the replacement of esophagus performed by gastric transposition to the neck[5,8,17].

However, with the inability to standardize an ideal tactic, controversies arise regarding the best surgical option for recurrent advanced megaesophagus after previous treatment. This is due to technical errors in performing the first operation, the inappropriate choice of surgical technique for a particular grade of megaesophagus, the different follow-up periods in which patients are attended, and poor nutritional status. It must be added to this, the fact that not always is known what was the previous procedure[7,21,25].

The alternatives range from more conservative procedures with less potential morbidity, such as re-myotomy and esophagocardioplasty with gastrectomy, or even more complex operations such as distal esophagectomy with interposition or jejunal, and subtotal esophagectomy[1,7,9,11,17,26].

These differences demonstrate the importance of trying to standardize the surgical technique selectively in relation to the degree of megaesophagus with recurrent symptoms in order to obtain better results. Therefore, the idea of standardizing the transmediastinal esophagectomy in patients with advanced megaesophagus and recurred symptoms after prior myotomy, is interesting.

The purpose of this study is to evaluate the results of transmediastinal esophagectomy in recurrent megaesophagus, regarding to local and systemic complications.

METHOD

Patients

From August 1995 to July 2010 were treated 32 patients in the Department of Surgery, Hospital Celso Pierro, Campinas, SP, Brazil, all with megaesophagus with recurrent symptoms after prior myotomy. All were treated by transmediastinal esophagectomy, and the time of the myotomy done before ranged from 5 to 39 years.

Twenty-five patients (78.1%) were males and seven females (21.9%) aged between 34 and 72 years. All were smokers consuming 10-30 cigarettes for 12 to 36 years. Eighteen of them had alcohol consumption, one to two distillates doses daily ranging from 10 to 46 years.

Preoperative evaluation

The diagnosis was made by clinical signs and symptoms, radiology, endoscopy and manometry, in addition to serology for Chagas disease, resulting positive in all patients.

Twenty one patients (65.6%) had severe dysphagia and 11 (34.4%) with moderate. Regurgitation was detected in 15 of them (46.8%), whereas weight loss was in the entire group, with variable loss of seven to 23 kg in the last two years.

Radiographic contrast study showed the presence of megaesophagus grade IV according to the classification of Rezende, et al.[24] in all (Figure 1).

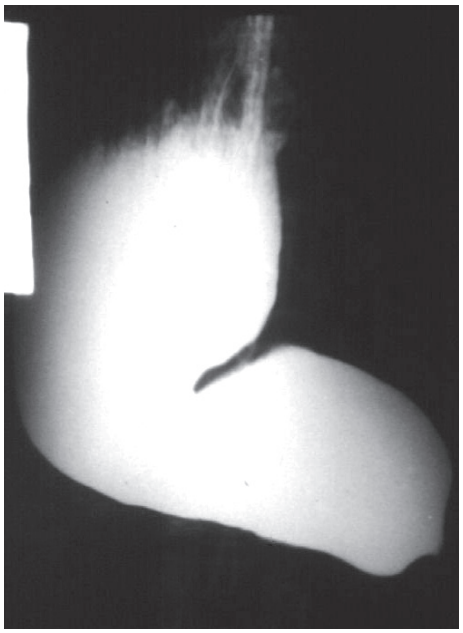

FIGURE 1 – X-ray contrast demonstrating grade IV megaesophagus

Endoscopic esophagitis was observed, in grade B/C according to the Los Angeles classification, in 19 (59.3%), and the other patients did not show any degree of esophagitis. In all patients, this examination showed dilation of the esophagus.

Only six underwent manometry, which resulted in the absence of esophageal body contractility and decreased lower esophageal sphincter relaxation (Figure 2).

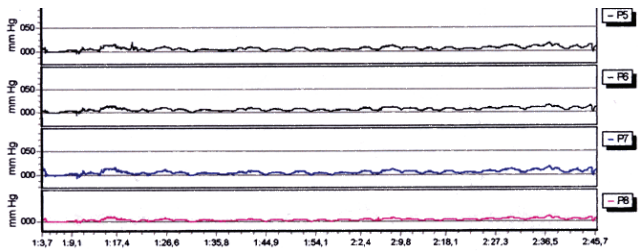

FIGURE 2 – Lack of contractility of the esophageal manometric examination

All patients underwent a clinical and nutritional assessment to see if they were able to undergo the proposed surgical procedure. Due to the finding of loss of more than 10% of ideal weight in 13 patients, it was recommended nutritional support through enteral feeding for 20 to 30 days before the operation.

Surgical technique and postoperative evaluation

The surgical technique used was the one proposed by Pinotti (1976)[22]

The postoperative evaluation was mainly focused on systemic complications - cardiovascular, pleuropulmonary or infectious - and local ones, in relation to dehiscence and stenosis of the cervical esophagogastric anastomosis.

In the event of drainage of digestive secretions through the drain of the cervical incision between the 3rd and 7th days after surgery, it was confirmed dehiscence with subsequent cervical esophagogastric anastomotic fistula. In the absence of clinical evidence of anastomotic fistula, was performed on day 7th post-operative day radiographic contrasted study to look for extravasation of contrast. In the case of a negative outcome, was released liquid diet orally, gradually progressing to the pasty and solid forms.

However, finding of dysphagia from the 30th day after surgery and decreased diameter of the anastomosis confirmed by contrast radiography and endoscopy, diagnosed cervical esophagogastric anastomotic stricture.

Quality of life was also assessed in relation to swallowing and, in cases of dysphagia, was mention it´s intensity as mild, moderate or intense.

RESULTS

Early assessment (first 30 days)

Early assessment, the first 30 days, showed two patients (6.2%) with hemothorax and massive hemomediastinum by azygos vein injury requiring re-emergency surgery through a thoracotomy. Due to the large hemodynamic imbalance, one patient (3.1%) died due to hemorrhagic shock - azygos vein rupture - even after suture of this vessel, and another had a good outcome. Another patient (3.1%) also underwent emergency thoracotomy due to injury on membranous part of trachea and died on the 7th postoperative day, due to infectious complications resulting from trachea suture. Eight patients (25.0%)) had lung infection - three associated with a small pleural effusion - all of them progressed well with specific clinical treatment.

Nine patients (28.1%) had cervical esophagogastric anastomotic dehiscence with digestive secretions through the drain and cervical incision between the 3rd and 6th day after surgery. There were two who also had lung infection. In all, the treatment was conservative with daily dressings, zero diet and nutritional support through jejunostomy. This treatment ranged between 13 and 17 days postoperatively, when there was no evidence of discharge from the digestive neck. After this period, radiographic study of the anastomosis was done. When no contrast extravasation was observed oral diet was liberated gradually from liquids to solids.

In the other 21 patients because of the absence of clinical evidence of cervical esophagogastric anastomotic fistula on day 7th day after surgery, radiography was performed to confirm lack of contrast extravasation. Also, with no contrast extravasation oral diet was liberated gradually from liquids to solids.

Evaluation from 30 to 60 days, performed in 30 patients, nine had dysphagia to solid diet (30%) and three for pasty (10%). Upper endoscopy and contrast radiography revealed cervical esophagogastric anastomotic stricture. Nine of these patients have had cervical esophagogastric anastomotic fistula. In 12 who was indicated dilatation with good outcomes after five to nine sessions of the procedure, returning to solid diet.

Late evaluation (six months to 14 years)

Medium and long term follow-up, between six months to 14 years, was performed in 21 patients (65.6%). There was loss of follow-up in nine and two others died of complications in immediate postoperative period, as cited. During this period, four patients (19.0%) reported intermittent dysphagia to solid diet, and the

endoscopic examination performed at that time showed no stenosis of the cervical esophagogastric anastomosis, but esophagitis in esophageal stump, suggesting gastroesophageal reflux. These patients were treated with proton pump inhibitor, with good improvement.

Both these patients as the others studied in this period, reported that they were satisfied with the surgery because it made the return on normal swallowing, with increasing body weight; 15 returned to their usual activities.

DISCUSSION

The untreated advanced megaesophagus is characterized by the absence of adequate contractility of the esophageal body.Thus, more conservative procedures such as myotomy do not provide good results in relief of dysphagia, although this aspect in the recurrence becomes even more evident due to the presence of scarring of previous surgery[2,7,9,15].

These factors have encouraged the standardization of procedures for improve drainage of the esophagus with larger diameter, especially in cases of recurrence. Cardioplasty are recommended, among which stand out the techniques described by Thal, *et al.*[27] e Serra-Dória, *et al.*[26]. Some authors have reported good results only in short follow-up, as in longer, most patients in related series had recurrence of symptoms, which required another type of surgery[1,23].

The advent of esophagectomy without thoracotomy recommended by Piinotti[22], stimulated several authors to employ this technique in the untreated advanced mega[4,10,28]. The advantage of this procedure is the broad vision of the esophagus to mediastinum, through a wide frenotomy in the middle portion of the diaphragm, from the esophageal hiatus to the xiphoid process. Thus, it becomes more feasible surgical technique via cervico-abdominal approach known as Pinotti transmediastinal tecnique[22].

Another advantage is the avoidance to access lung dynamics by thoracotomy. This is of great relevance, since many patients with achalasia have large lung diseases that manifest themselves as sub-clinical form, secondary to chronic intermittent aspiration of esophageal contents in addition to pulmonary involvement by smoking.

These prior reasons embased the idea to perform this procedure in large megaesophagus; it must the said that 13 of the patients had severe impairment of nutritional status, needing nutritional support preoperatively, associated to the fact they were heavy smokers. Thus, avoiding thoracotomy, it could be also avoided major pulmonary complications.

Although transmediastinal esophageal resection technique has the advantage to prevent impairment of lung dynamics, it is not free of complications, especially if operation is performed in the presence of recurrence. Among the complications, there is the opening of the pleura with pneumothorax, resulting in higher postoperative morbidity[4,7,19,20]. This may occur because of the existence of periesophagitis and/or adhesions due the previous operation, harming the pleura. This complication occurs in up to 83%, as has been demonstrated in several series using this procedure for the treatment of relapsed megaesophagus[4,17,19,20,22]. To prevent pulmonary complication, in this series was made bilateral chest drainage at the end of surgery in all patients.

Another complication consequent to periesophagitis was severe adhesion of the esophagus to the mediastinal structures, and possible injury of the azygous vein and trachea. Although infrequent, not exceeding 8% in most series, it has high morbidity and mortality, even doing urgent thoracotomy to repair the injured structures[17,19,20]. This occurred in three patients, and two died although all the efforts to treat them.

The incidence of 28.1%% of cervical esophagogastric anastomotic dehiscence, considered high in this study, is consistent with the series that also advocated transmediastinal esophagectomy for this type of condition[3,12,20]. Usually this complication is caused because it deals with malnourished patients, besides the possibility of ischemia of the gastric fundus due to the tension of the viscera when transposed to the neck.

Another reason for this complication might be to the fact that all patients had a cervical esophagogastric anastomosis performed with the manual technique. It has been shown that the stapler, because it provides double inverted and better coaptation of the anastomotic site, favors the reduction of this complication[3,6,8,20]. However, the fistula subsequent to cervical esophagogastric anastomosis is controlled in most cases, with conservative treatment. This fact corroborates with this study because all patients with this complication progressed well without presenting any hemodynamic effect.

Despite adequate evolution, 40.0% of patients had cervical esophagogastric anastomotic stricture, which delayed the onset of swallowing solid diet; full resolution of this complication was done with endoscopic dilatation. This is also demonstrated by others, and stenosis is caused by fibrotic reaction normally after the closure of the fistula[3,5,7,16,19].

Significant percentage of patients had pulmonary infection (25.0%) with good outcome with specific treatment, similar to other studies[3,19,20].

This was due to the age of these patients, since five of the eight patients who developed this complication were older than 65 years. This may predispose to lung diseases often sub-clinical, normally associated with continued tobacco use, a condition also present in the patients.

All the 21 patients analyzed in the six months to 14 years showed that they were satisfied with the surgery performed, managed to rescue the normal swallowing, which greatly improved the quality of life, as far as, preoperatively, most of them had intense dysphagia. The four patients who presented with intermittent dysphagia of low intensity did not have impaired quality of life returning to normal activity. Few patients had esophagitis in the cervical stump resulting from reflux of stomach contents; were confirmed by endoscopic and clinical improvement with the use of antacid. Esophagitis has also been demonstrated by other authors in this type of procedure, and is caused mostly by stasis in the transposed stomach with consequent reflux[2,4,10,17,19,20].

Thus, despite the transmediastinal esophagectomy in relapsed megaesophagus have advantages in providing satisfactory quality of life, restoring adequate swallowing, it was not without complications.

Thus, procedures that can provide lower morbidity, such as esophageal mucosal resection with preservation of muscular layer - a technique already well standardized by these authors - can be an option in patients with recurrent and non-advanced megaesophagus[5,8].

CONCLUSIONS

Transmediastinal esophagectomy, although providing adequate swallowing in most cases, is procedure of major morbidity. It should not be recommended as first treatment option for relapsed megaesophagus.

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