

Effect and Safety of Peroral Endoscopic Cardial Constriction for Gastroesophageal Reflux Disease

Xue Li¹, Xiao-Bin Zhang², Hai-Qing Hu², Hui-Kai Li², Xiao-Xiao Wang², En-Qiang Linghu²

¹Department of Radiology, Nanlou Clinic, The General Hospital of the People's Liberation Army, Beijing 100853, China

²Department of Gastroenterology, The General Hospital of the People's Liberation Army, Beijing 100853, China

Key words: Effect; Endoscopy; Gastroesophageal Reflux Disease; Peroral Endoscopic Cardial Constriction; Safety

Gastroesophageal reflux disease (GERD) is a common digestive system disease, characterized by series of discomfort symptoms, which are caused by stomach or duodenal contents refluxing to the esophagus. It is now widely prevalent around the world. Several epidemiological studies have demonstrated that the incidence of GERD is 10–20% in Western countries and it has also risen to 10.5% in Asian countries in recent years.^[1]

As for the management of GERD, lifestyle interventions, medications, and surgical interventions is usually taken into consideration and applied following a stepwise approach. Moreover, it is a significant breakthrough in GERD treatment that peroral endoscopic cardial constriction (PECC) was proposed as an alternative treatment for GERD by Professor Linghu *et al.* in 2013.^[2] The principle of PECC is to narrow the cardia through rubber bands and clips and finally reduce the acid reflux and relieve symptoms. The previous studies have confirmed that PECC is an innovative and minimally invasive procedure.^[3]

In this study, we aimed to evaluate the clinical curative effect and safety of PECC for the treatment of GERD with the experience of 47 cases.

Clinical data of 47 GERD patients, who underwent PECC in the General Hospital of the People's Liberation Army from August 2013 to August 2016, were retrospectively analyzed. The procedures were all performed by Professor Linghu.

The registration number of the study was ChiCTR-TRC-14004796, and the study protocol was reviewed and approved by the Institutional Review Board of the Ethics Committee of the General Hospital of the People's Liberation Army (No. S2013-119-02).

PECC was performed under intravenous anesthesia. Procedures were as follows: (1) preoperative preparation and anesthesia: fasting for 6–8 h and water-deprivation for 2 h before the procedure; blood pressure, heart rate, and breathing oxygen saturation were monitored during anesthesia period; (2) operation: (a) routine gastroscopy: to confirm the condition of the esophagus, cardia, and gastric fundus; (b) ligation: single ring ligation device was fixed on the top of the gastroscope, then ligation was performed at the lesser curvature and greater curvature, about 1 cm above the gastroesophageal junction; (3) fixation: clips were applied to fix the root of the ligated tissues.

After PECC, patients were generally fasted for 1–3 days. Moreover, proton pump inhibitors (PPIs) were applied routinely for more than 2 weeks. Patients were suggested gastroendoscopy, esophageal manometry, and 24-h pH monitoring, with a scheduled follow-up of 3, 6, and 12 months later.

Results showed that, among the 47 patients, 32 were males and 15 were females, with a mean age of 53.8 years (33–75 years). About 89.4% of patients suffered heartburn and regurgitation in the disease duration. They all underwent PECC successfully. The mean procedure time of PECC was 6.5 min (3–19 min). There was no severe complication of bleeding or perforation occurred during the procedure.

Address for correspondence: Dr. En-Qiang Linghu, Department of Gastroenterology, The General Hospital of the People's Liberation Army, Beijing 100853, China
E-Mail: linghuenqiang@vip.sina.com

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

© 2017 Chinese Medical Journal | Produced by Wolters Kluwer - Medknow

Received: 01-03-2017 **Edited by:** Qiang Shi

How to cite this article: Li X, Zhang XB, Hu HQ, Li HK, Wang XX, Linghu EQ. Effect and Safety of Peroral Endoscopic Cardial Constriction for Gastroesophageal Reflux Disease. Chin Med J 2017;130:1749-50.

Access this article online

Quick Response Code:



Website:
www.cmj.org

DOI:
10.4103/0366-6999.209898

Table 1: The comparison of pre- and post-operative 24-h pH monitoring, $n = 19$

Items	Preoperation	6 months postoperation	Z	P
DeMeester scores	61.2 (45.7–149.4)	23.1 (8.9–46.7)	–3.296	0.001
Reflux episodes, n	189 (131–266)	70 (38–139)	–3.040	0.002
Long reflux episodes*, n	9 (6–22)	3 (1–9)	–3.186	0.001
Longest time of reflux (min)	26.0 (15.0–54.0)	7.5 (4.0–26.5)	–2.668	0.008
Total reflux time (min)	207.0 (147.5–524.0)	72.0 (24.5–167.3)	–3.180	0.001

*Reflux episodes lasting longer than 5 min. Data are presented as median (interquartile range), Wilcoxon signed ranks test were used for data statistical analysis.

Nineteen patients had complete pre- and post-operative 24-h pH monitoring data. Among them, 14 patients achieved a significant decrease in DeMeester scores within a 6-month follow-up. Hence, the preliminary estimate of postoperative effective rate was 73.7% (14/19) [Table 1].

None of the 47 patients had fever and perforation postoperation. Retrosternal vague pain and discomfort occurred in 7 patients (7/47, 14.8%), mild dysphagia occurred in 2 patients (2/47, 4.3%), and one patient (1/47, 2.1%) had mild hemoptysis the day after the operation. However, no special measures were needed and these 10 patients all felt symptom remission within 2 days.

As mentioned above, treatments for GERD mainly include dietary and lifestyle modifications, medications, and surgical interventions. Studies have shown that through an 8-week course of PPIs treatment, about 70–80% of reflux esophagitis patients and 60% of nonerosive reflux patients can obtain complete remission.^[4] When GERD is refractory and persistent, or PPIs do not work, the laparoscopic fundoplication or gastric bypass surgery might be effective for these patients.

In recent years, endoscopy therapies (e.g., Stretta procedure) have also been very popular and achieved satisfactory effect. Fass *et al.* demonstrated that Stretta could reduce esophageal acid exposure, lower esophageal sphincter basal pressure, and reduce the incidence of erosive esophagitis by 24%.^[5]

PECC, as an alternative endoscopy therapy for GERD, aims to constrict the cardiac and ultimately make the reflux reduced. It is easy to be performed and needs just simple equipments (clips and single ring ligator). The mean procedure time can be as short as 6.5 min.

The clinical curative effect and safety of PECC were confirmed in this study. We found none of the patients had severe events and only 10 patients had some disturbing symptoms (7 suffered retrosternal vague pain and discomfort, 2 patients had mild dysphagia, and 1 patient had mild hemoptysis the day after the operation), but all of them got symptoms remission spontaneously within 2 days without any intervention. As to the curative effect of PECC, we

found that 73.7% of patients (14/19) gained a reduction in DeMeester scores within a 6-month follow-up. Moreover, DeMeester scores, number of reflux episodes, number of long reflux episodes, and duration of episodes all decreased significantly within a 6-month follow-up.

In summary, PECC is a new endoscopic treatment for GERD. It is easy to perform and could achieve satisfactory curative effect and has low incidence of complication. However, more prospective studies are needed to confirm this conclusion.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. El-Serag HB, Sweet S, Winchester CC, Dent J. Update on the epidemiology of gastro-oesophageal reflux disease: A systematic review. *Gut* 2014;63:871–80. doi: 10.1136/gutjnl-2012-304269.
2. Linghu EQ, Wang YF, Wang XX. Endoscopic cardiac constriction for gastroesophageal reflux disease: Case report (in Chinese). *Chin J Laparosc Surg (Electron Ed)* 2013;6:468–9. doi: 10.3877/cma.j.issn.1674-6899.2013.06.018.
3. Hu HQ, Chai NL, Linghu EQ, Li HK, Xiong Y, Zhang XB, *et al.* Peroral endoscopic cardiac constriction (PECC) in gastroesophageal reflux disease (in Chinese). *Chin J Gastrointest Endosc (Electro Ed)* 2016;3:65–7. doi: 10.3877/cma.j.issn.2095-7157.2016.02.004.
4. Chen MH, Hou XH, Xiao YL, Yang YS, Yuan YZ, Zhou LY, *et al.* 2014 China gastroesophageal reflux disease expert consensus (in Chinese). *Chin J Gastroenterol* 2015;3:155–68. doi: 10.3969/j.issn.1008-7125.2015.03.007.
5. Fass R, Cahn F, Scotti DJ, Gregory DA. Systematic review and meta-analysis of controlled and prospective cohort efficacy studies of endoscopic radiofrequency for treatment of gastroesophageal reflux disease. *Surg Endosc* 2017; [Epub ahead of print]. doi: 10.1007/s00464-017-5431-2.