



FREQUENCY AND SURGICAL APPROACH IN TREATING SYMPTOMATIC GASTRO-ESOPHAGEAL REFLUX IN BUJUMBURA.

Mbonicura JC ¹★, Sibomana T², Kwizera A¹, Ntagirabiri R³, Nduwimana D⁴, Haragirimana E¹, Karayuba R¹

¹University teaching Hospital, General Surgery Department

²University teaching Hospital, Pneumology Department

³University teaching Hospital, Gastroenterology department

⁴Military Hospital of Kamenge, General Surgery Department

Article Info

***Corresponding Author:**

Mbonicura Jean Claude

Email: mbonicurajc@gmail.com

Abstract

Goal: The objective of this study was to determine the epidemiological and clinical profile of patients undergoing gastroesophageal reflux disease (GERD) and to identify surgical indications.

Patients and Methods: This were a retrospective study conducted at the Kamenge Teaching Hospital and BUMEREC Hospital over a period of 5 years. Any patient operated in both hospitals for GERD during this period was included. Seventeen patients were collected.

Results: A frequency of 0.36% for operated GERD was noted. The average age of our patients is 41.07 years [range of 15 to 68 years]. The most affected age group is between 46 and 60 years old. The sex ratio was 1.12. Alcohol, tobacco and tea are the most popular contributing factors. Pain, regurgitation and heartburn were triggered by the posture in 41.17% and the postprandial in 52.94%. The operated patients were dependent on medical treatment in 94.11%. The Nissen procedure was the most used technic for surgical treatment in 64.70%. A laparotomy was done in 100%. At one postoperative month, the persistence of heartburn was observed in 11.76%; 5.8% with flatulence and 17.64% with bloating.

Conclusion: The factors that promote GERD are mostly preventable. The clinic is dominated by heartburn and regurgitations. GERD dependent on medical treatment remains the right indication for surgery. However, the approach is open surgery due to lack of laparoscopy in Burundi and only Nissen and Toupet are used.

Keywords: Frequency, surgery, GERD, Burundi

Introduction:

Gastroesophageal Reflux Disease (GERD) is defined as the passage of acidic gastric contents into the esophagus. It is physiological, but becomes pathological when the frequency of reflux is high and the time of contact of acidities with the esophageal mucosa increases [1].

Symptomatic GERD, affects 15 to 20% of the adult population, and significantly affects the quality of life of affected individuals [2]. The prevalence of reflux esophagitis is 2 to 5% in the general population. The prevalence of GERD is estimated at 34.7% in populations consulting a gastroenterology service in Bujumbura [3]. The overall prevalence of GERD in Burundi is 27.75% [4].

Surgical treatment still retains an important place but has experienced a certain decline in favor of the effectiveness of medical treatment (PPI) and since the advent of laparoscopy, surgical treatment of reflux is done more and more by laparoscopy [5]. No study on GERD surgery in Burundi. The objective of this work was to determine the epidemiological, clinical and therapeutic aspects of GERD operated in Bujumbura.

Patients and Methods

Our study was carried out in the surgical departments of the University teaching Hospital of Kamenge and the BUMEREC Hospital, part of the major hospitals in Bujumbura. It was an observational and retrospective study which took place over a period of 5 years (from November 1, 2011 to November 1, 2016).

The operative indication was retained on clinical and or endoscopic arguments. Indeed, patients with typical clinical symptoms of GERD (heartburn and regurgitation) having been improved by taking proton pump inhibitors (PPI) but worsening at the end of treatment, atypical signs GERD (ENT and pulmonary) relieved by taking PPI as well as patients with signs of complications of GERD seen in upper gastrointestinal endoscopy were included. Patients with unoperated GERD were excluded. The pH-measurement and the impedance measurement were not carried out due to lack of equipment.

Data collection was facilitated by the consultation of patient follow-up sheets and registers of entries and exits as well as those of the operating room. We used a survey sheet. Word processing was done using Microsoft Word Office 2013 software. Data analysis was done manually using a calculator. The parameters studied are: frequency, age, sex, clinical signs, indications for surgery, surgical procedure and post-operative morbidity.

Results:

During the period of our study, 17 cases of GERD were collected from 3664 patients operated on for visceral pathologies in the surgical department of CHUK and 824 of BUMEREC hospital, representing a frequency of 0.36%. Figure 1 shows the distribution of our patients by sex and age group.

The average age of our patients is 41.07 years with extremes of 15 years and 68 years. The most affected age group is between 46 and 60 years old. The sex ratio is 1.12 in favor of women.

Regurgitation is the most common sign followed by heartburn and retro sternal pain. Rumination phenomena were observed in 23.52% of patients.

Twelve of the 17 showed signs of complications from GERD: recurrent laryngitis (23, 52%), recurrent false angina (17.64%), chronic recurrent pneumonias (17.64%) and asthma (11.76%). About 50% of the patients had undergone medical treatment for a long period (11 to 20 years) which motivated their consultation in surgery.

Eight patients included in our study had an endoscopic sliding hernia hiatus. Of the 17 patients with GERD, 14 had complications of esophagitis and were classified as grade A (29.4%), B (41.17%) and C (11.76%) according to Los Angeles classification. No patient was classified in grade D. Table I gives the various indications for surgery for our patients. In most cases they are associated.

The operated patients were dependent on medical treatment (PPI) for GERD in 94.11% of cases. (47.05%) presented an associated hiatal hernia, pulmonary manifestations (17.64%), peptic esophagitis (82.35%) and weak lower esophageal sphincter (17.64%).

Total fundoplication according to Nissen was the most performed (11/17, i.e. 64.70%) and partial

fundoplication according to Toupet was performed on 6 patients (35.29%). In all these cases, open surgery was performed via the supra-umbilical median route.

The average stay was 6.64 days. Early post-operative complications range from tolerated dysphagia (29.41%) to rebellious dysphagia (5.88%). One case was re-operated for rebellious dysphagia and the Nissen was transformed into a Toupet. Post-operative follow-up at 1 month noted the persistence of functional signs in 35.28% (heartburn in 11.76%; flatulence in 5.88% and difficulty in burping in 17.64%).

Discussion:

The surgery rate for GERD is 0.36% in our series. This frequency is compatible with the surgery rates for this pathology in Africa which remain below 2% [6]. In the West, this rate goes up to 9.7% [7, 8, 9, 10, 11]. The average age of our patients is 41.07 years with extremes of 15 years and 68 years. The most affected age group is between 46 and 60 years of age. In the literature, the average age varies between 40 and 55 [6, 9, 12, 13, 14].

Clinically, typical signs such as regurgitation, heartburn and epigastric pain are widely noted by different authors at high rates [6, 8, 15]. Joong-min Park found 98% of the typical symptoms while 66% of the atypical signs [15]. In the series of Duffy et al, 48% of patients had typical symptoms of reflux [16].

In our series; 17.64% of pulmonary complications mainly asthmatic and ENT were noted. This observation has been made by other authors [6, 8, 17]. The relationship between asthma and GERD remains controversial, but an association appears to exist [18]. In the Irwin and Fotios series, GERD is known to be the cause of chronic cough and laryngitis and a high prevalence of reflux has been reported among asthma patients [19, 20, 21]. In the series by Lars Lundell, in Sweden, in 2014, he found that asthma and other respiratory manifestations can be treated well with anti-reflux surgery if the association with GERD is confirmed [22].

Upper digestive endoscopy is a vital morphological examination at all stages of GERD. It is used to confirm the diagnosis of GERD when it is complicated by esophagitis and to classify

esophagitis by assessing the lesions. It also and above all makes it possible to make biopsies which are compulsory in the event of endobrachyoesophagus. However, it is necessary to insist on the absence of anatomic-clinical correlation and on the possible existence of association with hiatal hernias in very variable proportions [6, 23].

In our series, the operative indication was either GERD dependent on medical treatment (94.11%), or the associated hiatal hernia (52.94%), or the ENT and / or bronchopulmonary complications of GERD (respectively 29, 4% and 41.16% of cases). A. Koivusalo et al found symptoms of recalcitrant GERD (44%), stunting (22%), respiratory manifestations (15%), an esophageal anastomotic structure (4%), apnea (2%) and regurgitation in 2% [24]. Anti-reflux surgery may be a good option for patients who require a high dose of PPIs or patients who cannot tolerate the drugs [6].

The type of operation remains a subject of research and controversy, but whether it is Nissen or Toupet, better results are obtained if the right indication is given by a good surgeon [26]. Different authors, both Western and African, have compared these two techniques and have found that they are used in different proportions with satisfactory results [9, 11, 24, 25].

In our series, the average stay was 6.64 days. Mostefa, in Algeria, found a stay in hospital of 3 to 5 days [6]. In the Duffy et al. Series, the average length of hospital stay was 2.96 +/- 1.5 days [16]. The difference is explained by the fact that we did a laparotomy but they performed laparoscopic surgery.

Dans notre série, les complications post-opératoires précoces variaient de la dysphagie tolérée (29,41%) à la dysphagie rebelle (5,88%). Le cas de dysphagie rebelle avait nécessité une reprise chirurgicale pour transformer le Nissen en Toupet. Mostefa, en Algérie, a trouvé une dysphagie ans 4 cas résolutive en 4 semaines, une douleur dans 3 cas et aucune récurrence [6]. Dans la série de Gomez et al, la morbidité était de 2,4% [13]. Tan et al a reporté une méta-analyse comparative entre Nissen et Toupet fundoplicature qu'une satisfaction post opératoire dans 2 groupes sont comparables, l'expérience a

montré une occurrence faible d'une dysphagie post opératoire [26].

In our series, early postoperative complications ranged from tolerated dysphagia (29.41%) to rebellious dysphagia (5.88%). The case of rebellious dysphagia required a re-operation to transform the Nissen into a Toupee. Mostefa, in Algeria, found dysphagia in 4 cases resolving in 4 weeks, pain in 3 cases and no recurrence [6]. In the Gomez et al. Series, the morbidity was 2.4% [13]. Tan et al reported a comparative meta-analysis between Nissen and Toupet fundoplication that post-operative satisfaction in 2 groups is comparable, experience has shown a low occurrence of post-operative dysphagia [26].

In our series; 11.76% had heartburn. 5.88% had flatulence while 17.64% had difficulty burping. No

patient in our series had a follow-up endoscopy. The patients were reluctant to repeat the endoscopy, which they considered traumatic. Other authors followed up longer than us and noted that the failure of the surgery is around 8.3% and that the preoperative response to PPIs was a predictive factor for the success of anti-reflux surgery [8, 15, 25, 27].

Conclusion:

Surgery for GERD remains little practiced in Burundi. The clinic is dominated by heartburn triggered by the supine or postprandial decubitus. GERD dependent on medical treatment remains the right indication for surgery. The approach, however, is open surgery due to lack of laparoscopy in Burundi and the only techniques used are Nissen and Toupet.

Figure 1: Distribution of patients by sex and age group

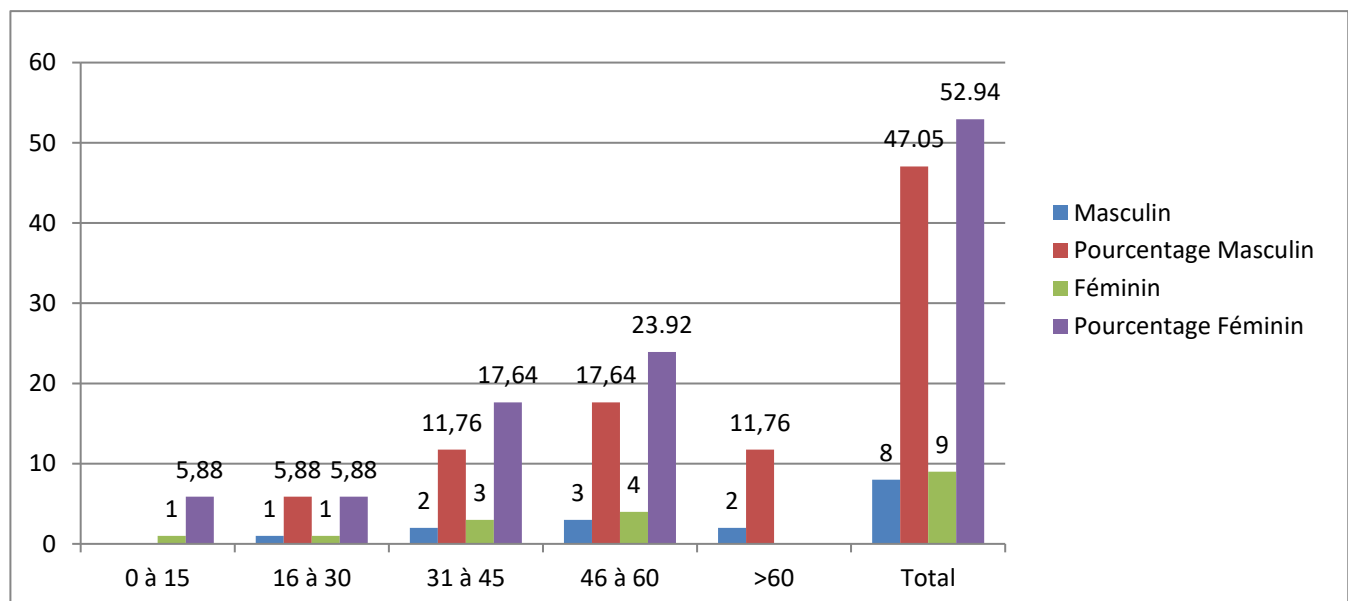


Table I: Distribution of cases according to surgical indications

Surgical indications	No of Patients	%
GERD dependent on medical treatment (PPI)	16	94,11
Associated hiatal hernia	8	47,05
Complication of peptic esophagitis	14	82,35
Atypical GERD (asthmatic and ENT)	3	17,64
Weak low oesophageal sphincter	3	17,64

References:

- [1.] Fass R. Epidemiology and pathophysiology of symptomatic gastro-esophageal reflux disease. *Am J Gastroenterol*, 2003; 98 suppl 3 : 52-57
- [2.] Bommelaer G. Reflux gastro-œsophagien de l'adulte. Définition, épidémiologie, histoire naturelle. Conférence de consensus. *Gastroenterol Clin Biol* 1999 ; 23 suppl1bis : S3-S9
- [3.] Ntagirabiri R, Mumana A, Baransaka E, Niyonzima S, Ndayishimiye H. Reflux gastro-œsophagien dans la population consultant à Bujumbura. *Journal africain d'hépatogastro-entérologie*. 2013, vol 7, issue 14 :204-207
- [4.] Ntagirabiri R, Niyonzima S, Mumana A, Ndabaneze E. Reflux gastro-œsophagien chez l'adulte jeune africain: cas des étudiants de l'Université du Burundi. *journal africain d'hépatogastro enterologie*, 2013, vol 7, issue 4 :192-195.
- [5.] Slim K, Triboulet JP. Quel type de fundoplicature pour un reflux gastro-œsophagien pathologique. *Ann chir*.2003; 128:40-42.
- [6.] Mostefa E. Traitement laparoscopique du reflux gastro-œsophagien. Etude prospective et comparative sur 44 cas colligés. [Thèse de médecine], Oran, Algérie. 2011, pp 112-118
- [7.] Andolfi C, Vigneswaran Y, Kavitt RT, Herbella FA, Patti MG. Laparoscopic Antireflux Surgery: Importance of Patient's Selection and Preoperative Workup. *J Laparoendosc Adv Surg Tech A*. 2017; 27(2):101-105
- [8.] Gábor Varga MD .Gastroesophageal reflux disease: treatment, outcome and special aspects. Department of Surgery Medical Faculty University of Pécs .Hongrie, 2008.
- [9.] Kasalický M, Koblihová E .Surgery of the hiatal hernia and gastroesophageal reflux disease, Nissen or Toupet? *Rozhl Chir*. 2015; 94(12):510-5.
- [10.] Mozharovskiy VV, Tsyganov AA, Mozharovskiy KV, Tarasov AA. Evaluating an effectiveness of surgical treatment of gastroesophageal reflux disease combined with hiatal hernia. *Khirurgiia (Mosk)*. 2017; (6):28-32.
- [11.] Strate U, Emmermann A, Fibbe C, Layer P, Zornig C. Laparoscopic fundoplication: Nissen versus Toupet two-year outcome of a prospective randomized study of 200 patients regarding preoperative esophageal motility. *Surg Endosc*. 2008; 22(1):21-30.
- [12.] Brown SR et al. Clinical outcomes of atypical extra-esophageal reflux symptoms following laparoscopic antireflux surgery. *Surg Endosc*. 2011; 25 (12):3852-8.
- [13.] Gómez Cárdenas X, et al. Antireflux surgery, comparative study of three laparoscopic techniques. *Rev Gastroenterol Mex*. 2005; 70 (4):402-10.
- [14.] Nicolau AE, Crăciun M, Zota R, Kitkani A. Quality of life after laparoscopic fundoplication for gastroesophageal reflux disease. Preliminary study. *Chirurgia (Bucur)*. 2013; 108(6):788-93.
- [15.] Joong-Min Park, Beom Jin Kim1, Jae Gyu Kim1, Kyong-Choun. Factors predicting outcomes of laparoscopic Nissen fundoplication for gastroesophageal reflux disease: experience at a single institution in Korea. *Departments of Surgery and Internal Medicine, Chung-Ang University College of Medicine, Seoul, Korea. Annals of Surgical Treatment and Research* 2017; 92(4):184190
- [16.] Duffy JP et al. Laparoscopic Nissen fundoplication improves quality of life in patients with atypical symptoms of gastroesophageal reflux. *Am Surg*. 2003; 69(10):833-8
- [17.] Sriratanaviriyakul N et al. LINX®, a novel treatment for patients with refractory asthma complicated by gastroesophageal reflux disease: a case report. Sriratanaviriyakul et al. *Journal of Medical Case Reports* (2016) 10:124.
- [18.] Parsons JP, Mastrorarde JG. Gastroesophageal reflux disease and asthma. *Curr Opin Pulm Med*. 2010; 16(1):60-3.
- [19.] Drakopanagiotakis F. Dangerous Liaisons? Gastroesophageal Reflux Disease and Organizing Pneumonia. Second Department of Internal Medicine, Justus Liebig University Giessen, Giessen, Germany. *Respiration*, 2015; 89:192-194
- [20.] Irwin RS, Madison JM. The diagnosis and treatment of cough. *N Engl J Med* 2000; 343: 1715-1721.
- [21.] Irwin RS: Chronic cough due to gastroesophageal reflux disease: ACCP

- evidence-based clinical practice guidelines. Chest 2006; 129 (1 supply):80S-94S.
- [22.] Lars Lundell. Surgery of Gastroesophageal Reflux Disease: A Competitive or Complementary Procedure? Division of Surgery, Karolinska University Hospital, Huddinge, Stockholm, Sweden. Dig Dis 2004; 22:161-170
- [23.] Nomura T et al. Characteristics and Outcomes of Laparoscopic Surgery in Patients with Gastroesophageal Reflux and Related Disease: A Single Center Experience. J Nippon Med Sch 2017; 84 (1)
- [24.] Koivusalo AI, Pakarinen MP. Outcome of surgery for pediatric gastroesophageal reflux-clinical and endoscopic follow-up after 300 funduplications in 279 consecutive patients. Scandinavian journal of surgery. Helsinki, Finland. Scandinavian Journal of Surgery 1 -8 © the Finnish Surgical Society 2017.
- [25.] Hoshino M, et al. Comparison of laparoscopic Nissen and Toupet fundoplication using a propensity score matching analysis. Surg Today. 2017.
- [26.] Tan GW, Du HX, Yang ZL, Wang ZG .Meta-analysis of laparoscopic Nissen and Toupet fundoplication for gastro-oesophageal reflux disease. Zhonghua Wei Chang Wai Ke Za Zhi. 2012 Aug; 15(8):814-8.
- [27.] Falk GL, Van der Wall H, Burton L, Falk MG, O'Donnell H, Vivian SJ. Fundoplication for laryngopharyngeal reflux despite preoperative dysphagia. Ann R Coll Surg Engl. 2017; 99(3):224-7.