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Aggressive Surgery of Hiatal Hernia

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Abstract

Purpose:

To emphasize aggressive surgery in the treatment of hiatal hernia based on a personal experience.

Materials and Methods:

Twenty-four patients with hiatal hernia were surgically treated in a period of 9 years. They included 6 men and 18 women. The mean age was 76.5 years old (range 54~87). At referral, one had depended on ventilator for 47 days following a cardiopulmonary resuscitation, and other one had been treated by repeated blood transfusion for severe anemia. Seven others had coincidental surgical diseases.

Results:

These hiatal hernias were type-1 in 6, type-3 in 15, and type-4 in 3. Eight (33.3%) patients had a huge hiatal hernia. All patients underwent laparotomy repair of hiatal hernia. Of them, 6 underwent concomitant and one underwent subsequent surgical procedure to treat the coincidental surgical diseases. Including the concomitant procedures, the mean operation time was 122 minutes (range 60 to 315). The mean length of postoperative hospital stay was 7.65 days (range 4 to 24). There was no operative death or recurrence.

Conclusion:

Patients with hiatal hernia had health problems and potential coincident surgical diseases. Huge hiatal hernia usually induced cardiopulmonary compression even cardiac arrest. Aggressive surgical repair is mandatory.

Keywords

Hiatal hernia; Cardiopulmonary compression; Life threatening

Conflicts of Interest

Authors declare no conflicts of interest.

Key message

Twenty-four patients with hiatal hernia were operated on in a 9-year period. These patients had major symptoms, and some of them had coincident surgical diseases, cardiopulmonary compression, and one life-threatening event. Aggressive surgery can eliminate their clinical problems and risks of cardiopulmonary compression.

Introduction

Hiatal hernia more commonly occurs in the aged adults, predominately in females. Some researchers mentioned that these patients did not need surgical intervention when the hernia is uncomplicated or asymptomatic [1]. However, some patients had a huge hiatal hernia resulted in cardiopulmonary compression. To understand the risks of hiatal hernia, this reports our limited data dealing the incidence of huge hiatal hernia and coincident surgical diseases. Clinical data, risks, technical considerations, and short-term results of patients with hiatal hernia are discussed herein.

Patients and Methods

We retrospectively reviewed patients with hiatal hernia treated by the first author between June 2009 and February 2018 (Table 1). A total of 24 patients with hiatal hernia, most patients were referred by our colleges, and one patient was referred from other hospital. They included 6 men and 18 women. The mean age was 76.5 years old (range

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54~87). Vomiting and chest distress were the common symptoms. At referral, one had depended on ventilator for 47 days following a cardiopulmonary resuscitation, and other one had been treated by repeated blood transfusion for severe anemia. Seven others had coincidental surgical diseases; gall stones of 3, lung cancer, colon cancer, pericardial effusion, and inguinal hernia of each one. Patients' demography, computed tomography, surgical procedure, and surgical outcome were reviewed.

Reoperative evaluation

Regarding patients presenting with vomiting or chest distress, after a review of their medical history, the severity, and type of hiatal hernia were evaluated using computed tomography (n=23) or esophagography (n=1).

Definition of huge hiatal hernia

The huge hiatal hernia refers the maximum transverse diameter of the hernia is longer than one-half of the pleural cavity. The diameter is measured in the computed tomography (Figure 1).

Surgical considerations

The repair procedure of hiatal hernia and concomitant procedure including cholecystectomy and pericardial window were through an 8-10 cm upper midline laparotomy. The concomitant thoracoscopic surgery was performed following the abdominal surgery. The repair procedure of the hiatal hernia included performing omentectomy to reduce peritoneal content. The hiatal sutures were carried out with or without enforcement by mesh. A 2 cm up to 3 cm distal esophagus was fixed below the hiatus to prevent gastroesophageal reflux. Postoperative dysphagia was prevented using placement of an esophageal bougie. Security of the laparotomy wound was ensured using No.2 absorbable sutures.

Associated surgical procedures

Six patients underwent concomitant surgical procedure to treat the coincident surgical diseases, including cholecystectomy (n=3), inguinal herniorrhaphy (n=1), pericardial window (n=1), and thoracoscopic left upper lobectomy of the lung associated with mediastinal lymph nodes dissection (n=1). One patient who had coincident colon cancer underwent left colectomy 19 days later at second hospitalization, because the colon cancer was not detected at the surgery of hiatal hernia.

Postoperative follow-up

The chest film was taken after surgery and esophagography was routinely conducted before discharge. Data were obtained through clinical visits and questionnaires completed after patients had been discharged from the hospital. Complications that developed immediately after surgery or during the follow-up period were considered cases of operative morbidity.

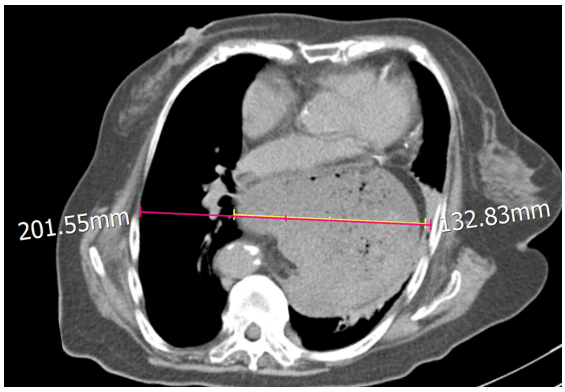

Figure 1: The huge hiatal hernia refers the maximum transverse diameter of the hernia (yellow) is longer than one-half of the pleural cavity (pink). The data show 132.83 mm/201.55 mm > 50%

Statistical analysis

The study variables were summarized using descriptive statistics. Continuous variables are expressed as mean (standard error) and were compared using the Student's t-test. Categorical variables are presented as frequency counts and intergroup comparisons were performed using the chi-squired test. $P < 0.05$ was considered statically significant. Statistical analysis was performed using the Statistical Package for Social Sciences (IBM SPSS Statistics 22).

Results

According to the Hill's classification of hiatal hernia, 6 patients were type-1, one was type-2, 14 were type-3, and 3 was type-4 (Figure 2). Eight (33.3%) patients had a huge hiatal hernia (Table 2). Huge hiatal hernias were more common in type-4 than Type-3 and type 1 (p=0.011) (Table 3). All patients underwent laparotomy repair of hiatal hernia, and seven of them also underwent other surgical procedures to treat coincident surgical diseases simultaneously (n=6) or subsequently (n=1). Including concomitant procedures, the mean operation time was 122 minutes (range 60 to 315). The mean length of postoperative hospital stay was 7.65 days (range 4 to 24). There was no operative death, complication, or recurrence. Postoperative gastroesophageal reflux was not observed in this series. A preoperative life-threatening event occurred on an 87-year-old woman. She had hiatal hernia for more than 9 years, suddenly developed cardiopulmonary failure after a heavy meal. The chest computed tomography showed severe cardiopulmonary compression (Figure 3). Following 20 second cardiopulmonary resuscitation at a regional hospital, the patient was transferred to a medical center for ventilator support for 47 days. After referral, she was successfully weaned from the ventilator on postoperative day 5.

Discussion

In an analysis of nationwide data base of 23,514 patients with hiatal hernia, the mean age was 56 years, and majority of the patients were woman (64%) [1]. In our series, the hiatal hernias more commonly occurred in elderly woman because 75% (18/24) were woman and the mean age (76.5 years) was older than the aforementioned study. In the nationwide data, 55% of patients with hiatal hernia underwent open abdominal, 35% laparoscopic, and 10% open thoracic repairs

Figure 2: Three patients with type-4 hiatal hernia, Left- herniation of colon (arrow) and stomach, Middle- herniation of colon and stomach with a placed NG tube (arrow), Right- herniation of omentum (arrow) and stomach

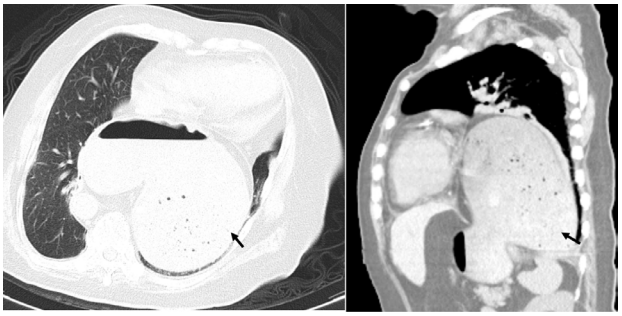

Figure 3: In the patient who had one episode of cardiac arrest, the images of axial view (left) and sagittal view (right) showed cardiopulmonary compression by a huge hiatal hernia (arrow)

Type	Number	Age	*P* value	Sex (F:M)	*P* value	stay (day)	*P* value	Op time	*P* value
			0.732		0.129		0.602		0.468
1	6	74.5 ± 4.1		04:02		5.6 ± 0.8		100.0 ± 13.4	
3	15	76.1 ± 2.2		13:02		9.1 ± 1.5		132.4 ± 16.1	
4	3	76.4 ± 1.7		01:02		7.7 ± 1.1		122.1 ± 11.5	

Table 1: The characteristics of these 24 patients with different type of hiatal hernia

Group	Number	Age	*P* value	Sex (F:M)	*P* value	stay (day)	*P* value	Op time	*P* value
			0.105		0.317		0.273		0.389
1	8	76.4 ± 1.7		05:03		8.5 ± 2.4		111.9 ± 9.6	
2	16	74.5 ± 4.1		13:03		7.2 ± 1.1		123.2 ± 16.8	

Table 2: Comparison between the two groups of patients with hiatal hernia

Type	number	Huge hernia	*P* value
			0.011
1	6	0	
3	15	5	
4	3	3	

Table 3: Correlation of the type of Hill's classification with huge hiatal hernias

[1]. Many researchers favored laparoscopic repair of the hiatal hernia that could shorten the hospital stay and minimal postoperative morbidities [2]. Banki reported a unique series; the most common type was type IV presenting in 54 of 131 patients (41%), which were treated by laparoscopic repair. Reoperation for symptomatic recurrent hiatal hernia occurred in 8 of the 99 patients (8%) [3]. Serious complications of cardiac complications have been reported in laparoscopic repair of hiatal hernia [4,5]. The complication could be related with staple fixation of the mesh. In the present series, all patients underwent limited laparotomy because of surgeon's preference. Romano defined a giant hiatal hernia that the presence of more than 1/3 of the stomach in the chest, through the diaphragmatic hiatus, representing the 5–10% of all hiatal hernias [6]. We define a huge hiatal hernia when its maximum transverse diameter is longer than one-half of the pleural cavity. This is easily measured in the computed tomography. Some researchers have reported risks of the mass effect of a huge hiatal hernia. Large hiatal hernia compressing the heart, impingement of the left atrium, pulmonary veins, and coronary sinus can result in reduced cardiac output [7]. The global heart function was significantly impaired by a standardized meal in the presence of a large hiatal hernia [8]. Saito reported an elderly woman having postprandial cardiogenic syncope caused by gastric polyp-induced pyloric obstruction [9]. Shoji reported a tension gastrothorax successfully treated by thoracotomy. In our series, a life-threatening hiatal hernia was also presented [10]. In the treatment of hiatal hernia, the mass effect and coincident surgical diseases in these aged adults should be considered.

Limitations

The present study was limited by its retrospective nature and small number of patients.

Funding and Support

This work was not supported by any organization.

Conclusion

Patients with hiatal hernia usually had significant clinical manifestations, and potentially had coincident surgical diseases because of age factor. One-third of these patients presented with cardiopulmonary compression including one event of cardiac arrest. Aggressive surgical repair of the hiatal hernia is mandatory when the diagnosis is established.

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