Full Length Research Paper

Intrathoracic anastomotic leaks after esogastrectomy and esogastric anastomosis by double abdominal and thoracic incision for esophageal cancer

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Abstract

The aim of this study was to evaluate the methods of diagnosis and the results of the treatment of anastomotic leaks after esogastrestomy for carcinoma. A retrospective study was done from January 1^{st} , 1996 through December 31, 2008. The circumstances of diagnosis and the results of the treatment of postoperative intra thoracic anastomotic leaks were analyzed. It concerned 13 patients out of 71 consecutive patients treated by esogastrectomy with immediate esogastric anastomotic leaks was 18.3%. The leaks had occurred mainly during the first 13 postoperative days. The warning signs of anastomotic leaks were a discharge of pus or bile in the pleural drain in 46.1% of cases, and pulmonary symptoms in 30.8% of cases. The patients had a medical treatment (11 cases; 76.9%). Esophageal stent was introduced by endoscopic way in 2 cases (15.4%). In one case (7.7%), another thoracotomy was performed in emergency to repair the esogastric anastomosis. The chemical glues were not used. There was no statistically significant difference (p=0.772) between the mortality of the patients who had a post-operative leak (7.7%) and the mortality without any leak (10.3%).

Keywords: Esophagus, cancer, esogastrectomy, intrathoracic anastomosis, anastomotic leak.

INTRODUCTION

The esophagectomy with lymph node dissection is the standard treatment for esophageal cancer (Peeters et al., 2008). The operating procedures have evolved considerably over the last century with the development of right thoracic route after the abdominal gastrolysis and the change of patient's position. Later, there was the development of instrument technology with the creation and development of auto-suture clips (Guivarc'h, 2006). Despite these innovations, the intra-thoracic anastomotic leaks after esogastrectomy are still frequent and severe (Mariette and Triboulet, 2005; Lozac'h et al., 2006). Their care is difficult and requires different strategies using

medical resuscitation, implantation of esophageal stents (Brams et al., 2008), chemical glue instillation (Samalin et al, 2005), or a new surgical operation (Mariette and Triboulet, 2005). How to find these fistulas and what is the expected outcome of their management? The aim of the study was to evaluate the methods of diagnosis and the outcome of the treatment of anastomotic leaks after esogastrectomy for cancer.

PATIENTS AND METHODS

Inclusion criteria

From 1996, January 1st to 2008, December 31, 79 patients with esophageal cancer underwent surgery.

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Epidemiological, clinical and therapeutic data were retrospectively identified and reviewed from patients' medical records. Were included in the study, all consecutive patients who received curative esogastric resection and gastroesophageal anastomosis by surgical method of lvor Lewis: double abdominal and right thoracic incision (Lozac'h et al., 2006; Triboulet, 2008). Minor variations to this method have been encouraged by the progress of surgery, essentially auto-sutures and laparoscopy. Eight patients (10.1%) were not included in the series as they were operated by exclusive abdominal way (2 cases), by triple abdominal, thoracic, and cervical incision (3 cases), or in whom a colonic implant was used (3 cases).

Indications

The operators were specialists in gastrointestinal surgery or thoracic surgery. During surgery, the abdominal incision was, according to the habits of the operator, a midline incision above the umbilicus (52 cases, 73.2%), a bilateral transverse subcostal incision (15 cases, 21.1%), a laparoscopy (4 cases with 2 conversions to midline laparotomy). The esophagogastric anastomosis was performed with a mechanical auto-suture clips in all cases. Additional intraoperative actions were made according to the habits of surgeons without the indications have been motivated in operating reports: it was about pyloroplasty (66 cases, 93%), jejunostomy (48 cases, 67.6%), cholecystectomy (7 cases, 9.9%). Haemostatic splenectomy was performed in 4 cases (5.6%). A blood transfusion was necessary 18 times (25.4%).

According to the conclusions of Herskovic et al. (Herskovic et al., 1992), neo adjuvant radiochemotherapy was systematic for any tumor classified as at least T3 with or without lymph node and any lymph node involvement, regardless of the extent local tumor. In all cases, the immediate postoperative monitoring was performed in intensive care room. A routine barium swallow radiograph was performed on 7th or 8th postoperative day supplemented if necessary by a CT scan or endoscopy. The management of the fistula was primarily medical, consisting mainly on antibiotics and the quiescence of the upper digestive tract. During that time, the patient's diet was provided enterally via a jejunostomy previously installed or parenterally in the absence of jejunostomy. Expansive esophageal stents was placed in persistent fistula despite medical treatment. Immediate surgery was proposed in large fistulas with early manifestation.

Statistical analysis

All statistical tests were performed using SPSS 17.0 for

Windows (SPSS Inc. 2008., Chicago, IL, USA). Univariate analysis of factors of occurrence of the leak was done using the Fisher exact test. Any difference with a p value less than 0.05 was considered statistically significant.

RESULTS

The sample was about 64 men (90.1%) and 7 women (9.9%). The average age of patients was 61.1 ± 9 years (range 42 - 79). Intoxication with alcohol and tobacco was evident with rates about 89.6% and 85.5%. The postoperative course was uneventful in 38 cases (53.5%). A postoperative complication occurred in 33 patients (46.5%). There was 13 anastomotic leaks (18.3%) and 20 other cardiovascular complications, hemodynamic or digestive. There was no statistical difference between the entire population and the population with anastomotic leak (Table 1). The warning signs of anastomotic leaks were a discharge of pus or bile in the pleural drain in 46.1% of cases, and pulmonary symptoms with or without respiratory distress in 30.8% of cases. The systematic gastrographin swallow radiograph detected the fistula in one case (7.7%), not images, but on the flow of contrast liquid by the pleural drain. The diagnosis of anastomotic leak was confirmed 8 times on chest CT and 5 times on upper gastrointestinal tract radiograph completed in 2 cases by esogastric endoscopy. Treatment was exclusively medical in most cases (Table 2). A new procedure had been associated in one case for performing a jejunostomy (7.7%). Esophageal prosthesis was placed endoscopically in 2 cases (15.4%). Thoracotomy was urgently performed once (7.7%), 48 hours after the first intervention for a reconstruction of the gastroesophageal anastomosis. After re-operation, the patient had a good and uneventful course. Chemical glues were not used.

Postoperative mortality concerned 7 patients. One was clearly linked to anastomotic death leak unsuccessfully treated by stent. In one case, death occurred after mediastinitis with no proof of leakage. For the five other patients, the causes of death were sudden cardiac failure, aortic hemorrhage, colonic necrosis, biliary cystic empyema and diabetic complication, clearly independent from the esogastric anastomosis There was no significant difference between the mortality with anastomotic leak (7.7%) and the mortality without leak (10.3%). Similarly, there was no significant difference between the lethality of anastomotic leaks and that of all other complications (Table 3). In addition, two patients with anastomotic leakage had also a complication of jejunostomy: a parietal abscess around the jejunostomy whose treatment consisted of a surgical flat and an accidental removal of the jejunostomy that has been replaced.

		Overall Population	Population with fistula	р	
Age	< 50 years	24 (33.8%)	7 (9.9%)	0.500	
	≥ 50 years	34 (47.9%)	6 (8.4%)	0.539	
Sex	Female	7 (9.9%)	0 (0%)	0.000	
	Male	51 (71.8%)	13 (18.3%)	0.336	
BMI*	Normal or decreased	21 (34.4%)	7 (11.5%)	0.050	
	Increased	28 (45.9%)	5 (8.2%)	0.356	
Pathology	Adenocarcinoma	24 (36.4%)	9 (13.6%)	0.215	
	Squamous cells carcinoma	29 (43.9%)	4 (6.1%)		
Tumor state	I	9 (12.7%)	1 (1.4%)		
	IIA	24 (33.8%)	6 (8.5%)		
	IIB	7 (9.9%)	1 (1.4%)	0.237	
	III	17 (23.9%)	3 (4.2%)		
	IVA	1 (1.4%)	2 (2.8%)		
Pre operatory RCT**	Yes	25 (35.2%)	4 (5.6%)	0.500	
	No	33 (46.5%)	9 (12.7%)	0.538	

*BMI = Body mass index ; **RCT = Radiochimiotherapy

Table 2: Initial manifestations, treatment and evolution of anastomotic leaks

N°	Operation date	Initial manifestation	Treatment	Evolution
1.	1996/06/03	Fever when starting alimentation	Medical treatment, jejunostomy at J21	Favorable
2.	1997/04/10	Pneumopathy	Medical treatment	Favorable
3.	1999/03/01	Bile and pus by the pleural drain	Medical treatment, flattening jejunostomy abcess	Favorable
4.	1999/05/31	Pus by the pleural drain	Medical treatment	Favorable
5.	1999/06/03	Gastrografine by the pleural drain	Medical treatment	Favorable
6.	1999/09/02	Pus by the pleural drain	Medical treatment	Favorable
7.	2002/08/26	Pneumopathy	Esophageal stent	Death at J42*
8.	2003/01/21	Pus by the pleural drain	Medical treatment	Favorable
9.	2003/05/07	Bile by the pleural drain	Anastomosis refection at J2	Favorable
10.	2004/09/07	Respiratory distress	Medical treatment	Favorable
11.	2005/05/20	Foods by the pleural drain	Medical treatment	Favorable
12.	2007/08/07	Purulent pulmonary secretions	Medical treatment, surgical decortication and pleural drainage	Favorable
13.	2008/10/09	Pus by the pleural drain	Esophageal stent	Favorable

* Death by hemorrhagic choc after massive hematemesis on esophageal stent

Table 3: Distribution by lethality of post operatory complications

		Alive		Dead	
	Number	%	Number	%	р
Anastomotic leaks	12	36.4%	1	3.0%	0.202
Other complications	14	42.4%	6	18.2%	

DISCUSSION

Being retrospective study is one factor of weakness of our study: there is a heterogeneity among patients and surely a selection bias. However, with a rate of 18.3%, the incidence of anastomotic leaks in our series is consistent with those of the literature, which vary between 3% and 30% depending on the authors (Mariette and Triboulet, 2005; Lozac'h et al., 2006) with a rate of 1.3% particularly low for Jiang et al. (Jiang et al., 2010). When it manifests clinically, the anastomotic leakage causes respiratory distress and sepsis with increasing mediastinal and pleural secretions (Mariette and Triboulet, 2005; Brams et al., 2008). Sometimes the diagnosis is made from a systematic imaging around the 5th post operatory day (Junemann-Ramirez et al., 2005; Atkins et al., 2004). The operative treatment of anastomotic leaks was favorable in some series (Jiang et al., 2010; Page et al., 2005) while for others, the results are considered best when patients have a conservatory treatment (Crestanello et al., 2005) as in our study. There were no significant change in mortality between leak and non leak group in our study. This fact could be surprising, as the main killer of patients is sepsis and anastomotic leak, which is one of the most feared postoperative complications after œsogastrectomy and very difficult situation for the authors [Page et al., 2005; Junemann-Ramirez et al., 2005]. However, in our context, medical treatment has been often sufficient to obtain satisfactory results. Several authors have used covered selfexpanding esophageal stents to overcome the difficulty of treating these fistulas (Roy-Choudhury et al., 2001; Hünerbein et al., 2004; Mitchel, 2006; Tuebergen et al., 2008). However, two patients in the series of Jiang et al. (Jiang et al., 2010) who had an esophageal stent died from massive uncontrollable hematemesis as in one of our observations. The in situ injection of biological glue (cyanoacrylate, Histoacryl®) has been proposed by Samalin et al. (Samalin et al., 2005) for the treatment of anastomotic leaks, especially when they are not associated with local stenosis. According to Carucci et al. (Carucci et al., 2002), the systematic feeding jejunostomy was, in 14% of cases, the cause of complications: obstruction, perforation or intussusception, jejunal wall extra-luminal collection, thickening or hematoma. deterioration or bad position of jejunostomy probe. This characteristic jejunostomy feeding disease rate is low in our study: 2 of 48 cases (4.2%). Some authors realize sometimes omentoplasty intraoperatively to protect the gastroesophageal anastomosis and prevent fistula. Thakur et al. (Thakur et al., 2004), studying a cohort of 50 patients with esogastrectomy and esogastroplasty for cancer, found a significant lack of fistula (0%) in the group of 37 patients who had achieved an omentoplasty versus 3 anastomotic leaks among the 13 patients who did not receive omentoplasty. For Bhat et al. (Bhat et al., 2006), the proportion of fistulas was 3.09% after omentoplasty versus 14.43% without omentoplasty.

CONCLUSION

With 18.3%, the post-œsogastrectomy anastomotic leaks are relatively common in our series, but their prognosis is relatively good. The diagnosis of anastomotic leaks after esogastrectomy is essentially clinical. Their treatment is a multidisciplinary challenge. The first-line treatment is medical treatment reinforced if necessary by endoscopy for the installation of an esophageal stent or surgical reoperation in the early forms. It is facilitated by a jejunostomy whose own illness should be considered.

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