

Cholecystoenteric fistula (CF) is not a contraindication for laparoscopic surgery

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Received: 16 November 1999/Accepted in final form: 11 May 2000/Online publication: 2 May 2001

Abstract

Background: Cholecystoenteric fistula (CF) is a rare complication of cholelithiasis. The aim of this study was to evaluate the safety and risk of complications when the laparoscopic approach is applied in patients with CF.

Methods: A questionnaire was mailed to all surgeons with experience of >100 cholecystectomies working in Naples, Italy, and the neighboring area.

Results: Between February 1990 and May 1999, 34 patients presented with cholecystoenteric fistula (0.2% of >15,000 laparoscopic cholecystectomies performed in the same period). These patients were allocated into two groups: the LT group (those who underwent laparotomy conversion after the diagnosis of CF), which consisted of 20 patients, four men and 16 women, with a mean age of 66.5 ± 9.3 years (range, 46–85) and the LS group (laparoscopically treated patients), which consisted of 14 patients, three men and 11 women, with a mean age of 65.6 ± 8.8 years (range, 51–74). They types of CF observed were as follows: in the former group of patients, cholecystoduodenal fistulas ($n = 11$, 55%), cholecystocolic fistulas ($n = 5$, 25%), cholecystojejunum fistulas ($n = 3$, 15%), and cholecystogastric fistulas ($n = 1$, 5%); in the latter group, cholecystoduodenal fistulas ($n = 8$, 5.1%), and cholecystocolic fistulas ($n = 4$, 28.6) and cholecystojejunum fistulas ($n = 2$, 14.3%). Stapler closure of CF was done in four LT patients and three LS patients with cholecystoduodenal fistula; it was also done in three LT patients and three LS patients with cholecystocolic fistula. Hand-sutured fistulectomy was performed in six LT patients and three LS patients with cholecystoduodenal fistula, in two LT patients with cholecystocolic fistula, and in all patients with cholecystojejunum or cholecystogastric fistula. There were no deaths or intraoperative complications in

either group. One patient in the LT group developed a bronchopneumonia postoperatively. Postoperative hospital stay was significantly longer in LT patients— 17 ± 4 vs 3 ± 1 days ($p < 0.001$).

Conclusion: Cholecystoenteric fistula is an occasional intraoperative finding during laparoscopic cholecystectomy. The results of this study, which are based on the collective experiences of 19 surgeons, illustrate the growing success of the laparoscopic approach to this condition, including a decreasing rate of conversion to open surgery over the last 3 years.

Key words: Cholecystoenteric fistula — Laparotomy — Laparoscopy — Cholecystectomy — Conversion — Complication — Cholelithiasis — Gallbladder

Cholecystoenteric fistula (CF) is a well-recognized complication of biliary lithiasis that is defined as a spontaneous track with bile flow between an inflamed gallbladder and one or more adjacent structures. Its incidence has been reported to occur in ~3–5% of patients with cholelithiasis and in 0.15–4.8% of all patients who undergo operations on the biliary tract [3, 4, 9, 13]. The preoperative diagnosis of CF is rare; it is almost always an intraoperative finding [2, 5]. This condition may be challenging if discovered during open surgery and was usually considered an absolute contraindication for laparoscopic cholecystectomy at the beginning of the laparoscopic era [2, 6]. A number of cases in which CF was treated laparoscopically have been documented [1, 5, 7, 8, 10]. The aim of this study was to assess the safety and risk of complications for the laparoscopic approach in cases of CF. Data were collected retrospectively on a multicentric basis and compared with cases of CF treated by laparotomy access.

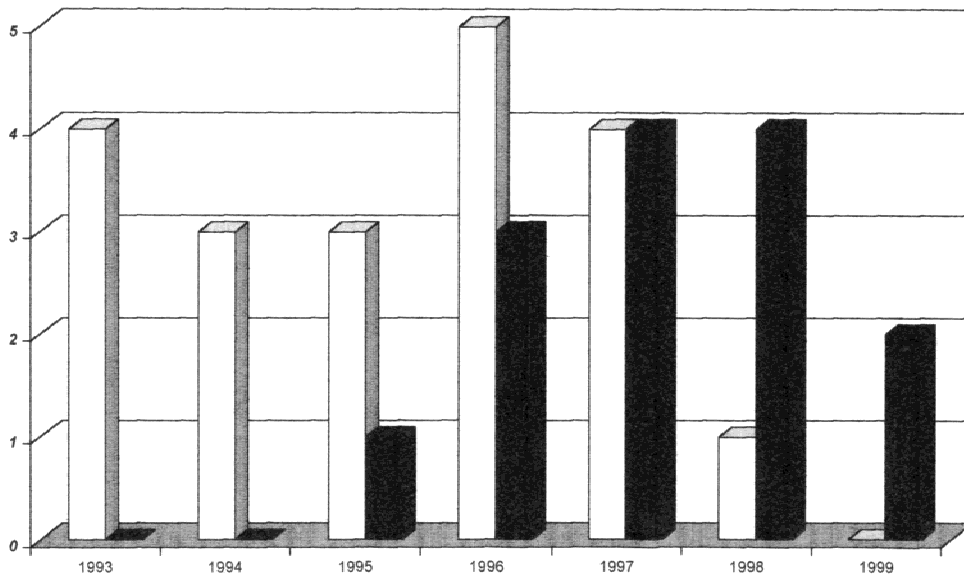


Fig. 1. Increasing success of laparoscopic technique vs laparotomic access over the last 7 years.

Methods

Questionnaires requesting specific information on patients with CF were mailed to all surgeons with an experience of >100 laparoscopic cholecystectomies who were working in Naples, Italy, and the surrounding area. The period considered ranged from February 1990 to May 1999. Over that time, >15,000 laparoscopic cholecystectomies were performed via laparoscopy by the participating surgeons. The following parameters were studied: clinical and laboratory data, surgical techniques, intra- and post-operative complications and treatment, hospital stay, and follow-up. Patients were allocated into two groups: LT (laparotomic-treated patients) and LS (laparoscopic-treated patients).

Statistical analysis was done by Student's *t*-test and Fisher's exact test. Statistical significance was defined as $p < 0.05$. All data are expressed as mean \pm standard deviation (SD), except where otherwise indicated.

Results

Cholecystoenteric fistulas were diagnosed in 34 of 15,000 patients (0.2%) over the last 9 years by 19 surgeons. All CF patients were initially approached by laparoscopic access. The conversion rate for this condition was 58.8% ($n = 20$); these patients are included in the LT group. The increasing success of the laparoscopic technique vs laparotomic access over the last 9 years is shown in Fig. 1. The two groups of patients (LT and LS) were comparable in terms of age, sex, and symptoms (Table I). CF were confirmed by intraoperative cholangiography via laparoscopy or laparotomy in all but three patients. Those three cases were the only patients who received a preoperative diagnosis by ERCP because of jaundice. They were treated by endoscopic sphincterotomy and bile duct stone extraction. Anatomical involvement of observed CF is shown in Table 2. Cholecystectomy was performed in all cases.

Data regarding the surgical treatment, complications, and follow-up of the LT group with the cholecystoduodenal type of fistula are given in Table 3. In four of eight patients in the LS group with cholecystoduodenal fistula, fistulectomy was performed by EndoGIA, leaving a small cuff of the duodenal wall attached to the gallbladder. In the other three patients, a laparoscopic suture was done. In one of

Table 1. Classification of patients according to laparotomic treatment (LT group) or laparoscopic treatment (LS group)

Group	No. of patients	Age mean \pm SD (range)	Sex	Clinical presentation
LT	20	66.5 \pm 9.8 (46–85)	4M/16F	Acute = 2 Chronic = 18
LS	14	65.6 \pm 8.8 (51–74)	3M/11F	Acute = 2 Chronic = 12

Table 2. Cholecystoenteric fistula: anatomical involvement

Organ	LT group		LS group		Total	
	<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)
Duodenum	10	(50)	8	(57.1)	18	(52.9)
Colon	5	(25)	4	(28.6)	9	(26.5)
Jejunum	3	(15)	2	(14.3)	5	(14.6)
Stomach	1	(3)	—	—	1	(3)
Duodenum + right hepatic duct	1	(3)	—	—	1	(3)
Total	20		14		34	

these cases, a Suture Assistant (Ethicon Endosurgery, Cincinnati, OH, USA) was used. In a single patient, both a stitch and an endoloop were used to close the duodenal defect.

The treatment of cholecystojejunal and cholecystocolic fistula in both the LT and LS patients is shown in Table 4.

One patient with a cholecystogastric fistula was treated with GIA.

One patient with a double cholecystoduodenal and cholecystobiliary fistula was treated with duodenorrhaphy with right hepatic duct suture and T-tube placement.

There were no intraoperative complications in any of the patients. One patient in the LT group developed bronchopneumonia postoperatively (Table 3). Postoperative hospital stay was significantly longer in patients operated by laparotomy: 17 \pm 4 vs 3 \pm 1 days ($p < 0.001$).

Table 3. Surgical treatment of LT group patients with cholecystoduodenal fistula

Patient no.	Access	Intraoperative cholangiography	Surgical procedure	Gallbladder anatomy	Hospital stay (days)	Follow-up (mo)
1	Xifoumbilical	yes	fistulectomy + duodenorrhaphy	E	32 ^a	10 n.e.d.
2	Subcostal (mini-laparotomy)	yes	GIA fistulectomy	N	19	lost
3	Subcostal	yes	TA55 fistulectomy	SA	10	20 n.e.d.
4	Xifoumbilical	yes	fistulectomy + T-tube	N	15	24 n.e.d.
5	Xifoumbilical	yes	fistulectomy + duodenorrhaphy	SA	12	3 n.e.d.
6	Xifoumbilical	yes	fistulectomy + T-tube	N	15	24 n.e.d.
7	Subcostal	yes	fistulectomy + duodenorrhaphy	N	8	2 n.e.d.
8	Subcostal (mini-laparotomy)	no	GIA fistulectomy	SA	9	4 n.e.d.
9	Subcostal (mini-laparotomy)	no	GIA fistulectomy	SA	10	2 n.e.d.
10	Subcostal	no	fistulectomy + duodenorrhaphy	SA	7	4 n.e.d.

E, empyema; SA, scleroatrophy; N, normal; n.e.d., no evidence of disease or late complication

^a Postoperative bronchopneumonia

Table 4. Surgical treatment of cholecystocolic and cholecystojejunal fistula

Fistula type	LT group (n)	LS group (n)
Cholecystocolic stapler	3	3
hand suture endoloop	2	1
Cholecystojejunal hand suture	3 ^a	2

^a T-tube placement in one patient

Discussion

Cholecystoenteric fistula is a rare clinical condition that occurs primarily in the female geriatric population, as reported in the international literature describing open biliary surgery [9, 10, 11, 12]. These data have been confirmed by the present study in the laparoscopic era (32/34 patients >60 years; 26 women vs six men). The clinical presentation is mostly chronic and is not distinguishable from the dyspeptic symptoms of noncomplicated cholelithiasis. For this reason, the diagnosis is made intraoperatively, unless the biliary tract is involved and jaundice, cholangitis, or pancreatitis are present. In three patients of the present study, the diagnosis of CF was obtained preoperatively by endoscopic retrograde cholangiopancreatography (ERCP) because of jaundice.

The standard treatment for this condition is open cholecystectomy and closure of the fistula, eventually with excision. Recently, with the development of video-laparoscopic techniques, several case reports have described the potential use of the laparoscopic approach for this unusual occurrence [1, 5, 7, 8, 10]. The strategy and techniques used in open surgery have been adapted to the laparoscopic operations. The results of this study showed no differences in terms of intraoperative and postoperative complications between the LT and the LS groups of patients, using virtually all the technology and the technique presently available in surgical endoscopy.

The mean postoperative hospital stay in the LT group was 17 ± 4 days due to the rarity of this condition. For safety

reasons, surgeons who operate on unusual cases have typically preferred to observe the patients in the postoperative period for a longer time than was probably needed. In the LT group, a T-tube was placed due to the presence of cholelithiasis in patients with cholecystoenteric fistula. T-tube placement is routinely performed by some surgeons via laparotomy or laparoscopy in the presence of bile duct stones. The reason for laparotomic conversion in these cases was the fistula and not the bile duct lithiasis.

Prasad and Foley have pointed out the need for complete excision of the fistula during performance of the laparoscopic technique to avoid the risk of leaving bowel cancer in cases of neoplastic cholecystocolic fistula and to avoid the possibility of postoperative perforation if unhealthy inflammatory tissue or ischemic gallbladder wall is left on the colon [11].

In conclusion, CF is a complication of gallstones that is occasionally found during laparoscopic cholecystectomy. It carries the highest incidence of laparotomic conversion (60% of cases in this series). The feasibility of the laparoscopic approach has been previously demonstrated in a number of case reports. The results of this study, which was based on the collective experience of 19 surgeons, demonstrate the growing success of laparoscopic techniques, with a decreasing rate of conversion to open surgery for the treatment of CF in the last 3 years.

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