

Port site recurrences after laparoscopic cholecystectomy

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Abstract Port site metastasis is a well-documented event after laparoscopic procedures in cancer patients. We summarize current epidemiological knowledge about the risk of this complication after laparoscopic/conventional cholecystectomy in patients with unexpected gallbladder cancer as well as other intraabdominal malignancies. We found 174 cases of port site metastasis after laparoscopic cholecystectomy and 12 recurrences in the surgical scar after converted or open cholecystectomy. A review of all case reports and its comparison with four international surveys show a 14% incidence of port site metastases 7 months after laparoscopic cholecystectomy for cancer. Similar numbers are available for open cholecystectomy. Our data suggest that abdominal wall metastases of gallbladder cancer are not a specific complication of laparoscopy. The long-term prognosis of patients with unknown gallbladder cancer however seems to be worsened by laparoscopy. The registry of the German Society of Surgery, which prospectively compares follow-up and prognosis of all cases of cholecystectomy, laparoscopic as well as open, in patients with incidental gallbladder cancer will definitely clarify whether laparoscopy affects the prognosis of patients with unsuspected gallbladder cancer.

Key words Port site metastasis · Laparoscopic cholecystectomy · Tumor seeding

Introduction

Early reports of inspected abdominal wall metastases following laparoscopic cholecystectomy for unapparent gallbladder cancer as well as diagnostic and therapeutic laparoscopy for abdominal and thoracic malignancies raised the prospect that laparoscopic surgical procedures may specifically increase the risk of port wound metastasis and generally of tumor cell seeding.¹ When compared with the large number of laparoscopic pro-

cedures performed worldwide, 164 published cases of laparoscopic and thoracoscopic tumor seeding may appear a very small group. Furthermore, experienced laparoscopic surgeons report no unusual tumour relapse,^{2–5} and thus in general opinion abdominal wall metastases and early peritoneal carcinosis following laparoscopy are believed to be rare, but no data on the real incidence and patterns of this eventuality are available so far. It appeared that the rate of laparoscopic tumour implantation exceeded that previously observed with conventional procedures. Of concern are reported instances of port site metastasis when it has been documented that the primary tumor was not manipulated during the procedure as well as metastasis following T1 gallbladder tumor resection.^{6,7}

With the aim of assessing the dimensions of this phenomenon, we present a review of the published case reports and compare them with the results of our own survey undertaken with the CAE (work group endoscopy) of the German Society of Surgery and three other surveys.

Material and methods

A MEDLINE database search was carried out for pertinent articles through January 2000. Each case of documented recurrence was recorded separately with regard to demographic data, tumor stage at laparoscopy, time and site of metastasis, follow-up, outcome. The data of four international surveys are reviewed with regard to the patterns and incidence of port site metastases after laparoscopic cholecystectomy. These include:

1. the CAE survey of the German Society of Surgery, personally monitored by the author;⁸
2. the Swedish survey on port site metastases from gallbladder, cancer;⁹
3. the Swiss Association of Laparoscopic and Thoracoscopic Surgery (SALTS) survey;¹⁰ and

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4. a review of the University of Texas M.D. Anderson Cancer Center, Houston.¹¹

Histologic findings were reclassified according to the recommendations of the World Health Organization. The cumulative data of the case reports and of all three surveys were compared. We determined the incidence of port site recurrences and the outcome of patients with such recurrences after laparoscopic cholecystectomy in the presence of unsuspected gallbladder carcinoma.

Results

We found at least 174 cases of port site metastasis of a malignancy after laparoscopic cholecystectomy and 12 cases of recurrence in the surgical scar after converted or open cholecystectomy in the literature. We can distinguish between case reports and larger analyses in the context of national surveys.

Clinical case reports

Between January 1991 and January 2000, a total of 83 case reports of port site recurrence of a malignancy after laparoscopic cholecystectomy were published in 61 articles. Table 1 summarizes all cases of port site metastases following laparoscopic cholecystectomy in patients with undiagnosed gallbladder cancer. Seventy-five cases occurred after laparoscopic cholecystectomy for unsuspected gallbladder carcinoma. In all cases the primary diagnosis was cholelithiasis, cholecystitis, or benign polyp, even during surgery there was no visual evidence of abnormality, and the histological examination of the specimens revealed the carcinoma first. The mean patient age was 64 years (range 36–88 years) and the female/male ratio was 10:1.

In 20 cases the carcinoma infiltrated the whole gallbladder wall involving the serosal surface or the liver (Union Internationale Contre le Cancer [UICC] stage T3). However, 26 patients had a primary T2 carcinoma without involvement of the serosal surface of the gallbladder and 10 a T1 gallbladder carcinoma infiltrating

Table 1. Case reports (1991–2000) of port site metastasis after laparoscopic cholecystectomy for unexpected gallbladder cancer ($n = 75$)

Author	Year	Age	Sex	Interval	Implants	Localization	Tumor stage	Follow-up
Drouard ¹²	1991	58	F	3 m	1	Extraction port	T3 Nx M0	7 m, alive
Gornish ¹³	1991	53	F	4 m	2	Extraction port	T3 Nx M0	6 m, died
Barsoum ¹⁴	1992	73	F	3 m	2	Extraction port	T3 Nx M0	6 m, died
Berthet ¹⁵	1992	48	F	5 w	1 + p	Port site	T2 Nx M0	—
Pezet ¹⁶	1992	58	F	4 m	2 + L + p	Extraction port	T3 Nx M0	10 m, died
Clair ¹⁷	1993	66	F	3 m	1	Extraction port	T2 Nx M0	—
Fligelstone ¹⁸	1993	49	F	6 w	1 + p	Extraction port	T1b Nx M0	—
Fong ¹⁹	1993	67	F	4 w	1 + p	Port site	T3 Nx M1	5 m, died
		60	M	3 w	1 + p	Port site	T3 Nx M1	6.5 m, died
Landen ²⁰	1993	40	F	8 m	1	Extraction port	T3	—
Landford ²¹	1993	71	F	3 m	1	Port site	T3 N1 M0	12 m, died
Lucciarini ²²	1993	40	M	5 m	multiple + p	Port site	T2 N0 M0	8 m, alive
O'Rourke ²³	1993	62	F	3 w/3 m	3	Extraction port + 2	T3 Nx M0	3 m, died
Walsh ²⁴	1993	88	F	4 m	1	Right lat. port	T3 Nx M0	6 m, died
Jatzko ²⁵	1994	67	F	24 m	1	Extraction port	T2 Nx M0	30 m, alive
Johnson ²⁶	1994	61	F	—	1 + p	Port site	T1	died
Kessler ²⁷	1994	64	F	4 m	1 + p + L	Umbilical	T2 Nx Mx G3	—
Kim ²⁸	1994	59	F	2 w	1	Extraction port	T3 N0 M0	12 m, alive
Nally ²⁹	1994	69	F	7 m	1	Extraction port	T3 Nx M0	15 m, died
Nduka ¹	1994	62	F	4 w	3	Epigastric + 2	T1 Nx M0	8 m, died
Ng ³⁰	1994	65	F	2 m	3	Extraction port	T2 Nx M0	—
Targarona ³¹	1994	67	F	5 m	2	Extraction port	T3 Nx M0 G2	died
		63	F	—	1	umbilicus	—	18 m, died
Targarona ³²	1994	61	F	—	1	Right hypoch.	—	7 m, died
Wade ³³	1994	59	F	21 d	1	Extraction port	T2 G2	36 m, alive
Weiss ³⁴	1994	41	F	14 w	1 + L	Extraction port	T3 Nx M0 G3	—
Baer ³⁵	1995	65	F	7 m	1 + L + p	Extraction port	T2 N0 M0	16 m, died
Brooks ³⁶	1995	—	—	—	1	abdominal wall	—	died
		—	—	—	1	abdominal wall	—	died
Copher ³⁷	1995	66	F	2.5 m	2	Extraction + drainage	T2 Nx M0	—
Dhote ³⁸	1995	73	F	3 m	1	Port site	T2 Nx M0	9 m, died
Hentsch ³⁹	1995	70	F	2 w	1	Port site	T2 G1	—
Hug ⁴⁰	1995	79	F	23 m	1	Right lat.	T1b N0 G1	—

Table 1. *Continued*

Author	Year	Age	Sex	Interval	Implants	Localization	Tumor stage	Follow-up
Jacobi ⁴¹	1995	73	F	2 m	2	Extraction + right side	T2 Nx M0	—
John ⁴²	1995	48	F	6 w	4	All ports	—	6 m, died
Norfleet ⁴³	1995				1	Port site		
Sailer ⁴⁴	1995	67	M	5 m	1 + p	Umbilicus	T2	7 m, alive
Sandor ⁴⁵	1995	72	F	—	1	Port site	T2 Nx M0	8 m, died
		69	F	4 m	1	Extraction port	T2 Nx M0	7 m, alive
Wibbenmayer ⁶	1995	76	F	9 m	1 + p	Port site	Tis (spillage)	10 m, died
		70	F	6 w	1 + p	Port site	T3	6 w, died
Buhr ⁴⁶	1996	66	F	3 m/5 m	2	Extraction site + 1	T2, G2	13 m, died
Cotlar ⁴⁷	1996	60	F	11 m	3	Umbilicus + 2	T2 Nx M0	18 m, died
Häußler ⁴⁸	1996	59	F	18 m		Infraumbilical	—	—
Manger ⁴⁹	1996	(65)		(revision 6 d–2 m after laparoscopy)	3 3 + p 3 3 4	Extraction port	T1b T2 T2 T2 T3	
Shibata ⁵⁰	1996	64	M	13 m	1 + p	Extraction port	T2 Nx M0	13 m, alive
Trenn ⁵¹	1996	48		12 m	1	Port site	—	9 m, died
Yamaguchi ⁵²	1996	—	—	10 m	—	Port sites	T3	—
		—	—	12 m	—		T2	—
		—	—	30 m	—		T2	—
Younan ⁵³	1996	36	F	10 m	1 + p	Extraction port	T2 G2	18 m, died
Karayiannakis ⁵⁴	1997	59	F	3 m	1	Umbilical	T2 Nx M0	
Johnson ⁵⁵	1997	61	F	6 w	1 + a	Port site + axilla	T1	12 m, died
Lomis ⁵⁶	1997	64	F	7 m	2	Extraction port + 1	T3 N0 M0	18 m, alive
Mori ⁵⁷	1997	63	M	12 m	1	Extraction port	T3 G1	22 m, alive
Principe ⁵⁸	1997	57	F	4 m	1 + L + p	Epigastrium	T1b	10 m, alive
Razzetta ⁵⁹	1997	76	F	2 m	1	Umbilical	T2 Nx M0	6 m, died
Wolken ⁶⁰	1997	64	F	4 w	1	Liver and umbilicus	T2 Nx G3	12 w, died
Reber ⁶¹	1998	59		4 m		Umbilical	T2	10 m, alive
Marmorale ⁶²	1998	52	F	6 m	1	Extraction port	T2 N1 M0 G1	24 m, alive
Garcia ⁶³	1999	76	F	8 m	1	Right upper	T1	
Jeon ⁶⁴	1999	65	F	47 m	1	Umbilical	T1b	47 m, alive
Ohmura ⁶⁵	1999	71	F	30 m	1	Extraction port	T3 N0 M0	26 m, alive
Wettstein ⁶⁶	1999	74	W	40 m	1	Extraction port	T1 Nx M0	43 m, died
Winston ⁶⁷	1999	60	F/M	17 m	3 + p	Port site +	All patients	
		3/1		(6 m–41 m)	2	abdominal	had radical	
					2	Port site	resection after	
					2 + p	Port site	laparoscopic	
					2 + p	Port site +	cholecystectomy	
					1 + p	abdominal		
						Port site +		
						abdominal		
						Port site +		
						abdominal		
Reddy ⁶⁸	2000	72	F	13 m	2	Extraction port	T3	16 m, died

m, month; w, week; p, peritoneal; L, Liver; hypoch, hypochondrium; lat., lateral

the mucosal and submucosal layer. A female patient developed port site metastasis and peritoneal carcinomatosis 9 months after laparoscopic cholecystectomy for a carcinoma in situ (UICC stage Tis) of the gallbladder that was discovered during the procedure. In 21 case reports tumor stage was not available.

Winston et al. described 6 cases of computed tomography (CT)-diagnosed port site recurrences in a total of 12 patients who underwent subsequent surgical resection of the liver and laparoscopic follow-up after the diagnosis of unexpected gallbladder cancer. The port

used for gallbladder extraction was the most common site of recurrence ($n = 29$); at least 19 recurrences, however, were in a port site that had not been used for specimen retrieval.

A simultaneous peritoneal carcinomatosis or a liver metastasis was diagnosed in 21 and 5 of the 83 patients, respectively. Recurrence occurred in a mean of 4 months (range 2 weeks–4 years) after the laparoscopic procedure, although in 14 of 75 cases the time interval between the laparoscopic procedure and port site recurrence was not mentioned. Of the 75 patients who devel-

oped port site metastases, 31 died within 2 to 43 months and 14 were still alive 7 to 47 months after cholecystectomy. The length of follow-up of the remaining 30 patients is unknown.

There are also published reports of port site metastases after laparoscopic cholecystectomy originating from latent nongallbladder tumours, such as primary tumors of the colon, ovary, and pancreas. Table 2 lists 8 cases of port site metastases from digestive tract tumors that occurred after laparoscopic cholecystectomy in patients without gallbladder carcinoma. In two cases^{69,70} laparoscopic cholecystectomy was performed for gallbladder disease and later adenocarcinoma of the colon was discovered. The patients underwent an open right hemicolectomy and developed port site recurrences of the colon carcinoma 8 and 9 months later, respectively.

A 71-year-old male developed a port site metastasis of an adenocarcinoma 6 months after laparoscopic cholecystectomy, although histological examination of the gallbladder did not find any malignancy. The autopsy showed an adenocarcinoma of the pancreas.⁷ Four other cases of port site recurrence of colon, pancreatic, and ovarian carcinoma were described after laparoscopic cholecystectomy; in one case the primary tumor remained unknown.⁷⁴ Age, interval between laparoscopy and port site metastasis, and prognosis were similar to those in the gallbladder cancer group (Table 2).

Port site metastases surveys

Table 3 lists the general data of the surveys reviewed for this article.

CAE survey. Unsuspected gallbladder cancer was diagnosed in 409 cases in a retrospective survey the

author's group performed with the German Society of Surgery.⁸ A total of 86 port site metastases in various sites were observed in 70 patients (17.1%). The port used for gallbladder extraction was the most common site of recurrence ($n = 49$), although 37 recurrences were in a port site that had not been used for specimen retrieval. In 8 cases (11.5%) a protective plastic bag was used for extraction of the gallbladder, and in 59 patients (84.3%) the gallbladder was not opened during the laparoscopic procedure or extraction. The first clinical tumor recurrence after laparoscopic cholecystectomy was found at a median of 6 months (range 2 weeks to 2.5 years).

At the time of cholecystectomy, 13 patients had T1 tumors. 55 patients had already died at the time data sampling ceased. The survival time after laparoscopy was a mean of 1 year (range 3 months–3 years). Fifteen patients were still alive 3 months to 4 years after cholecystectomy. The overall 2-year survival rate was 18.5%. In the CAE survey, port site metastases were reported after laparoscopic cholecystectomy in the presence of nonapparent intraabdominal malignancies in 5 patients. The metastatic process appeared between 3 months and 3 years after laparoscopy.

Swedish survey. A Swedish retrospective, national, multicenter study investigated the incidence and patterns of port site metastases ($n = 9$) from unsuspected gallbladder cancer ($n = 55$) after laparoscopic cholecystectomy.⁹ In this study, 24% ($\frac{9}{37}$) of patients developed port site metastases after completed laparoscopic cholecystectomy. No port site metastases developed among the patients in whom cholecystectomy was converted from laparoscopic to open surgery. One patient who developed a port site metastasis had a carcinoma in situ

Table 2. Port site metastasis after laparoscopic cholecystectomy from tumors other than gallbladder carcinoma ($n = 8$)

Author	Year	Age	Sex	Interval	Implants	Localization	Tumor stage	Follow up
Siriwardena ⁷	1993	71	M	6m	1	Midclavicular line	Pancreatic cancer	Died
Rae ⁶⁹	1995	61	F	8m	2	Umbilicus + 1	Dukes C/cecum	—
Ugarte ⁷⁰	1995	79	F	9m	1	Port site	Dukes C/colon	19m, died
Rieger ⁷¹	1998	74	M	6m	1	Port site	Cecal carcinoma	9m, died
		85	F	4m	1	Right upper	Ovarian carcinoma	9m, died
Azevedo ⁷²	1999	68	F	8m	1 + p	Umbilicus	Colon carcinoma	
Lane ⁷³	1999	69	F	12m	1	Drain site	Pancreatic tumor	
Mintz ⁷⁴	1999	50	F	18m	1	Abdominal wall	Tumor unknown	23m, alive

P, peritoneal

Table 3. Port site and surgical scar metastasis after cholecystectomy for unexpected gallbladder cancer in international surveys ($n = 103$)

Author	Year	n (%)	Mean age	Sex (F/M)	Interval	No. of implants	Follow-up	T1 stage	Site of metastasis
Ricardo et al. ¹¹	1997	6/21		2/1		6	10 m, all died		Port site
Laposcopic conversion		(29) 5/16		2/1		5	10 m, all died		4 surgical scars 1 port site
Open		(31) 8/26		2/1		8	10 m, all died		Surgical scar
Z'graggen et al. ¹⁰	1998	5/37	67 y	3.6/1	10 m	5	19 m, all died	1	3/5
		(14)	(51–87)		(6 m–1.3 y)		(12 m–3 y)		extraction site
Lundberg et al. ⁹	1999	9/55			9 m	10	5 m–4.5 y	1	6/9
		(16)			(3 m–3.5 y)				extraction site
Paolucci et al. ⁸	1999	70/409	66 y	3.3/1	6 m	86	3 m–5 y	13	49/70
		(17)	(43–81)		(14 d–2.5 y)				extraction site

of the gallbladder. The mean time between surgery and the development of recurrence was 9 months.

SALTS survey. SALTS conducted a prospective study on laparoscopic cholecystectomy from 1992 to 1995.¹⁰ Of 37 patients with adenocarcinoma of the gallbladder diagnosed after surgery, 5 (14%) developed port site recurrences a mean of 10 months later, including one early tumor of stage T1b without intraoperative perforation of the gallbladder. In 3 of 5 patients, the recurrence was localized to the umbilical port site through which the gallbladder was removed. Distant metastases were detected in all patients with recurrences at the port sites, and all of these patients died a mean 19 months after cholecystectomy. While 4 (18%) of 22 patients with completed laparoscopic cholecystectomy had recurrences at the port site, only 1 (7%) of 15 patients with a conversion to an open procedure had port site recurrence.

Review of the University of Texas M.D. Anderson Cancer Center. To determine whether laparoscopic cholecystectomy performed in patients with gallbladder cancer results in an increased incidence of abdominal wall recurrences, the patterns of all gallbladder cancers operated on laparoscopically or in open surgery at the University of Texas M.D. Anderson Cancer Center, Houston, from 1991 to 1996 were retrospectively reviewed.¹¹ The 79 patients included 52 women and 27 men. Port site metastasis was found in 6 of 21 patients who underwent complete laparoscopic cholecystectomy (29%) as well as in 1 of 16 patients after laparoscopy was converted to open surgery. Surgical scar metastases were found in 8 of 26 patients operated on with the open technique (31%), as well as in 4 of the 16 after laparoscopy was converted to open surgery. All 19 patients with abdominal wall metastases died a mean 10

months after surgery, and the overall 5-year survival rate was 10%. The authors concluded that the incidence of abdominal wall implantation of gallbladder cancer is not increased with laparoscopic surgery but it is more likely a manifestation of the aggressive nature of this tumor.

Discussion

Reports of tumor implantation after laparoscopic procedures in patients with intraabdominal malignancies are a source of increasing concern and the most important factor precluding widespread employment of laparoscopy in the treatment of malignant disease. At present, 174 cases of port site recurrence of a malignant tumor after laparoscopic cholecystectomy have been reported in the literature. Most metastases occurred in patients with advanced gallbladder cancer, but an increasing number were after surgery for T1 and T2 tumors. In this clinical situation numerous editorials and reviews have concluded that laparoscopic surgery should not be performed when cancer is suspected outside controlled studies until there are sufficient data on the clinical importance of this complication.³² Our critical analysis of the literature appears to confirm such concerns.

According to the collected data, the overall incidence of port site metastases after laparoscopic cholecystectomy for gallbladder cancer is 14%–30% after a mean of 4–10 months. Ricardo et al. in their retrospective analysis of 79 cases of gallbladder cancers described a high rate of abdominal wall metastases after laparoscopic (29%) as well as open (31%) and laparoscopic converted to open (31%) cholecystectomy.¹¹ These data suggest that abdominal wall metastases of gallbladder cancer are not a specific complication of laparoscopy.

In contrast with previously held convictions,⁷⁵ the phenomenon of laparoscopic tumor seeding is essentially mechanical in origin and mainly due to intraoperative accidents, such as disruption of the gallbladder wall and spreading of tumor cells through the extraction or working port sites. Our data show that a mucosal tumor, intact specimen, and protective retrieval bag cannot exclude port site metastasis. We must examine other, most likely biological, causes, for example, the physical influence of intraabdominal pressure on tumor cell diffusion into tissue, and the direct chemical effects of CO₂ pneumoperitoneum on tumor cell growth or on local defense against tumor cell implantation. A possible hypothesis is that CO₂ has a stimulating effect on tumor growth. Jones et al.⁷⁶ and Knolmayer et al.⁷⁷ observed that CO₂ pneumoperitoneum increases the incidence of port site metastases compared to laparotomy. However, Southall et al. found CO₂ pneumoperitoneum to be beneficial.⁷⁸ Further studies are in progress to determine the trophic potential of various insufflating agents.

Several clinical and experimental observations have suggested that surgical trauma to peritoneal mesothelial cells may promote peritoneal dissemination. Aoki et al.⁷⁹ injected cultured human gallbladder cells into the peritoneal cavity of mice immediately after surgical procedures and showed a significant lower site-specific implantation rate in the group with surgical repair of peritoneal injury (40%) compared with a group without any repair of injury. They concluded that peritoneal injury enhances peritoneal implantation of cancer cells and suggested that repair of injured peritoneum at trocar sites may reduce the frequency of wound metastases in laparoscopic surgery for unexpected gallbladder cancer.

Local application of cytotoxic or antiadherence agents at trocar sites after a laparoscopic procedure is one possible way to prevent port site metastases.⁸⁰ Jacobi et al. studied peritoneal tumor growth after application of heparin, taurolidine, or a combination of the two agents.⁸¹ Tumor growth was the least when a combination of taurolidine and heparin was used. The use of other agents such as iodine, chlorate, and chemotherapeutic agents to prevent port site metastases requires further study.

In a randomized, controlled study in 77 hamsters Wu et al.⁸² demonstrated that abdominal trocar wound excision after laparoscopy significantly decreased tumor implantation at trocar sites, but according to the observations by Winston et al.⁶⁷ gallbladder carcinoma can recur in laparoscopic port tracks even if surgical resection of the port sites is performed at subsequent hepatic resection. Nontraumatic handling and retrieval of specimens in both known and nonapparent tumors, with enlargement of the extraction site whenever necessary, might reduce the risk of laparoscopic tumor seeding.⁸³

The potentially aggressive nature of such recurrences is evident. In this review some port site recurrences and peritoneal carcinomatosis occurred within days or weeks after laparoscopic surgery. Some authors observed cases of very early recurrence, partly associated with a rapid deterioration in the course of the disease.^{16,19,23}

The outcome for patients with port site metastases of gallbladder carcinoma is poor. The overall 2-year survival rate of 18.5% in the CAE survey is very low if we consider that all patients had nonapparent tumors, and at least 13 T1 carcinoma. Similar results were reported in the Swiss survey¹⁰ with a mean survival of 19 months and a mortality rate of 100% within 3 years as well as in the review of the University of Texas M.D. Anderson Cancer Center¹¹ with a mean survival of 10 months and a 5-year survival rate of 10%. In contrast, in a series of 32 gallbladder carcinomas first diagnosed at microscopic examination after open cholecystectomy, Bergdahl⁸⁴ found a 22% 5-year and a 16% 10-year survival rate, without any therapy other than cholecystectomy. In a more recent Japanese study in 98 patients with nonapparent carcinoma of the gallbladder who underwent conventional cholecystectomy, Shirai et al.⁸⁵ found up to 90% 5-year survival for patients with T2, and 100% 5-year survival for those with T1 tumors.

These data, together with the frequent simultaneous diagnosis of peritoneal carcinomatosis and port site metastasis, have raised concerns that laparoscopic procedures might worsen the prognosis of gallbladder cancer. The long-term prognosis of patients with malignancy who undergo laparoscopic surgery is still unknown. Suzuki et al.⁸⁶ recently performed a clinicopathological study in 41 patients with postoperatively diagnosed gallbladder cancer from among 5027 patients undergoing laparoscopic cholecystectomy at 24 institutions. The cumulative survival rate was compared with that reported for gallbladder cancer diagnosed after open cholecystectomy. Port site recurrence occurred in 4 patients, and 2 died of the cancer. The 5-year survival rate was 92% for patients with early cancer and 59% for those with advanced cancer. These results were comparable with 5-year survival rates for gallbladder cancer diagnosed after open cholecystectomy. The authors concluded that the long-term prognosis of patients with undiagnosed gallbladder cancer was not worsened by laparoscopic procedures, and stated that surgeons can perform laparoscopic cholecystectomy with reasonable confidence, even if the lesion is possibly malignant.

With the aim of obtaining more knowledge of the impact of surgical technique on the prognosis of gallbladder cancer, in 1997 the Surgical Endoscopy Working Group of the German Society of Surgery started a registry of all cases of cholecystectomy, laparoscopic as well as open, with a postoperative incidental finding of

gallbladder carcinoma. After a follow-up of 5 years it will compare the prospective collected data from at least 100 patients in each arm. This study may definitively answer the question of whether laparoscopic cholecystectomy affects the course and prognosis of patients with unsuspected gallbladder cancer.

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