

Analysis of Medical Disputes and Compensation Costs Associated With Gastric Cancer Surgery at a Large-volume Center

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Research

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Abstract

Background

The incidence and costs of medical disputes in Korea are increasing annually. The purpose of this study was to identify the characteristics of medical dispute cases and analyze compensation costs in gastric cancer patients who were admitted for surgery at a single large-volume center.

Methods

Gastric cancer patients who were admitted for surgery and received compensation after filing medical disputes with the legal affairs team at our center between January 2012 and December 2017 were retrospectively registered for the study. The characteristics of and information on the disputes were reviewed and the amount of awarded compensation was analyzed according to different factors.

Results

There were 20 cases of medical disputes associated with gastric cancer surgery during the study period. In five cases, evidence of medical negligence was detected. There were 17 morbidity cases and four mortality cases. The mean compensation cost paid for settlement was USD 7,502. Length of hospital stay ($p=0.009$) and morbidity ($p=0.004$) were significantly associated with compensation.

Conclusion

Our results demonstrate foundational information on disputes regarding surgery in gastric cancer patients and the accompanying compensation costs for settlement.

Background

Surgery plays a key role in the treatment of gastric cancer because it is the only option that can achieve a cure(1). Nevertheless, recent reports have demonstrated that gastrectomy is associated with significant postoperative complications(2–4). A multicenter retrospective study conducted by the Korean Laparoscopic Gastrointestinal Surgery Study group for preoperative stage I gastric cancer in Korea reported overall morbidity and mortality rates of 14% and 0.6%, respectively(5).

Although some complications following gastrectomy are inevitable, patients may be dissatisfied with the outcomes. Medical disputes and litigation are increasing in Korea, and these are often related to surgery, with 1,907 applications for medical dispute mediation in 2016, showing a mean annual increase of 30.5%. Of the 1,907 cases, 44.7% were related to surgery(6). According to a recent report that investigated cases of lawsuits related to surgery in Korea, of 81 cases during the five years between 2005 and 2010, 23 cases were related to gastrointestinal surgery(7).

While the number of medical disputes has increased rapidly(6), details on the characteristics of disputes associated with gastric surgery or compensation have never been addressed in previous studies.

This study aimed to identify and analyze the current status of medical disputes associated with gastrectomy in patients with gastric cancer based on a single-center experience.

Methods

This study is a retrospective analysis of medical disputes in gastric cancer patients who were admitted for surgery during the six years between January 2012 and December 2017 at Asan Medical Center. Only cases in which compensation was awarded to the patient for resolution of the dispute were included in the study. The list of patients involved and the amount of monetary compensation awarded were shared by the legal affairs team at our center, and the electronic medical charts were reviewed for data collection.

To evaluate patient characteristics, data on sex, age, past medical history, details of the operation including operation name, date and combined operation, postoperative complications, or other problems during the hospital stay, the detection date, hospital stays, and survival were collected and analyzed.

Complications or other events that caused the medical disputes were categorized into three groups: surgical complications, medical complications, and other events. Adverse events were ranked according to the Clavien-Dindo classification (CDC)(8). Morbidity was defined as any adverse event classified as CDC grade III-V or other events that led to equivalent consequences. Hospital stays were counted since the day patients' chief complaints for disputes occurred and any additional admissions within 30 days related to the event were also counted for the summation of the total stay at the hospital. The presence of medical negligence was determined by two different gastrointestinal surgeons. All estimated costs are represented in U.S. dollars (USD), using the 2018 annual exchange rate of 1,100 KRW to USD 1.

Statistical analysis was performed using SPSS version 25.0 (SPSS, Inc., Chicago, IL, USA). To compare the amount of awarded compensation depending on different factors, the Mann-Whitney U test or Kruskal-Wallis H test and Spearman's rank-order correlation test were used for categorical and continuous variables, respectively. Statistical significance was set at $p < 0.05$.

The study was approved by the Institutional Review Board of Asan Medical Center (registration number: 2020 – 0993)

Results

There was a total of 20 cases of medical disputes associated with gastric cancer surgery during the study period. All cases were managed by the legal affairs team at the hospital, and none progressed to lawsuits. The baseline characteristics and details of the complications or other problems patients complained of as the cause of disputes is described in Table 1.

Table 1
The clinical details of gastric cancer patients who received medical compensation for settlement of medical disputes.

Case No.	Sex	Age	Past medical history	Operation name	Combined operation	Complications or other problems leading to disputes	Day of detection (postoperative days)	CDC	Negligence	Re-operation	Mortality	Hours
1	M	70	NAFLD	LDG	LAR	Leakage	19	IIIb	No	Yes	No	72
2	M	72	s/p LAR, LC	LDG	DP	Postoperative ileus	99	IIIb	No	Yes	No	107
3	M	71		LTG		Leakage	4	IIIa	No	No	No	78
4	M	46	Schizophrenia	LTG		Leakage	6	II	No	No	No	32
5	M	66				Anaphylaxis	0	IV	No	No	No	11
6	F	72	Parkinson's disease s/p LDG	TG		Postoperative ileus	90	V	Yes	Yes	Yes	31
7	M	31		DG		Postoperative ileus	14	IIIb	No	Yes	No	13
8	M	42		DG		Postoperative ileus	9	IIIb	No	Yes	No	20
9	M	67	s/p LT	DG		Incomplete resection	0	IIIb	Yes	Yes	No	13
10	M	73		TG		PCA errors	0	NA	No	No	No	9
11	M	61		LTG		Iatrogenic injury of small bowel	2	IIIb	Yes	Yes	No	11
12	F	72	h/o stroke	LDG		Intraabdominally retained drain	4	IIIb	Yes	Yes	No	5
13	M	67	Hypertension, DM	LDG		Acute myocardial infarction	4	V	No	No	Yes	1
14	M	64		TG		Leakage	6	II	No	No	No	31
15	F	39		LTG		Leakage	2	IIIb	No	Yes	No	146
16	M	54	Aortic dissection			Anaphylaxis	0	V	No	No	Yes	44
17	F	79		TG		Postoperative bleeding	5	V	No	No	Yes	2
18	F	72	Asthma	DG		Postoperative bleeding	1	IV	No	Yes	No	230
19	F	54		TG		Postoperative ileus	6	IIIb	No	Yes	No	20
20	M	74	Hypertension	LDG	LC	Iatrogenic injury of CBD	3	IIIb	Yes	Yes	No	23

CDC = Clavien-Dindo classification; NAFLD = nonalcoholic fatty liver disease; LDG = laparoscopic distal gastrectomy; LAR = low anterior resection; DP = distal pancreatectomy; LTG = laparoscopic total gastrectomy; DG = distal gastrectomy; TG = total gastrectomy; LC = laparoscopic cholecystectomy; PCA = patient-controlled analgesia; LT = liver transplantation; CBD = common bile duct

The events that patients complained of as the main cause for the disputes are summarized in Table 2. There were 14 (70.0%) cases related to surgical complications, including five cases of anastomotic leakage, two cases of bleeding, five cases of mechanical ileus, one case of iatrogenic injury of small bowel and a case of iatrogenic injury of common hepatic duct. Medical complications included two cases of anaphylaxis that occurred during the induction of anesthesia and a case of acute myocardial infarction (AMI) that occurred postoperatively. There were three cases that did not fall under the previous two groups that were classified as "others": a case where the surgeon missed synchronous cancer at initial surgery, leading to an additional operation, a case with a fragment of drain retained inside the abdomen due to breakage during attempted removal and a case of device-related error in patient-controlled analgesia.

Table 2
Complications and other events that led to medical disputes.

Causes of disputes	No. of patients (n = 20)	%
Surgical complications	14	70.0
Anastomotic leakage	5	25.0
Postoperative bleeding	2	10.0
Mechanical ileus	5	25.0
Iatrogenic injury of other organs	2	10.0
Medical complications	3	15.0
Anaphylaxis	2	10.0
Acute myocardial infarction	1	5.0
Other events	3	15.0
Intraabdominally retained drain	1	5.0
Incomplete resection due to missed synchronous lesion	1	5.0
Device-related error of PCA	1	5.0
PCA = patient-controlled analgesia		

Table 3
Analysis of the awarded compensation for settlement of medical disputes according to different factors

Variables		Monetary compensation*	p-value
Age (median, range)	67, 31–79		0.403 [†]
Sex			0.130 [‡]
Male	14	\$ 2,119 (273 – 11,818)	
Female	6	\$ 11,605 (772 – 46,296)	
Operation type			0.863 [‡]
Open	9	\$ 2,229 (455 – 46,296)	
Laparoscopic	9	\$ 2,545 (273 – 28,195)	
Cause of disputes			0.651 [§]
Surgical complications	14	\$ 3,545 (273 – 46,296)	
Leakage	5		
Bleeding	2		
Postoperative ileus	5		
Iatrogenic organ injury	2		
Medical complications	3	\$ 1,818 (1,682-9,787)	
Other non-medical problems	3	\$ 772 (455-3,373)	
CDC			0.205 [§]
II	2	\$ 591 (273–909)	
IIIa	1	\$ 4,545	
IIIb	10	\$ 2,387 (712 – 28,195)	
IV	2	\$ 24,057 (1,818 – 46,296)	
V	4	\$ 9,835 (1,682 – 13,327)	
Re-operation			0.412 [‡]
No	9	\$ 1,818 (273 – 11,818)	
Yes	11	\$ 2,545 (772 – 46,296)	
Hospital stays (days, median)	21.5, 1-230		0.009 ($\rho = 0.571$) [†]
Morbidity			0.004 (U = 1.0) [‡]
No	3	\$ 545 (273–909)	
Yes	17	\$ 3,373 (772 – 46,296)	
Mortality			0.211 [‡]
No	16	\$ 2,119 (273 – 46,296)	
Yes	4	\$ 9,835 (1,682 – 13,327)	
Negligence			0.800 [‡]
No	15	\$ 2,229 (273 – 46,296)	
Yes	5	\$ 2,545 (771 – 13,327)	
* All costs are represented in U.S. dollar and the values are described in median (range).			
[†] Spearman's rank-order correlation test, [‡] Mann-Whitney U test and [§] Kruskal-Wallis H test were used for the analysis of compensation payments.			

The median and mean monetary compensation for the settlement of medical disputes was USD 2,387 and USD 7,502, respectively, with a range from USD 273 to 46,296. There was no significant difference in amount of compensation according to age, sex, operation type or the cause of disputes. A total of 19 cases of adverse events excluding a case of patient-controlled analgesia (PCA) error that did not involve any kind of adverse outcome, were graded according to the

CDC; there was no statistical difference in compensation between different CDC groups. The median hospital stay was 21.5 days with a range from 1 to 230 days, and there was a positive relationship between hospital stays and the amount of awarded compensation with a coefficient of 0.571 ($p = 0.009$).

There were 17 morbidity cases that involved re-operation or intervention, ICU care or mortality associated with the adverse event. There was a statistically significant difference in awarded compensation according to morbidity ($p = 0.004$). There were four cases of mortality among the study group which included a case of postoperative AMI that led to sudden death of the patient, a case of postoperative luminal bleeding in which the patient died during preparation for an emergency operation and a case of anaphylactic shock during induction of anesthesia, where the patient failed to recover despite immediate cardiopulmonary cerebral resuscitation and extracorporeal membrane oxygenation. Another mortality case involved a patient who was delayed diagnosed with mechanical ileus with bowel ischemia at 90 days since primary gastrectomy and underwent three consecutive operations due to anastomotic failure at the first and second surgeries for ileus and died of sepsis.

Medical negligence was detected in five cases. We determined that a delayed diagnosis in the aforementioned case of mechanical ileus at 90 postoperative days may have resulted in the progression of bowel ischemia and poor surgical results. Another is the case in which a patient had to undergo an additional surgery the day after the initial distal gastrectomy because the surgeon missed and left a synchronous cancer at the stomach fundus. The case of an intraabdominally retained drain and two cases of iatrogenic injury of organs that all required surgery for resolution were also determined to be cases of medical negligence.

Discussion

The incidence of medical disputes and litigation is growing rapidly in Korea(6), and a similar trend has been observed worldwide(9–11). Most medical disputes usually occur when a patient perceives or is affected by an adverse event(12), although adverse events may not always result from medical negligence. Postoperative complications are inevitable. Failure or delay in identifying these complications is considered as medical negligence; however, despite a prompt diagnosis and appropriate management, there could be a possibility of medical disputes being raised. An extensive study carried out in the United States revealed that adverse events occurred in 3.7% of hospitalizations, and among them, only 27.6% were attributed to negligence(13).

The results of our study showed that 19 cases of medical disputes (95.0%) resulted from adverse events, and among these, five (26.3%) were consequences of medical negligence. There were other cases where unexpected complications occurred without any evidence of negligence; nevertheless, the medical staff may be held responsible for such results and suffer deleterious economic consequences(14). Our results also demonstrated that the absence of medical negligence was not associated with less compensation.

Morbidity ($p = 0.004$, $U = 1.0$) and length of hospital stay ($p = 0.009$, $\rho = 0.571$) were factors associated with the amount of compensation. This may result from the higher total medical costs that patients with morbidity and longer hospital stay had to bear, but unfortunately data on patients' medical costs were unavailable due to the retrospective nature of the study.

The mean compensation awarded was USD $7,502 \pm 2,534$. The Korean Medical Dispute Mediation and Arbitration Agency year book(6) stated that the average cost of mediation in 2016 was USD 7,964 with an annual increase of 7%. Although these data were based on disputes raised in all fields of medicine including Korean medicine and dentistry, the mean total cost was comparable to that of our study, while it was far different from that of data from the US, where an average compensation of USD 485,348 was paid(15). This disparity is due to the difference in patient medical costs. The average overall healthcare cost for gastric cancer was USD 149,900 in Western countries(16) whereas it was USD 12,577 in South Korea(17).

This study has several limitations. This study was a retrospective review and the information on disputes we could receive from the legal affairs team was limited only to cases that involved payment of compensation from the hospital for settlement of the disputes; information on the total medical costs of the patients was unavailable. In addition, this study is based on data from a single large-volume center in Korea; therefore, it may not reflect the situations in care centers of different settings or other countries.

Conclusions

Despite these limitations, the present study provides foundational information on medical disputes associated with surgery in gastric cancer patients and accompanying compensation costs awarded for settlement, which cannot be obtained from previous literature.

Abbreviations

CDC, Clavien-Dindo classification; USD, U.S. dollar; AMI, acute myocardial infarction; PCA, patient-controlled analgesia; ICU, intensive care unit

Declarations

Ethics approval and consent to participate

The study was approved by the Institutional Review Board of Asan Medical Center (registration number: 2020-0993)

Consent for publication

Not applicable.

Competing interests

The authors disclose no potential conflicts of interest.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Authors' contributions

Y.M.W. contributed to conceptualization of the study. K.A. analyzed and interpreted the data and drafted the manuscript. All authors read and approved the final manuscript.

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