

# A survey of early and advanced gastric cancer treatment by surgeons in Thailand

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## Abstract

This study shows the first survey of patterns about surgeons' approaches and current practices in early and advanced gastric cancer in Thailand. Gastric cancer is a significant health problem worldwide. International guidelines for treatment differ in their recommendations including the accompanying therapy, but the condition is potentially curable. Surgeons have played an important role in Thailand but the limitation of institutional resources and the practices for gastric cancer vary between treatment options. The aim of this study is to investigate the current practices and approaches of Thai surgeons in relation to early and advanced gastric cancer treatment. A survey was conducted on 112 surgeons who claimed to have performed clinical practice upon gastric cancer patients. Information was collected on participant demographic data, the practices approaches in early and advanced stage without metastasis and the preferable adjuvant chemotherapy. The majority of participants were 100 general surgeons (89.4%). The preferred early gastric cancer treatment proved to be endoscopic resection 83.9%, cT1bN0 group preferred laparoscopic surgery 75.9%, cT2-T4aN0 group preferred open surgery 67.8%, cT4bN0 group preferred open surgery with En bloc resection 85.7% and cN+ group preferred open surgery 70.5%. For adjuvant treatment with chemotherapy, the study showed the surgeons who prescribed and treated by themselves

was 41.9%. The preferred adjuvant regimens were S-1 50.9% and capecitabine and oxaliplatin 31.3%. This study is the first survey of the patterns of surgeons' approaches and current practices in early and advanced gastric cancer in Thailand.

## Introduction

Gastric cancer is a significant health problem worldwide, including Thailand. Global data of gastric cancer reported it fifth in incidence and third in mortality rate.<sup>1-3</sup> The accepted treatment recommendations are based on the National Comprehensive Cancer Network (NCCN) guidelines,<sup>4</sup> the European Society for Medical Oncology (ESMO), the European Society of Surgical Oncology (ESSO), the European Society of Radiotherapy and Oncology (ESTRO),<sup>5</sup> Japanese Gastric Cancer Association<sup>6</sup> and the Korean Gastric Cancer Association.<sup>7</sup> Many publications have reported that early diagnosis and standardized treatment strategies have contributed to the improvement of survival and quality of life.<sup>8-12</sup> For the advanced stage, the international guidelines differ in their recommendations for an accompanying therapy but it is potentially curable.<sup>13,14</sup>

Despite the advances in diagnosis and treatment of gastric cancer, the role of the surgeons in endoscopy, surgery and chemotherapy has remained essential in treatment in our country. Due to the limited resources and opportunities in some institutions, the surgeon practices for gastric cancer vary between treatment options. The aim of this study is to investigate the current practices and approaches of Thai surgeons in relation to early and advanced gastric cancer treatment.

## Methods of research

A survey was conducted among surgeons who attended the Association of Surgical Oncologists, Thailand (ASOT) meeting in December 2017. The gastric cancer treatment survey was designed as a series of multiple choice questions based on the National Comprehensive Cancer Network (NCCN) guidelines version 5.2017<sup>4</sup> which explored the surgeons' practice and treatment approaches in their institute. Data from responding surgeons who had performed clinical practice on gastric cancer patients were included in the study. Metastatic disease was excluded and was not reviewed in this study.

Questions covered four sections. The first section explored the demographic data such as surgical subspecialty, affiliations, mean annual gastric cancer patient number and mean annual gastric cancer surgery number. The second section reviewed the early stage gastric cancer treatments including the practices and treatment approaches of choice such as endoscopic resection, laparoscopic surgery and open surgery. The third section highlighted locore-

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Key words: Gastric cancer treatment; survey; surgeons; Thailand.

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gional gastric cancer treatment with medically fit patients such as laparoscopic surgery, open surgery, En bloc surgery, preoperative chemoradiation and perioperative chemotherapy. Locoregional disease was divided into four subgroups for survey, namely: depth of invasion limited submucosal layer (cT1bN0), locally advanced gastric cancer without invasion to an adjacent organ (cT2-4aN0), advanced tumor invasion of adjacent structure (cT4bN0) and positive lymphadenopathy on clinical preoperative evaluation (cN+). The last section of questions explored the preferred adjuvant treatment regimens, namely: fluorouracil and cisplatin, ECF (epirubicin, cisplatin, and fluorouracil), S1, capecitabine and oxaliplatin, fluorouracil and leucovorin with radiation, fluorouracil and oxaliplatin with radiation, and *other*.

Surgeons giving incomplete answers and/or did not respond to the question about performing the clinical practice of gastric cancer treatment were excluded from the study. All responses and answers remained anonymous. Duplicate responses were not allowed. The participants did not receive any remuneration in return for answering the questions. The collected data were analyzed and presented descriptively using SPSS version 25 (SPSS Inc, Chicago, USA).

## Results

A total of 112 participant surgeons who claimed to perform the clinical practice on gastric cancer patients who diagnosed early and advanced gastric cancer without metastasis, completed the process of inspection and were enrolled in this study (Table 1). The majority of participants were 100 general surgeons (89.4%), followed by 11 surgical oncologists (9.8%) and 2 upper gastrointestinal surgeons (1.8%). Most of the participants worked in the university hospital (53.5%), followed by the tertiary care hospital (31.3%) and the secondary care hospital located provincially (15.2%). The data showed the greater number of surgeons 54 (48.2%) had less than 10 gastric cancer patients per year and 43 (38.4%) had 11-20 patients per year. The number of surgeons who annually performed less than 10 gastric cancer surgeries was 95 (84.8%), which constituted the largest group of surgeons, followed by 15 (13.4%) surgeons performing 11-20 gastric cancer surgeries annually.

The clinical preference of early gastric cancer treatment demonstrated 94 (83.9%) for endoscopic resection, 11 (9.8%) for laparoscopic surgery and 7 (6.3%) for open surgery. For locoregional cases, the tumor-limited submucosal layer group (cT1bN0) showed that 85 (75.9%) surgeons preferred laparoscopic surgery, 16 (14.3%) surgeons preferred endoscopic resection and 7 (6.3%) preferred open surgery. For more advanced cases in the locoregional group (cT2-T4aN0), the responses were 76 (67.8%) in open surgery, 30 (26.8%) in laparoscopic surgery and 6 (5.4%) preferred perioperative chemotherapy. The next, cases of locoregional disease with adjacent organ invasion, the number of open surgery with En bloc resection was higher than laparoscopy and perioperative chemotherapy (Open surgery, En bloc resection, 96 (85.7%); Laparoscopic surgery, 7 (6.3%); Perioperative chemotherapy, 9 (8.0%)). The last of the locoregional diseases, the positive lymphadenopathy on clinical preoperative evaluation (cN+) group, the open surgery preference was 79 (70.5%), laparoscopic surgery was 21 (18.8%) and the perioperative chemotherapy option was 12 (10.7%) (Table 2).

For the patients after gastric cancer surgery and indicated for adjuvant treatment with chemotherapy, the study found 47 (41.9%) surgeons prescribed and treated by themselves and 65 (58.1%) surgeons consulted and referred to a medical oncologist.

**Table 1. Characteristics of participant surgeons.**

Characteristics	n (%), total n=112
<b>Surgical specialty</b>	
Upper gastrointestinal surgery	2 (1.8)
Surgical oncology	11 (9.8)
General surgery	100 (89.4)
<b>Hospital</b>	
University	60 (53.5)
Tertiary care	35 (31.3)
Secondary care, Province	17 (15.2)
Primary care, Community	0 (0)
<b>Number of gastric cancer patients (yearly)</b>	
<10	54 (48.2)
11-20	43 (38.4)
21-30	4 (3.6)
31-40	4 (3.6)
41-50	0 (0)
51-60	0 (0)
> 61	7 (6.2)
<b>Number of gastric cancer surgery (yearly)</b>	
< 10	95 (84.8)
11-20	15 (13.4)
21-30	2 (1.8)
31-40	0 (0)
41-50	0 (0)
51-60	0 (0)
> 61	0 (0)

**Table 2. Treatment approaches for early and advanced stage gastric cancer by participant surgeons.**

Approach	n (%), total n=112
<b>Early gastric cancer: c T1a N0 M0</b>	
Endoscopic resection	94 (83.9)
Laparoscopic surgery	11 (9.8)
Open surgery	7 (6.3)
<b>Locoregional disease: c T1b N0 M0</b>	
Endoscopic resection	16 (14.3)
Laparoscopic surgery	85 (75.9)
Open surgery	11 (9.8)
Preoperative chemoradiation	0 (0)
Perioperative chemotherapy	0 (0)
<b>Locoregional disease: c T2-T4a N0 M0</b>	
Laparoscopic surgery	30 (26.8)
Open surgery	76 (67.8)
Preoperative chemoradiation	0 (0)
Perioperative chemotherapy	6 (5.4)
<b>Locoregional disease: c T4b N0 M0</b>	
Laparoscopic surgery	7 (6.3)
Open surgery, En bloc resection	96 (85.7)
Preoperative chemoradiation	0 (0)
Perioperative chemotherapy	9 (8.0)
<b>Locoregional disease: c N+ M0</b>	
Laparoscopic surgery	21 (18.8)
Open surgery	79 (70.5)
Preoperative chemoradiation	0 (0)
Perioperative chemotherapy	12 (10.7)

gists. The preferred adjuvant treatment regimens of participant surgeons showed that 57 (50.9%) chose S-1, 35 (31.3%) capecitabine and oxaliplatin, 12 (10.7%) fluorouracil and leucovorin with radiation, 5 (4.5%) chose fluorouracil and oxaliplatin with radiation, 2 (1.8%) chose fluorouracil and cisplatin and 1 (0.8%) other regimen (Table 3).

## Discussion and Conclusions

Gastric cancer is a significant global health problem. Currently, the surgeons, medical oncologists and radiation oncologists in our country treat gastric cancer patients based on the National Comprehensive Cancer Network (NCCN) guidelines,<sup>4</sup> the European Society for Medical Oncology (ESMO), the European Society of Surgical Oncology (ESSO), the European Society of Radiotherapy and Oncology (ESTRO),<sup>5</sup> Japanese Gastric Cancer Association<sup>6</sup> and the Korean Gastric Cancer Association.<sup>7</sup> Many gastric cancer guidelines demonstrate powerful evidence of treatment efficacy but they are diverse in some recommendation details. Although the development of treatment practice in gastric cancer is advancing, gastric cancer is treated by surgeons, which shows the important role they have in Thailand. In fact, the limitation of budget and institutional resources have given rise to variable practices surrounding gastric cancer. This survey was proposed to investigate the current practices and approaches of surgeons in our country.

The study revealed the participants of the survey were mostly in university hospitals and tertiary care centers rather than an institutional facility of technology and instrumentation. For early gastric cancer with limited tumor invasion of mucosa, the majority of surgeons take endoscopic resection as choice of treatment. In cases of advanced stage due to tumor factor (T in TNM staging), the preferable options of treatment move from endoscopic resection to laparoscopic surgery and open surgery in advanced locoregional disease. The positive lymphadenopathy on clinical preoperative evaluation (cN+) group was dominant in open surgery over other options. Because this survey was informed by surgeons, the data reported the surgical intervention option as leading and popular compared with perioperative chemotherapy. No one chose preoperative chemoradiation in this study, which reflects one of the concerns of most surgeons performing gastric surgery after chemoradiation - the adverse effects of radiation.

This survey reflects the gastric cancer situation in Thailand. The annual number of cases suitable for gastric cancer surgery is less than the number of gastric cancer patients in clinical practice. This mirrors the patients being first diagnosed in an advanced stage, the same as data from GLOBOCAN 2102 and National

Cancer Institute of Thailand.<sup>1,2</sup> Encouragement of patients to inform themselves and screening to detect the early stage are the keys to improving quality of life and outcomes for gastric cancer patients.

In the current situation in our country, the surgeons take care of the adjuvant treatment for indicating gastric cancer after surgery. The survey showed the adjuvant chemotherapy using S-1 was favored over other prescribed regimens. Apart from the efficacy of the chemotherapeutic agent, the pharmaceutical form for oral administration is one of the considerations that has a sequence for prescription and treatment by the surgeon that other regimens provide with parenteral and/or plus radiation.

Despite this study not representing all surgeons, it is the first survey that can give the patterns of surgeons' approaches and current practices in early and advanced gastric cancer in Thailand. Going forward, the scientific, technological and clinical knowledge will synergize to improve the international guidelines and provide for development of national practice guidelines by consensus.

## Ethical statement

This study passed the ethical research process from Human Ethics Committee of Thammasat University (Faculty of Medicine) with reference number; MTU-EC-SU-0-203/60.

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**Table 3. Preferable adjuvant treatment regimens of participant surgeons.**

Adjuvant treatment regimen	n (%), total n=112
Fluorouracil and cisplatin	2 (1.8)
ECF (epirubicin, cisplatin, and fluorouracil)	0 (0)
S-1	57 (50.9)
Capecitabine and oxaliplatin	35 (31.3)
Fluorouracil and leucovorin with radiation	12 (10.7)
Fluorouracil and oxaliplatin with radiation	5 (4.5)
Other	1 (0.8)

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