IJMA

International Journal of Medical Arts

Volume 7, Issue 4 (April 2025)

http://ijma.journals.ekb.eg/

P-ISSN: 2636-4174

E-ISSN: 2682-3780

Available online at Journal Website
https://ijma.journals.ekb.eg/
Main Subject [Surgery]

Original Article

Evaluation of Wedge Resection Gastrointestinal Stromal Tumor [GIST] of the Stomach

Mohamed Hasan Abdou Abdelaze Ghoneim[1]; Saied Hosny Bendary [1]; Sayed Shaker Shaeir [2]; Mohammad Omar Mahmoud [3]

[1] Department of Surgical Oncology, Faculty of Medicine, Al-Azhar University, Cairo, Egypt.
[2] Department of Surgical Oncology, National Cancer Institute, Cairo University, Giza, Egypt.
[3] Department of General Surgery, Faculty of Medicine, Al-Azhar University, Cairo, Egypt.

Article information

Received: 29-09-2024

Accepted: 04-03-2025

DOI: 10.21608/ijma.2025.324640.2046

*Corresponding author

Email: mohamedghoneam9350@gmail.com

Citation: Ghoneim MHA, Bendary SH, Shaeir SS, Mahmoud MO. Evaluation of Wedge Resection Gastrointestinal Stromal Tumor [GIST] of the Stomach. IJMA 2025 Apr; 7 [4]: 5547-5554. DOI: 10.21608/ijma.2025.324640.2046.

ABSTRACT

Background: A gastrointestinal stromal tumor [GIST] is the most common mesenchymal tumor affecting the gastrointestinal tract with the stomach is the commonest site. Many treatment options are available aiming to prevent recurrence and metastasis.

Aim of the work: This study aimed to evaluate the oncological safety and survival rate after wedge resection of gastric GIST.

Patients and Methods: This was a retrospective study of patients with Gastric GIST who underwent wedge resection. The patient evaluation was performed in a systematic manner. Firstly, full history taking, followed by general and local [Abdominal] examinations. Results of laboratory investigations were collected. The radiological investigations included the results of ultrasound or computed tomography-guided tru-cut biopsy of the gastric mass. Early detection of recurrence was facilitated by follow-up imaging with contrast-enhanced CT scans of the abdomen every six months for five years. This follow-up protocol enabled vigilant monitoring of patients and was essential for assessing the overall outcomes.

Results: The study included 36 patients, their age ranged from 29 to 70 years with mean of 54.7±12.6 years, and 22 [61.1%] were females. Of our cases, 20 [55.6%] underwent sleeve gastrectomy, and 16 [44.4%] underwent partial gastrectomy/wide local excision. The mitotic index was <5/50 in 16 [44.4%] patients and was >5/50 in 20 [55.6%] patients. The primary closure was the most common method of reconstruction used in 34 [94.4%]. Only 6 [16.7%] patients had postoperative complication; 2 [5%] had chest infection, 2 [5%] had incisional hernia, and 2 [5%] developed postoperative leakage. The median follow-up time of the studied patients was 45.5 months. The loco-regional recurrence occurred in 2 [5.6%] patients, 2 [5.6%] patients showed distant metastasis and 1 [2.7%] patient had died.

Conclusion: Wedge resection is an efficient and safe procedure in patients with gastric GIST as it showed high overall survival rate and low rate of recurrence and postoperative complications.

Keywords: Gastric; Gastrointestinal tumor; Survival; Incisional Hernia.

INTRODUCTION

A gastrointestinal stromal tumor [GIST] is the most common mesenchymal tumor affecting the gastrointestinal tract with the stomach is the commonest site of affection [1]. GISTs affected adults between 40 and 70 years of the age. However, it rarely affects children and young adults [2].

Previously, these tumors were classified as leiomyomas, leiomyoblastomas, and leiomyosarcomas. This was based on the wrong belief they are originated from the smooth muscles. However, with the introduction of advanced technologies of electron microscopy and immunohistorychemisty, it is discovered that, GIST are originated from a pleuropotential intestinal pacemaker cell and the interstitial cell of Cajal. These cells were found within the myenteric plexus, submucosa and *muscularis propria* of the gastrointestinal [GI] tract. In addition, these cells have a myogenic and neurogenic architectures [3,4].

The molecular characteristics of these tumors were further understood by the discovery and recognition of human progenitor cell antigens, mainly cluster of differntiion-17 [CD117], CD34, and a c-kit proto-oncogene product. These cells are detected in the majority of GIST [5].

Clinically, GIST usually asymptomatic and lesions are discovered accidentally during upper GIT endoscopy for other causes. However, if symptomatic, the commonest symptoms included GIT bleeding and abdominal pain [6,7].

It is difficult to predict the metastatic potential of GIST, as it lacks the clear clinical and pathological manifestations of malignancy other than evident metastasis at surgery. In addition, the recurrence potential, either local or distant, may not present until years after the first-time diagnosis of the condition [8,9].

The complete surgical resection with safety margin is the standard treatment option of the localized primary GIST. The local excision is the treatment of choice as the submucosal and lymphatic spread are rare. Thus, gastric GISTs are often submitted to a wedge resection rather than gastrectomy whenever is feasible from the technical and surgical point of view[10,11]. Wedge resections of gastric tumors were traditionally performed via laparotomy. However, a minimally invasive laparoscopic approaches are widely accepted and well-established [12,13].

A safety margin of 1-2 cm was thought to be necessary for adequate resection and subsequent longer survival after wedge resection of GIST. However, the tumor size and not the negative margins had become the determinant factor for survival. This supports the local resection strategy of the GISTs, either wedge or submucosal resection. The combined use of laparoscopic or laparo-endoscopic approaches for complete resection of gastric GIST is associated with a low perioperative complication, with long term control of the disease [14-18].

THE AIM OF THE WORK

This study aimed to evaluate the oncological safety and survival rate after wedge resection of gastric GIST.

PATIENT AND METHODS

The study was a retrospective study that included patients with Gastric GIST who underwent wedge resection in period from January 2013 to December 2021. Patients were selected from Al-Azhar University Hospital [Sayed Galal] and National Cancer Institute [NCI], Cairo, Egypt. It is confirmed that, all patients signed an informed consent and the study protocol was approved by the local Research Ethics Committee of NCI [and Al-Azhar University.

The Inclusion criteria: We collected data for patients aged 18 to 70 years, with confirmed diagnosis of gastric GIST, irrespective of neo-adjuvant chemo or radiotherapy, who were treated by wedge resection.

The exclusion criteria were patients submitted to anatomic resection, or had distant metastasis.

The patient evaluation was completed in a systematic manner. Firstly, the data of full history were collected and documented. The results of the general and local [Abdominal] examinations were recorded. Furthermore, results of laboratory investigations were collected. These investigations included complete blood count random blood surgery, urine analysis, C-reactive protein [CRP], liver enzymes [ALT and AST], serum urea and creatinine, coagulation profile [PT, PTT and INR], Viral markers [e.g., hepatitis B, hepatitis C, HIV]. The radiological investigations included the results of ultrasound or computed tomography- guided tru-cut biopsy of the gastric mass.

In addition, we collected operative data [e.g., the details of the approach, and any postoperative complications]. Additionally, histopathological examination of tumor specimens was conducted to evaluate oncological characters and safety after wedge resection. The analysis focused on the survival rates over a minimum of two years and evaluating the overall oncological safety of the intervention.

Surgical techniques

The procedure consisted of a laparoscopic non-touch lesion-lifting method using traction sutures at the normal stomach wall around the tumor. Three ports [15, 12, and 5 mm] were placed, and pneumo-peritoneum was established. Intraoperative gastroscopy was used to confirm the location of the tumor.

For the anterior wall tumors, traction sutures were placed at the normal stomach wall near the tumor, and pulled out through the abdominal wall. When necessary, the perigastric vessels were dissected using laparoscopic coagulation sheers. After lifting the tumor, tumors with a clear operative margin were resected using a linear stapler.

For the posterior wall tumors, traction sutures were placed at the anterior stomach wall, and pulled out through the abdominal wall. Traction sutures were used instead of forceps. This enables minimization of the required number of ports. After dissecting perigastric vessels, some additional traction sutures were placed at the posterior stomach wall near the tumor. Traction sutures were pulled out through the abdominal wall, and the posterior stomach wall including the tumor was rotated to the front of operative field. The lifted tumor was then resected using a linear stapler.

When tumors were located near the esophagogastric junction [EGJ], traction sutures were placed in the area near EGJ and on the opposite side of the tumor. An appropriate distal margin was assured to prevent stenosis and deformity of EGJ. Intraoperative endoscopy was used to assess for the presence of any gastric deformity and to resect the gastric wall across the gastric longitudinal axis. Thus, avoiding the induction of stenosis and deformity of the stomach.

Follow-up

Early detection of recurrence was facilitated by follow-up imaging with contrast-enhanced CT scans of the abdomen every six months for five

years. This follow-up protocol enabled vigilant monitoring of patients and was essential for assessing the overall outcomes.

Statistical analysis: The SPSS [Statistical Package for social science] version 28 [IBM Inc., USA] was used to analyze the data. The means and standard deviations were used to describe quantitative data. Frequency and percentage were used to summarize qualitative data. From the date of diagnosis until death or the last follow-up date, the overall survival was calculated. Disease-free survivals were calculated from the surgery date till the date of documented recurrence, metastasis, death, or last follow-up. The Kaplan-Meier technique was used to conduct the survival analysis. The log-rank test was used to compare two survival curves. A p-value ≤ 0.05 was considered significant.

RESULTS

Regarding the demographic data, the age of the studied patients ranged from 29 to 70 years with mean of 54.7±12.6 years, of the studied patients, 20 [55.6%] patients were < 55 years and 16 [44.4%] ≥ 55 years. There were 22 [61.1%] females and 14 [38.9%] males [Table 1]. The size of the tumor ranged from 4 to 20 cm with a mean of 11.3±5.5 cm. The tumor size was ≤ 10 cm in 22 [61.1%] patients and > 10 cm in 14 [38.9%] patients. The pathology revealed GIST in all the studied patients 36 [100%]. Of the studied patients, 12 [33.3%] patients were of low & intermediate risk, whereas 24 [66.7%] patients were of high risk. The mitotic index was <5/50 in 16 [44.4%] patients and was >5/50 in 20 [55.6%] patients. The site of tumor was at the greater curvature in 20 [55.6%] patients and in other sites in 16 [44.4%] patients. The lymph node status was negative in 12 [33.3%] patients, while lymphadenectomy not done in 24 [66.7%] patients [Table 1].

As regard the risk stratification, the size was <5 cm in 12 [33.33%] patients, 5-10 cm in 12 [33.33%] patients, and >10 cm in 12 [33.33%] patients. Among the studied patients, 16 [44.44%] patients had mitotic index [MI] <5/50, 16 [44.44%] patients had MI >5/50 and 4 [11.11%] patients had MI >10/50. Additionally, 8 [22.22%] patients were of low risk, 4 [11.11%] patients were of intermediate risk and 24 [66.66%] patients were of high risk [Table 2]. Among the studies patients, 20 [55.6%] patients underwent sleeve gastrectomy, and 16 [44.4%] patients underwent partial gastrectomy/ wide local excision. The primary closure was the most common method of reconstruction used in 34 [94.4%] patients and Bill Roth II reconstruction was used in 2 [5.6%] patients. Only 6 [16.7%] patients had postoperative complication; 2 [5%] patients had chest infection, 2 [5%] patients had incisional hernia, and 2 [5%] patients developed postoperative leakage; one patient passed with successful conservative management and the other ended with total gastrectomy and R en Y gastrojejunostomy after failure of conservation. Of the studied patients, 4 [11.1%] patients had received neoadjuvant treatment [Gleevec], while 28 [77.8%] patients had received adjuvant treatment [Gleevec]. The median follow-up time of the studied patients was 45.5 months [Table 3].

Regarding the outcomes, loco-regional recurrence occurred in 2 [5.6%] patients, 2 [5.6%] patients showed distant metastasis and 1 [2.7%] patient had died [Table 4].

Table [5] showed the factors affecting disease survival, where sex and mitotic index were significant factors affecting disease survival, the cumulative disease survival at 60 months was significantly higher in females and in patients with Mitotic index <5/50 [P=0.004, 0.014]. The other factors were insignificant factors affecting the disease survival [Table 5; Figure 1a-j].

Regarding the Overall Survival, the failure occurred in 1 case and the cumulative overall survival at 60-months was 93.3% [Table 5; Figure 2].

Table [1]: Patient and tumor characteristics among study group

Variables		Total [n= 36]
Age [year]	Mean ± SD	54.7±12.6
	Median [min. – max.]	55 [29-70]
Age groups [n,%]	< 55 years	20 [55.6%]
	≥ 55 years	16 [44.4%]
Sex [N,%]	Female	22 [61.1%]
	Male	14 [38.9%]
Size of the tumor [cm]	Mean ±SD	11.3±5.5
	Median [min.-max.]	10 [4-20]
Size of the tumor grade [n,%]	≤ 10 cm	22 [61.1%]
	> 10 cm	14 [38.9%]
Pathology [n,%]	GIST	36[100.0%]
Risk [n,%]	Low & intermediate	12 [33.3%]
	High	24 [66.7%]
Mitotic index [n,%]	<5/50	16 [44.4%]
	>5/50	20 [55.6%]
Site of the tumor [n,%]	Greater curvature	20 [55.6%]
	Others*	16 [44.4%]
Lymph node status [n,%]	Negative	12 [33.3%]
	Lymphadenectomy not done	24 [66.7%]

* Others include gastric wall, pyloric and fundal mass and GIST: gastrointestinal stromal tumor

Table [2]: Risk stratification among study group

Characteristic		Total [n=36]
Size [n,%]	<5	12 [33.33%]
	5-10	12 [33.33%]
	>10	12 [33.33%]
MI [n,%]	<5/50	16 [44.44%]
	>5/50	16 [44.44%]
	>10/50	4 [11.11%]
Risk [n,%]	Low	8 [22.22%]
	Intermediate	4 [11.11%]
	High	24 [66.66]

MI: mitotic index.

Table [3]: Treatment characteristics and post-operative complications of the studied patients

Characteristic		Total [n= 36]
Surgery type	Sleeve gastrectomy	20 [55.6%]
	Partial gastrectomy/ Wide local excision	16 [44.4%]
Method of reconstruction	Bill Roth II reconstruction	2 [5.6%]
	Primary closure	34 [94.4%]
Postoperative complication	No	26 [72.22%]
	Yes	6 [16.7%]
Type of complications	Chest infection	2 [5%]
	Incisional hernia	2 [5%]
	Leakage	2 [5%]
Neoadjuvant treatment	No	32 [88.9%]
	Yes	4 [11.1%]
Type of Neoadjuvant treatment [n=4]	Gleevec	4 [100%]
Adjuvant treatment	No	8 [22.2%]
	Yes	28 [77.8%]
Type of adjuvant treatment	Gleevec	28 [100%]
	Median follow-up time [months]	45.5 [1.3-81.1]

*One patient may have more than one complication.

Table [4]: Outcome of the studied patients

Characteristic		Total [n= 36]
Loco-regional recurrence [n,%]	No	34 [94.4%]
	Yes	2 [5.6%]
Distant metastasis [n,%]	No	34 [94.4%]
	Yes	2 [5.6%]
Status [n,%]	Dead	1 [2.7%]
	Alive	35 [97.3%]

Table [5]: Factors affecting disease survival

		n	No. failures	Cumulative disease survival at 60 months [%]	p-value
Whole Group		36	5	75.3	
Age groups [years]	< 55	20	2	80	0.244
	≥ 55	16	3	68.6	
Sex	Male	14	5	45.7	**0.004***
	Female	22	0	100	
Risk	Low& intermediate	12	0	100	0.166
	High	24	5	67.1	
Site of the tumor	Greater curvature	20	2	90	0.315
	Others*	16	3	57.1	
Type of Surgery	Sleeve gastrectomy	20	2	90	0.315
	Others	16	3	57.1	
Neoadjuvant treatment	No	32	3	85.2	0.294
	Yes	4	2	50	
Adjuvant treatment	No	8	0	100	0.502
	Yes	28	5	73.8	
Tumor Size	<10 cm	22	3	72.7	0.891
	>10 cm	14	2	85.7	
Mitotic index	<5/50	16	0	100	**0.014***
	>5/50	20	5	50	
Overall survival		**6**	1	93.3	

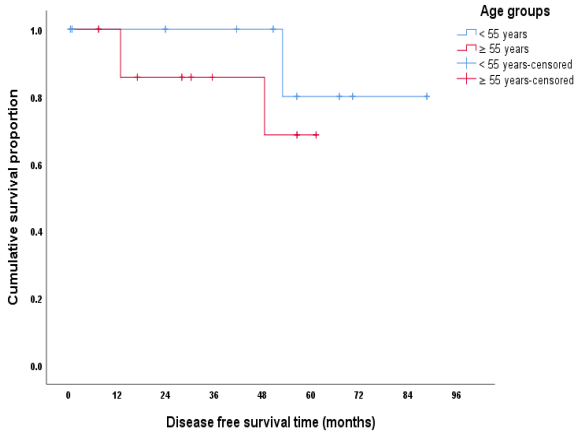

Figure [1a]: Age as factor affecting the disease free survival

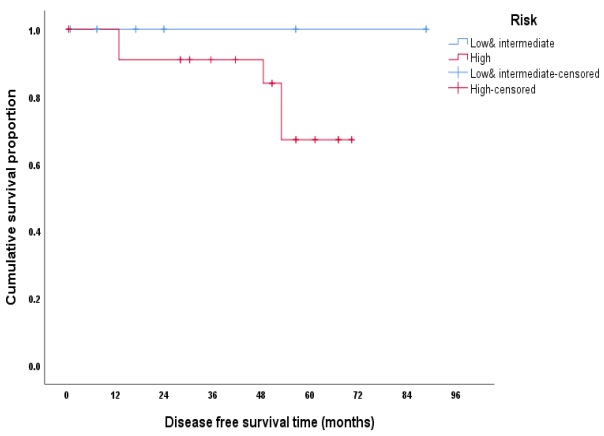

Figure [1b]: Risk as factor affecting the disease free-survival

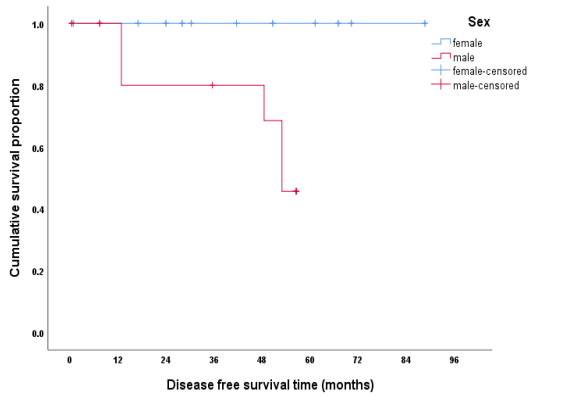

Figure [1c]: Sex as factor affecting the disease free survival

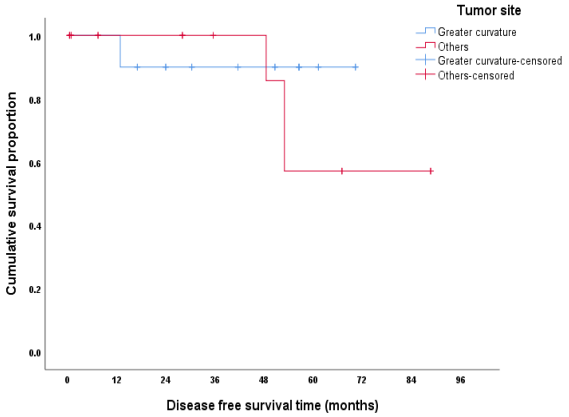

Figure [1d]: Tumor site as factor affecting the disease free-survival

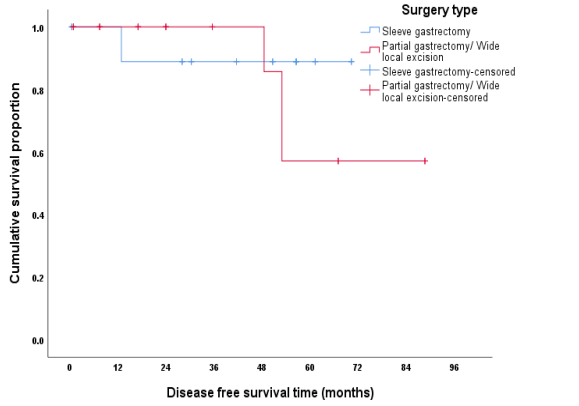

Figure [1E]: Surgery type as factor affecting the disease free survival

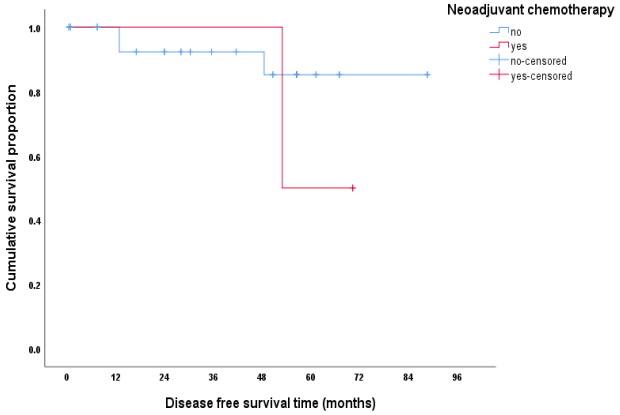

Figure [1F]: Neoadjuvant chemotherapy as factor affecting the disease free survival

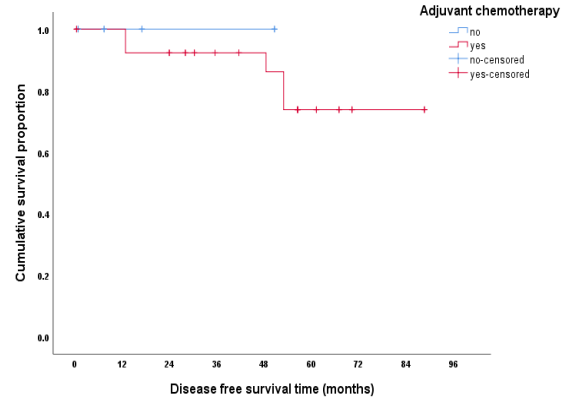

Figure [1G]: Adjuvant chemotherapy as factor affecting the disease free survival

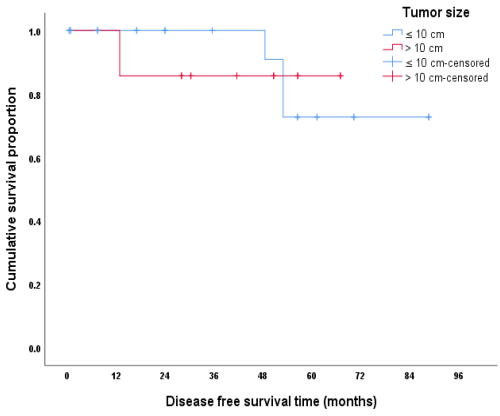

Figure [1H]: Tumor size as factor affecting the disease free survival

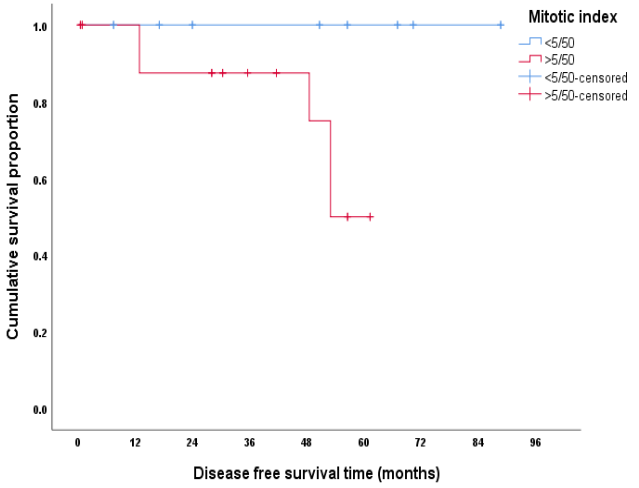

Figure [1-i]: Mitotic index as factor affecting the disease free survival

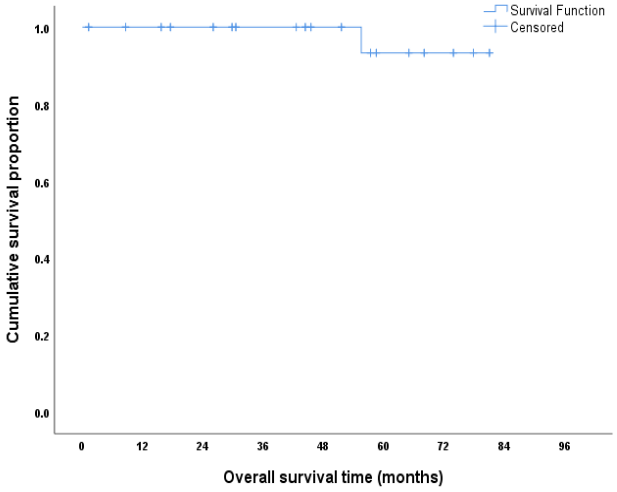

Figure [1-j]: Tumor site as factor affecting the disease-free survival

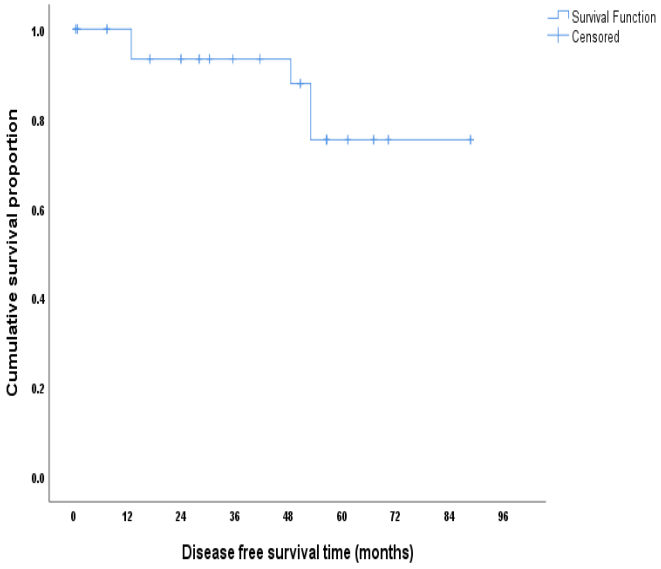

Figure [2]: Overall Survival of the studied patients

DISCUSSION

This study aimed to evaluate oncological safety and survival rate after wedge resection of gastric gastrointestinal stromal tumor [GIST]. The age of the studied patients ranged from 29 to 70 years with mean of 54.7±12.6 years. There were 22 [61.1%] females and 14 [38.9%] males.

Kim *et al.* [19] study evaluated the clinical features and the prognosis of surgically treated gastric GISTs. They found that 157 males [38.7%] and 249 females [61.3%], with a mean age of 60.8 ± 10.8 years.

In addition, a more recent single center retrospective study by **Joo et al.** [20] evaluated the clinical outcomes of endoscopic treatment for gastric GISTs and found that the mean patient age was 57.9±12.2 years. Females represented 57.8% of the patients.

On the other side, **Xiong *et al.*** [21] enrolled 1027 patients were diagnosed with primary GIST and reported that, among the entire cohort, the median age was 57.1 years and 227 [53.3%] of patients were men.

In the current work, the size of the tumor ranged from 4 to 20 cm with a mean of 11.3±5.5 cm. The tumor size was ≤ 10 cm in 22 [61.1%] patients and > 10 cm in 14 [38.9%] patients. However, some studies showed smaller tumor size.

Kim *et al.* [19] study showed that the mean tumor size was 4.9 cm [range, 0.3−29 cm]. Also, **Joo *et al.*** [20] retrospective study showed that the mean tumor size was 2.1±1.1 cm.

In disagreement with us, **Lin *et al.*** [22] compared the long-term oncological outcome of laparoscopic and open resection of large gastric GISTs and found that the mean tumor size was 6.0 ±0.83 cm in open group and 6.3 ± 1.07 cm in laparoscopic group.

The pathology revealed GIST in all the studied patients 36 [100%]. Of the studied patients, 12 [33.3%] patients were of low & intermediate risk, whereas 24 [66.7%] patients were of high risk. However, **Xiong *et al.*** [21] differed from our results and noted that, according to the modified NIH classifications, 92 [21.6%] cases were classified as very low risk, 144 [33.8%] as low risk, 101 [23.7%] as intermediate risk, and 89 [20.9%] as high risk.

The mitotic index was <5/50 in 16 [44.4%] patients and was >5/50 in 20 [55.6%] patients. The site of tumor was at the greater curvature in 20 [55.6%] patients and in other sites in 16 [44.4%] patients. The lymph node status was negative in 12 [33.3%] patients, while lymphadenectomy not done in 24 [66.7%] patients. The size was <5 cm in 12 [33.33%] patients,

5-10 cm in 12 [33.33%] patients, and >10 cm in 12 [33.33%] patients.

In contrary, **Kim *et al.*** [19] study stated that tumor sizes were ≤ 2 cm in 51 patients [12.6%], 2 cm < tumor size ≤ 5 cm in 248 [61.1%], 5 cm < tumor size ≤ 10 cm in 79 [19.5%], and >10 cm in 28 [6.9%], with a mean size of 4.9 cm [range, 0.3−29.0 cm].

In the current work, 16 [44.44%] patients had MI < 5/50, 16 [44.44%] patients had MI >5/50 and 4 [11.11%] patients had MI >10/50. In difference with us, **Kim *et al.*** [19] reported that mitotic counts were ≤ 5/50 in 306 patients [75.4%], 5/50 < mitotic count ≤ 10/50 in 91 [22.4%], and > 10/50 in 9 [2.2%].

Additionally, 8 [22.22%] patients were of low risk, 4 [11.11%] patients were of intermediate risk and 24 [66.66%] patients were of high risk. On the other hand, **Joo *et al.*** [20] retrospective study noted that 54.8% of the patients in the very-low-risk group, followed by the low-risk [28.1%], intermediate-risk [11.9%], and high-risk groups [5.2%].

Among the studies patients, 20 [55.6%] patients underwent sleeve gastrectomy, and 16 [44.4%] patients underwent partial gastrectomy/ wide local excision. The primary closure was the most common method of reconstruction used in 34 [94.4%] patients and Bill Roth II reconstruction was used in 2 [5.6%] patients. Only 6 [16.7%] patients had postoperative complication; 2 [5%] patients had chest infection, 2 [5%] patients had incisional hernia, and 2 [5%] patients developed postoperative leakage; one patient passed with successful conservative management and the other ended with total gastrectomy and R en Y gastrojejunostomy after failure of conservation.

In line with the previous findings, **Koga *et al.*** [23] found that, in 89 patients undergoing gastric wedge resection, the incidence of postoperative complications was 10.1%; 5.6% of the patients developed late sequelae, all of which were mild. In addition, **Joo *et al.*** [20] detected the pathologic and clinical outcomes of endoscopic resection of gastric gastrointestinal stromal tumor and showed that 19 patients [14.1%] had complications. However, their complications were as the following, microperforation occurring in 6.7% of patients, followed by microperforation 4.4% of patients and major bleeding 3.0% of patients.

Of the studied patients, 4 [11.1%] patients had received neoadjuvant treatment, while 28 [77.8%] patients had received adjuvant treatment. The median follow-up time of the studied patients was 45.5 months. **Solaini *et al.*** [24] compared open versus laparoscopic versus robotic gastric gastrointestinal stromal tumor resections and found that in open resections group, neo-adjuvant treatment was given in 4 [28.6] of patients.

On the other side, **Gertsen *et al.*** [25] evaluated the safety and feasibility of minimally invasive gastric resection [MIG] of large [>5 cm] GIST. The authors found that, in 4 patients, adjuvant treatment was indicated, and the median follow-up was 31 months, this difference may be due to that their surgery was minimally invasive. However, **Joo *et al.*** [20] had the mean follow-up period of 36.5±30.1 months [range, 6 to 124 months].

In our study, loco-regional recurrence occurred in 2 [5.6%] patients, 2 [5.6%] patients showed distant metastasis and 1 [2.7%] patient out of 36 patients had died.

In line with our study results, **Solaini *et al.*** [24] compared open versus laparoscopic versus robotic gastric gastrointestinal stromal tumour resections. In open group, they found that 1 [7.1] of the patients detected recurrence and 1 [7.1] of the patients had died.

In addition, a previous study by **Koga *et al.*** [23] included 138 patients with GIST underwent surgery including 112 patients with gastric GISTs and stated that postoperative recurrence was observed in 3 [2.2%] patients.

Similarly, **Lin *et al.*** [22] compared the long-term oncological outcome of laparoscopic and open resection of large gastric GISTs and found that 1 in the open resection of GISTs had recurrence of tumor.

Furthermore, **Lee *et al.*** [26] assessed the oncologic safety of laparoscopic wedge resection with gastrotomy [LWR-G] compared to LWR without luminal exposure. 2 patients in the LWR without gastrotomy group experienced recurrence. While, no gastric GIST-related death was recorded in any group during the study period.

On the other side, some studies were in difference with us, such as **Kim *et al.*** [19] who showed that there were 11 recurrent cases [2.7%] and observed no recurrence after laparoscopic wedge resections, and **Gertsen *et al.*** [25] who showed that one patient presented with local recurrence 2 years after the index resection. However, **Joo *et al.*** [20] reported that a total of four patients [3.4%] had recurrences during the follow-up period.

In this study, sex and mitotic index were significant factors affecting disease survival, the cumulative disease survival at 60 months was significantly higher in females and in patients with Mitotic index <5/50. The other factors [e.g., age, risk, site of tumor, type of surgery, neo-adjuvant treatment, adjuvant treatment, and tumor Size] were insignificant factors affecting the disease survival. The overall survival in our study, the failure occurred in 1 case and the cumulative overall survival at 60-months was 93.3%.

Similar to these results, **Lin *et al.*** [22] noted that the 5-year recurrence-free survival were 100% for the open and 94.2% for the laparoscopic group. Additionally, **Joo *et al.* [20]** study stated that the 5-year recurrence-free survival rates were 92.5%.

On the other side, **Gertsen *et al.*** [25] included 22 patients with gastric GIS and showed that the 5-year disease-free survival was 74%.

Overall, the results of the current work are in line with **Zhang *et al.*** [27] who aimed to evaluate the safety and efficacy of laparoscopic local gastrectomy for GIST at the EGJ. They reported that, the procedure [Wedge resection [n=27], opening all layers of the stomach [n=11]] was associated with an excellent short-term effect, with minimal complications.

Conclusion:

From the current study results, wedge resection is an efficient and safe procedure in patients with gastric GIST as it shows high overall survival rate and low rate of recurrence and postoperative complications. Females and patients with Mitotic index <5/50 may had a higher disease survival rate.

Limitations:

The study had a relatively small sample size comparing to previous studies which may contributed to insignificant results. In addition, there was a limitation of the lack of comparison group. It was a retrospective observational study with low evidence based, so we recommend conducting it as a prospective or a randomized trial.

Financial and non-financial activities and relationship of interest:
None

REFERENCES

1. Gheorghe G, Bacalbasa N, Ceobanu G, Ilie M, Enache V, Constantinescu G, Bungau S, Diaconu CC. Gastrointestinal Stromal Tumors-A Mini Review. J Pers Med. 2021 Jul 22; 11[8]:694, doi: 10.3390/jpm11080694.

2. Dudzisz-Śledź M, Klimczak A, Bylina E, Rutkowski P. Treatment of Gastrointestinal Stromal Tumors [GISTs]: A Focus on Younger Patients. Cancers [Basel]. 2022 Jun 8; 14 [12]:2831, doi: 10.3390/cancers14122831.

3. Moga DF, Vlădoiu G, Frățilă AM, Dan AA, Popa D, Oprea V. Understanding Gastric GIST: From Pathophysiology to Personalized Treatment. J Clin Med. 2024 Jul 9; 13[14]:3997, doi: 10.3390/jcm13143997.

4. Khan J, Ullah A, Waheed A, Karki NR, Adhikari N, Vemavarapu L, et al. Gastrointestinal Stromal Tumors [GIST]: A Population-Based Study Using the SEER Database, including Management and Recent Advances in Targeted Therapy. Cancers [Basel]. 2022; 14[15]:3689, doi: 10.3390/cancers14153689.

5. Davila RE. A Gastroenterologist's Approach to the Diagnosis and Management of Gastrointestinal Stromal Tumors. Gastroenterol Clin North Am. 2022 Sep; 51[3]:609-624, doi: 10.1016/j.gtc.2022.06.009.

6. Mohamed YAE, Abdelghaffar MM, Khalaf SS, Amin AF, Mostafa MA, Harb O, Mohamed AH, Abdelfattah AR. Gastrointestinal stromal tumor of the duodenum presenting with shock and massive upper and lower gastrointestinal bleeding: a case report and review of the literature. J Med Case Rep. 2024 Jun 22; 18[1]:286, doi: 10.1186/s13256-024-04597-x.

7. Giordano A, Moroni F, Di Filippo G, Cammelli F, Baraghini M, Giudicissi R, et al. Emergency duodenal resection for giant GIST with acute gastrointestinal bleeding A case report. Ann Ital Chir. 2021 Oct 25; 10:S2239253X21036707.

8. Perati SR, Blakely AM. Modern times call for modernized treatment strategies for advanced gastrointestinal stromal tumors. J Gastrointest Oncol. 2024 Aug 31; 15[4]:2013-2015, doi: 10.21037/jgo-24-501.

9. Schaefer IM, DeMatteo RP, Serrano C. The GIST of Advances in Treatment of Advanced Gastrointestinal Stromal Tumor. Am Soc Clin Oncol Educ Book. 2022 Apr; 42:1-15, doi: 10.1200/EDBK_351231.

10. Paganini AM, Quaresima S, Balla A, Palmieri L, Corallino D, Di Saverio S, Morales-Conde S. Clinicopathological Features and Surgical Management of Gastrointestinal Stromal Tumors: State-of-the-Art. In: Morgado-Diaz JA, editor. Gastrointestinal Cancers [Internet]. Brisbane [AU]: Exon Publications; 2022 Sep 30. Chapter 4. PMID: 36343151.

11. Kosmidis CS, Alexandrou V, Koimtzis GD, Mantalovas S, Varsamis NC, Koulouris C, et al. Treatment of a Gastrointestinal Stromal Tumor [GIST] Adherent to the Spleen and the Tail of the Pancreas: A Case Report. Am J Case Rep. 2020 Mar 31; 21: e918278, doi: 10.12659/AJCR.918278.

12. Umman V, Kılınçarslan Ö, Temel R, Bağdat Y, Tunalı S, Ersin S, Sezer TÖ, Fırat Ö. Long-Term Efficacy of Single-Incision Laparoscopic Intragastric Resection in Treating Gastrointestinal Stromal Tumors. Turk J Gastroenterol. 2024 Mar 4;35[3]:193-203, doi: 10.5152/tjg.2024.24080.

13. Pappalardo V, Lianos GD, Morabito M, Gianazza S, Cassinotti E, Frattini F, et al. Laparoscopic vs Open Treatment for Gastric and Non-Gastric Gastrointestinal Stromal Tumors: a Two-Center Experience. Surg Technol Int. 2023 Jun 15; 42:sti42/1699, doi: 10.52198/ 23.STI.42.GS1699.

14. Freeman HD, Mudgway R, Tran Z, Kim R, Lum SS, Namm JP, et al. Oncologic outcomes and survival of modern surgical approaches for gastric gastrointestinal stromal tumor [GIST]. Surg Endosc. 2024 Aug 23, doi: 10.1007/s00464-024-11152-8.

15. Bangolo A, Fwelo P, Al-Qatish T, Bukasa-Kakamba J, Lee T, Cayago AG, et al. Outcomes of Patients with Gastrointestinal Stromal Tumors in the Past Decade. Med Sci [Basel]. 2023 Aug 28; 11[3]:54, doi: 10.3390/ medsci11030054.

16. Colapkulu-Akgul N, Gunel H, Beyazadam D, Ozsoy MS, Alimoglu O. Gastrointestinal Stromal Tumors: Recurrence and Survival Analysis of 49 Patients. Middle East J Dig Dis. 2023 Jan; 15[1]:19-25, doi: 10.34172/ mejdd.2023.315.

17. Wang L, Ni Z, Xu W, Mei Y, Li C, Zhu Z, Liu W. Clinical characteristics and outcomes of gastro-intestinal stromal tumor patients receiving surgery with or without TKI therapy: a retrospective real-world study. World J Surg Oncol. 2023 Jan 23; 21[1]:21, doi: 10.1186/s12957-023-02897-y.

18. Landi B, Blay JY, Bonvalot S, Brasseur M, Coindre JM, Emile JF, et al. Gastrointestinal stromal tumours [GISTs]: French Intergroup Clinical Practice Guidelines for diagnosis, treatments and follow-up [SNFGE, FFCD, GERCOR, UNICANCER, SFCD, SFED, SFRO]. Dig Liver Dis. 2019 Sep; 51[9]:1223-1231, doi: 10.1016/j.dld.2019.07.006.

19. Kim IH, Kim IH, Kwak SG, Kim SW, Chae HD. Gastrointestinal stromal tumors [GISTs] of the stomach: a multicenter, retrospective study of curatively resected gastric GISTs. Ann Surg Treat Res. 2014 Dec; 87[6]:298-303, doi: 10.4174/astr.2014.87.6.298.

20. Joo MK, Park JJ, Lee YH, Lee BJ, Kim SM, Kim WS, et al. Clinical Efficacy and Safety of Endoscopic Treatment of Gastrointestinal Stromal Tumors in the Stomach. Gut Liver. 2023; 17[2]:217-225, doi: 10.5009/ gnl210454.

21. Xiong Z, Wan W, Zeng X, Liu W, Wang T, Zhang R, et al. Laparoscopic Versus Open Surgery for Gastric Gastrointestinal Stromal Tumors: a Propensity Score Matching Analysis. J Gastrointest Surg. 2020 Aug; 24[8]: 1785-1794, doi: 10.1007/s11605-019-04318-6.

22. Lin SC, Yen HH, Lee PC, Lai IR. Oncological outcomes of large gastrointestinal stromal tumors treated by laparoscopic resection. Surg Endosc. 2023 Mar; 37[3]:2021-2028, doi: 10.1007/s00464-022-09693-x.

23.Koga T, Hirayama Y, Yoshiya S, Taketani K, Nakanoko T, Yoshida R, et al. Necessity for resection of gastric gastrointestinal stromal tumors ≤ 20 mm. Anticancer Res. 2015 Apr;35[4]:2341-4. PMID: 25862898.

24. Solaini L, Cavaliere D, Fico V, Milone M, De Pascale S, Desiderio J, et al. Open versus laparoscopic versus robotic gastric gastrointestinal stromal tumour resections: A multicentre cohort study. Int J Med Robot. 2021 Apr; 17[2]: e2198, doi: 10.1002/rcs.2198.

25. Gertsen EC, van Boxel GI, Brosens LAA, Ruurda JP, van Hillegersberg R. Minimally Invasive Resection of Large Gastric Gastrointestinal Stromal Tumors. Dig Surg. 2020; 37[6]:441-446, doi: 10.1159/000510386.

26. Lee CM, Park S. Laparoscopic techniques and strategies for gastrointestinal GISTs. J Vis Surg. 2017 May 4; 3:62, doi: 10.21037/jovs.2017.03.09.

27. Zhang H, Liu X, Zheng Z, Yin J, Zhang J. Safety, efficacy, and selection strategy of laparoscopic local gastrectomy for gastrointestinal stromal tumors in the esophagogastric junction. Front Surg. 2022 Sep 27; 9:1015126, doi: 10.3389/fsurg.2022.1015126.

IJMA

International Journal of Medical Arts

Volume 7, Issue 4 (April 2025)

http://ijma.journals.ekb.eg/

P-ISSN: 2636-4174

E-ISSN: 2682-3780