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Study of Re Obstruction after Stenting in Upper GI Malignancies

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Abstract: ***In this prospective study conducted between 2022 and 2023 at Govt Rajaji hospital, maduraithe post operative outcomes of palliative stenting in 29 patients with advanced upper GI malignancies representing with obstructive symptoms areexamined.in my view thr research sheds light on a critical intervention for a vulnerable population primarily older adults (mean age 69.2 yrs) with a notable male predominance (62.1). it is evident that esophageal cancer dominated the cohort (48.3%) reflecting its prevalence in such cases, while the uniform use of uncovered self-expanding metallic stents (SEMS) for all participants suggests a standardized yet contextually apt approach to care. This study reveals an impressive absence of postoperative complications like re-obstructioon or stent migration, which contrast with existing literature and hints at the skill of the procedural team or the rigor of patient selection. Beyond this the rapid resumption of oral intake within 24 hrs and mean hospital stay of just 3.52 days underscore the procedure's practical benefits. That said the modest survival time (81.1 days) and low quality of life scores (mean WHOQOL -100 OF 41.1) remind us of the terminal nature of the conditions, raising questions about how we might enhance patient well-being beyond mere symptom relief. This suggest that while palliative stenting excels in safety and short term efficacy its role in the broader narrative of end -of-life care warrants deeper exploration.***

Keywords: Palliative stenting, upper GI malignancies, postoperative outcomes, esophageal cancer, quality of life

1. Aim

To evaluate the postoperative results of the patients who are affected with the upper GI malignancy who are coming with obstruction who underwent palliative stenting.

2. Objectives

- **Primary Objective**: To determine the rate of postoperative complications which include re-obstruction and migration of the stent.
- **Secondary Objectives:** To determine additional outcomes such as bleeding, aspiration, gastroesophageal reflux, and dislodgement of stent.

3. Methodology

- **Study Design** This is a prospective study conducted over the period of 12 months, from 2022 to 2023.
- **Study Location** Government Rajaji Hospital and Madurai Medical College, Madurai.
- **Study Duration** It was conducted for 12 months.
- **Study Participants** All the patients with an upper GI malignancy who presented with an obstructive symptom and were deemed fit for palliative stenting were included in this study.

Inclusion and Exclusion Criteria

Inclusion Criteria:
- Patients with various medical conditions that rule out surgery or gastrointestinal anastomosis.
- Patients with severe comorbid conditions, like uncontrolled diabetes mellitus, hypertension, renal, cardiac, or liver dysfunctions.
- Patients who provided informed and written consent to participate.

Exclusion Criteria:
- Patients with complications of GI malignancies like perforation, complete obstruction, or severe bleeding.
- Patients who did not give consent to become part of the study.

Number of Participants: Twenty nine patients were enrolled in the study.

Data Collection Procedure
- All admitted patients suffering from upper GI malignancy and obstructive symptoms were clinically and radiologically assessed.
- Eligible patients were treated with palliative stenting.
- Data such as demographics, clinical examination findings, diagnosis, comorbidities, laboratory investigations, and radiological imaging were recorded on a pre-designed proforma.
- Postoperative outcomes were recorded and follow ups were observed for restenosis, stent migration, and other complications.

Outcome Measures
- Primary Outcome Measures: Incidence of re-obstruction, incidence of stent migration.
- Secondary Outcome Measures: Incidence of bleeding, aspiration, gastroesophageal reflux, and stent dislodgment.

Statistical Analysis
Data analysis was performed using SPSS 26.0 statistical software. Descriptive statistics applied in this study: it summed up the demographic and clinical characteristic of participants. Continuous variables were age, length of hospital stay, stent patency duration, survival time, and quality of life scores that are presented as means, medians, standard deviations, and ranges. The categorical variables were: gender, primary diagnosis, tumor location, type of stenting procedure, type of stent, tumor stage, preoperative symptoms, postoperative complications, pain scores, and

time to oral intake, respectively presented as frequencies and percent 10. Ethical Considerations

- Obtained ethical approval from the Institutional Ethical Committee.
- Taken written informed consent from all participants before registration in the study.
- The paper had met the ethical standards, and confidentiality of the wellbeing of all participants was ensured. No financial support, no conflict of interest.

Palliative stenting Images from our study participants

Figure 1: Oesophageal stent procedure

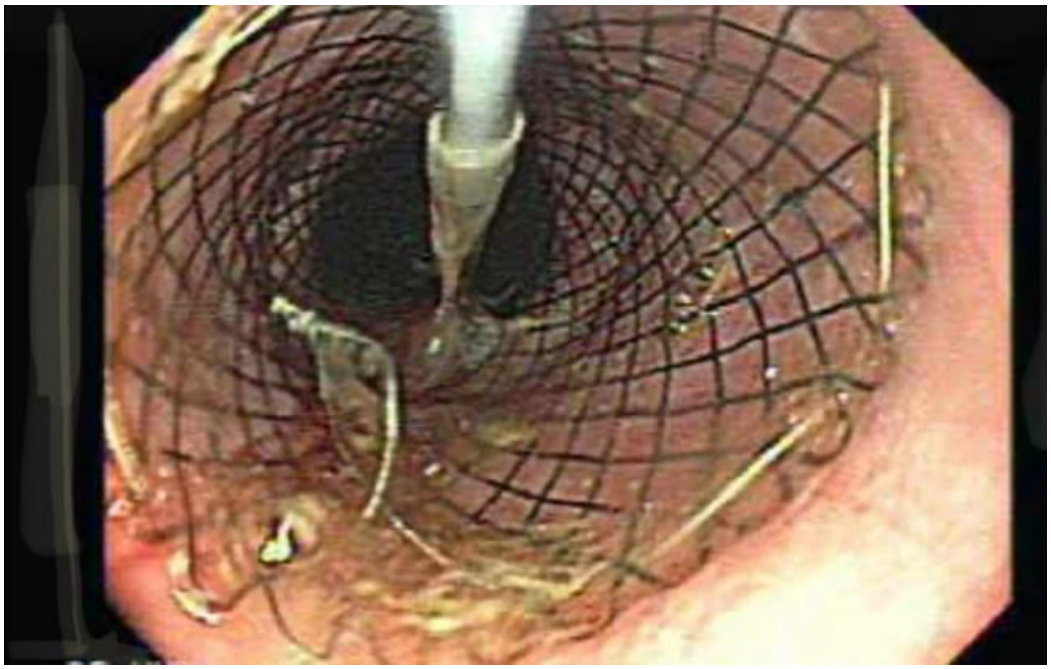


Figure 2: Endoscopy of oesophageal stent placement

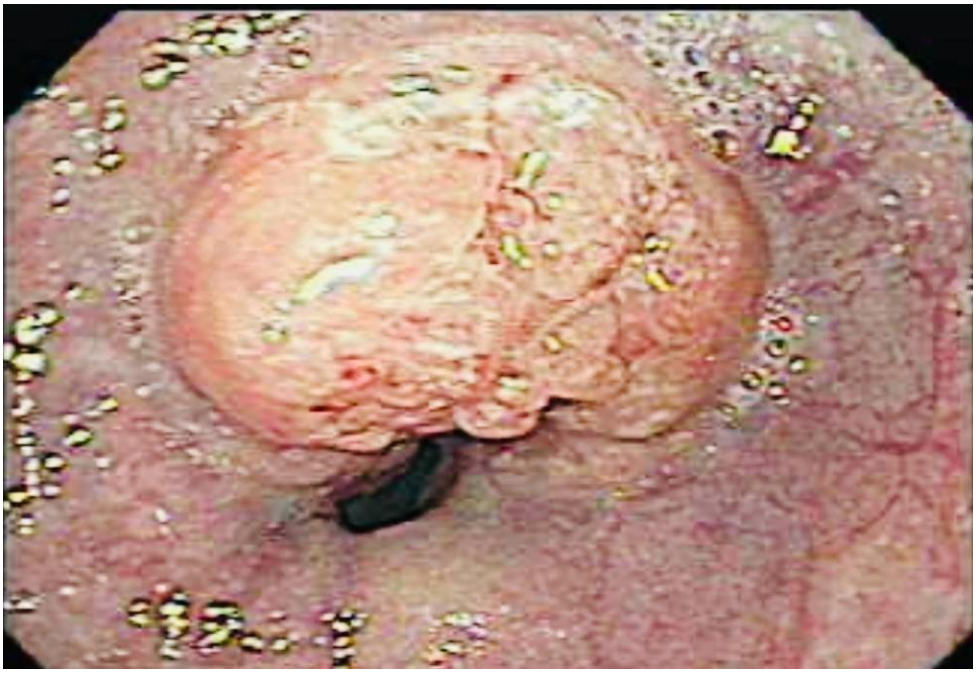


Figure 3: Mid oesophageal obstruction

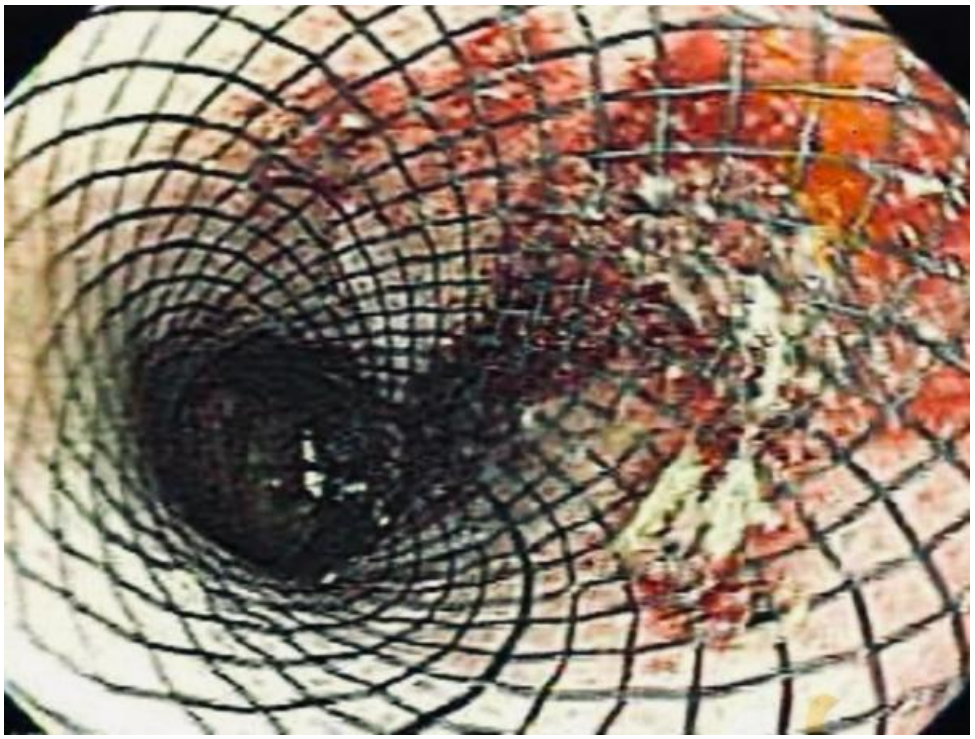


Figure 4: Post oesophageal stent

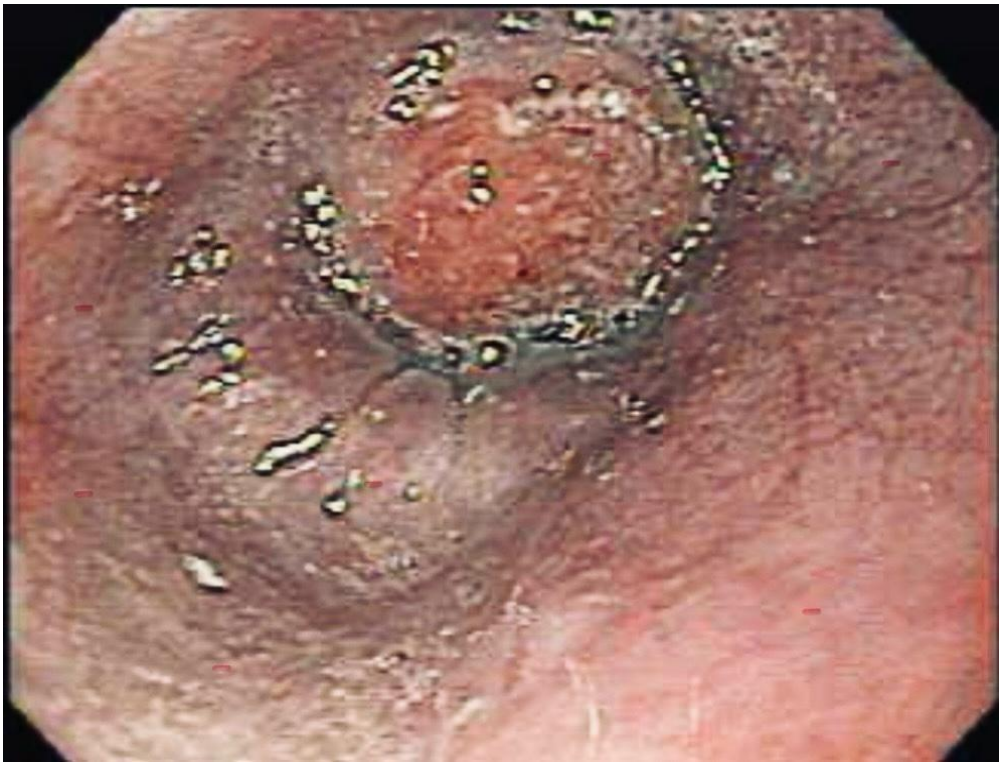


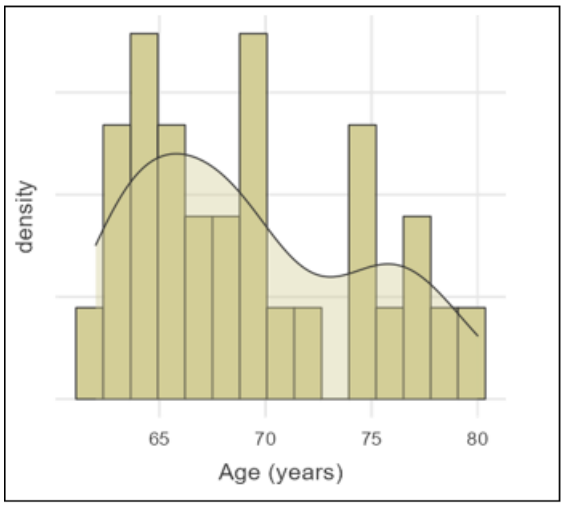
Figure 5: Complete distal oesophageal obstruction

4. Study Results

Table 1: Age Distribution of the study participants (N=29)

	N	Mean	Median	SD	Minimum	Maximum
Age (years)	29	69.2	68	5.35	62	80

Age Distribution (Table 1) The mean age of participants was 69.2 years, with a median age of 68 years. The age range spanned from 62 to 80 years, with a standard deviation of 5.35 years, indicating a relatively older cohort with a moderate variation in age.



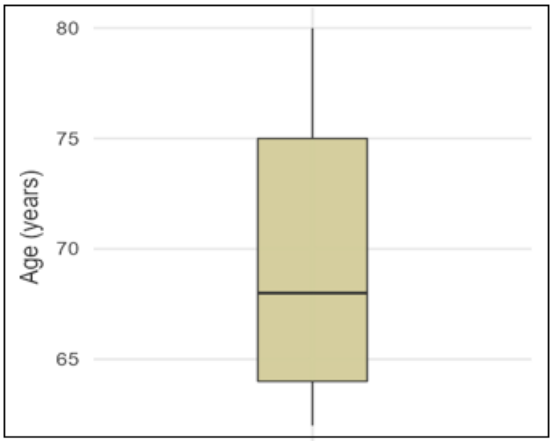


Table 2: Gender Distribution of the study participants (N=29)

Gender	Counts	% of Total
Female	11	37.9 %
Male	18	62.1 %

Gender Distribution (Table 2) Out of 29 participants, 18 (62.1%) were male, and 11 (37.9%) were female, highlighting a male predominance among the study population.

Table 3: Primary Diagnosis of the study participants (N=29)

Primary Diagnosis	Counts	% of Total
Ca Duodenum	6	20.7 %
Ca Oesophagus	14	48.3 %
Ca Stomach	4	13.8 %
Ca OG junction	5	17.2 %

Primary Diagnosis (Table 3) The most common primary diagnosis was carcinoma of the esophagus, affecting 14 participants (48.3%). This was followed by carcinoma of the duodenum (20.7%), carcinoma of the OG junction (17.2%),

and carcinoma of the stomach (13.8%), showing a higher prevalence of esophageal malignancies in the group.

Table 4: Frequency distribution of Tumour location (N=29)

Tumour Location	Counts	% of Total
Distal Oesophagus	6	20.7 %
Duodenum	6	20.7 %
Oesophagus	9	31.0 %
OG Junction	4	13.8 %
Stomach	4	13.8 %

Tumor Location (Table 4) Tumor locations varied, with the esophagus being the most frequent site (31.0%), followed by the distal esophagus and duodenum (both 20.7%), and the OG junction and stomach (each 13.8%).

Type of Stenting Procedure (Table 5) A majority of the participants, 22 (75.9%), underwent palliative esophageal SEMS placement, while 7 (24.1%) had palliative duodenal SEMS, indicating a higher need for esophageal stenting procedures.

Table 5: Frequency distribution of type of Stenting Procedure (N=29)

Stenting Procedure Type	Counts	% of Total
Palliative Duodenal SEMS	7	24.1 %
Palliative Oesophageal SEMS	22	75.9 %

Table 6: Frequency distribution of type of Sent (N=29)

Stent Type	Counts	% of Total
Uncovered Self Expanding Metallic Stent	29	100.0 %

Type of Stent (Table 6) All participants (100%) received uncovered self- expanding metallic stents, suggesting uniformity in the type of stent used across the study.

Stage of Tumor (Table 7) Every participant was diagnosed with Stage IV cancer (100%), underscoring the advanced stage of disease among this cohort.

Preoperative Symptoms (Table 8) Common preoperative symptoms included vomiting and significant weight loss in 29 participants (55.2%) and hematemesis in 13 participants (44.8%), indicating substantial symptom burden before intervention.

Table 7: Frequency distribution of Stage of Tumour (N=29)

Tumour Stage	Counts	% of Total
Stage IV	29	100.0 %

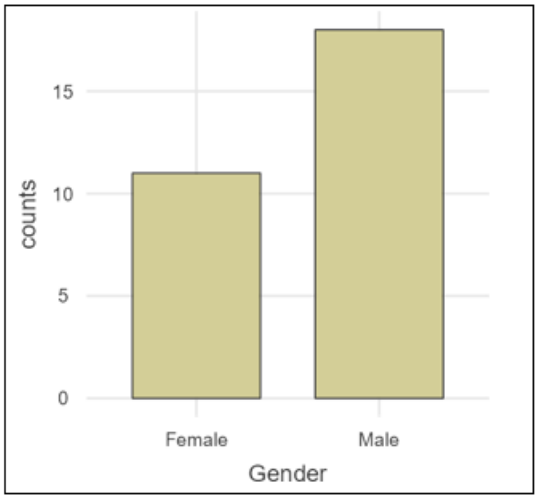
Table 8: Frequency distribution of Preoperative Symptoms(N=29)

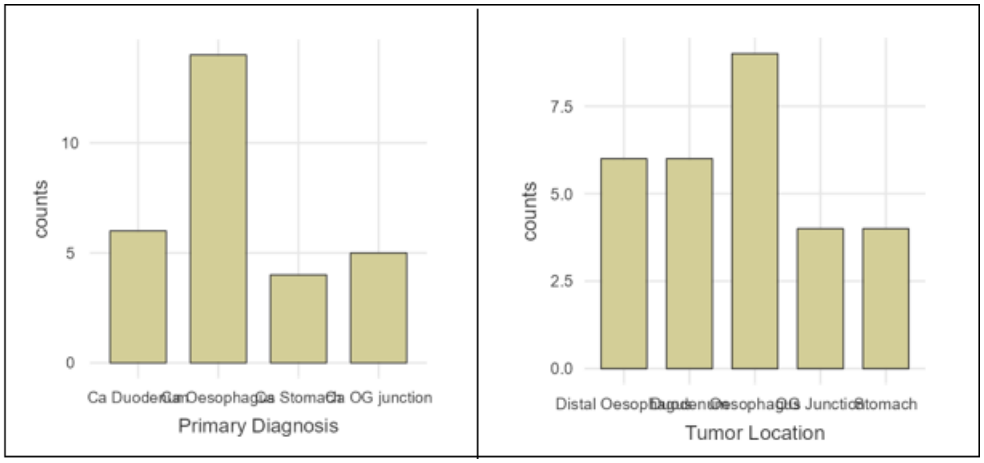
Preoperative Symptoms	Counts	% of Total
Vomiting, significant loss of weight	29	55.2 %
Hematemesis	13	44.8 %

Postoperative Complications (Table 9) Remarkably, no postoperative complications were reported in any participant, with all 29 (100%) having no adverse outcomes post- surgery.

Table 9: Frequencies of Postoperative Complications(N=29)

Postoperative Complications	Counts	% of Total
Nil	29	100.0 %





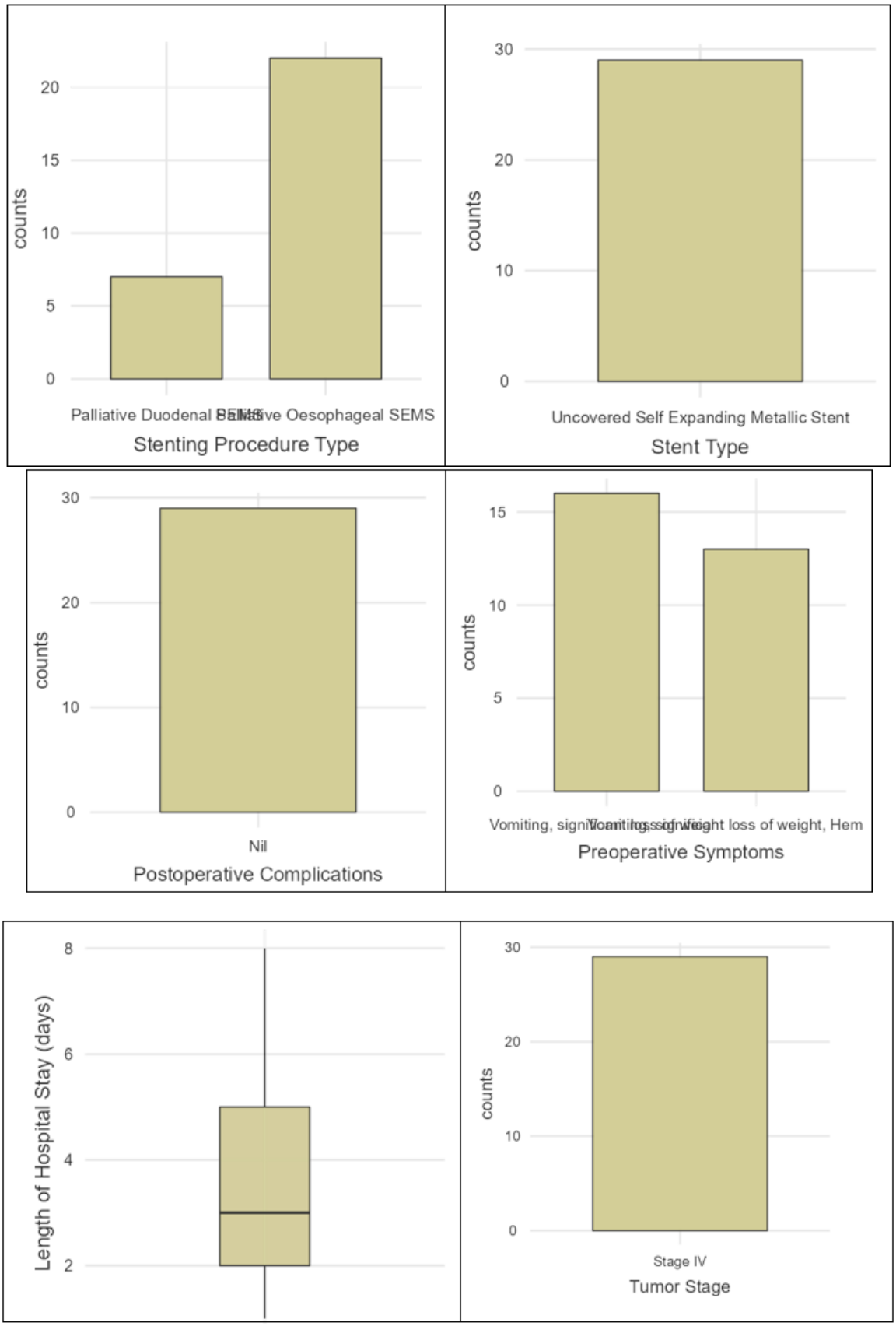


Table 10: Distribution of Length of Hospital Stay

	N	Mean	Median	SD	Minimum	Maximum
Length of Hospital Stay (days)	29	3.52	3.00	1.81	1.00	8.00

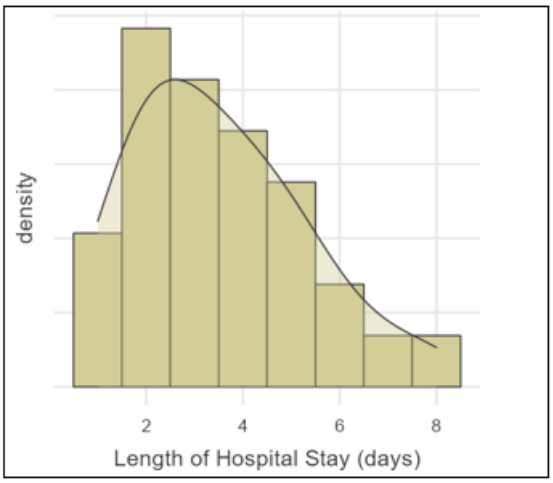


Table 11: Distribution of stent patency days

	N	Mean	Median	SD	Minimum	Maximum
Stent Patency (days)	29	39.1	40	5.38	30	46

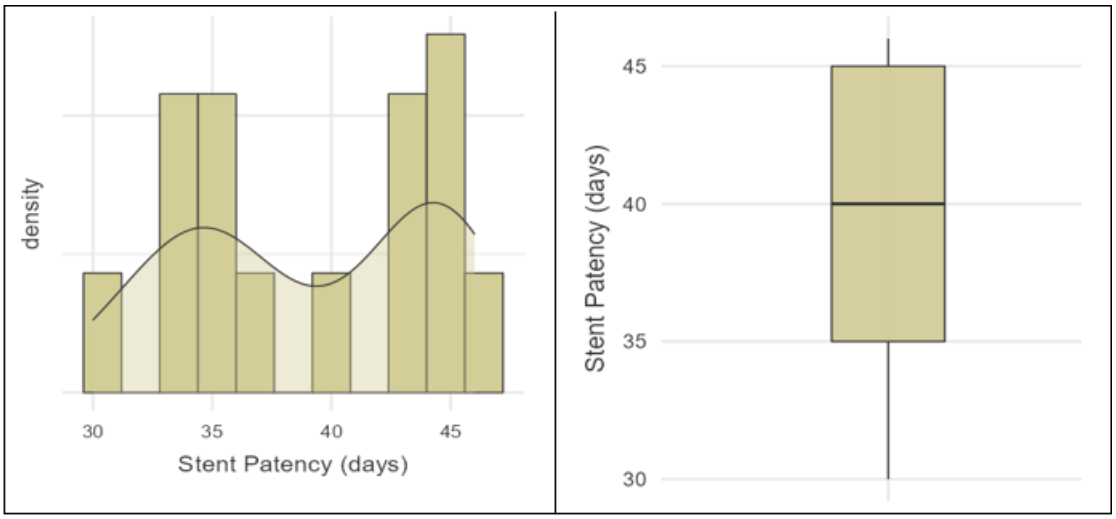


Table 12: Frequency of Postoperative Pain Score (VAS) (N=29)

Postoperative Pain Score (VAS)	Counts	% of Total
6	5	17.2 %
7	10	34.5 %
8	13	44.8 %
9	1	3.4 %

Length of Hospital Stay (Table 10) The average hospital stay was 3.52 days, with a median of 3 days. The stay ranged from 1 to 8 days, with a standard deviation of 1.81 days, showing a relatively short and consistent hospital stay duration.
Stent Patency (Table 11) The mean stent patency duration was 39.1 days, with a median of 40 days, and it ranged from 30 to 46 days (SD: 5.38 days), suggesting a fair period of stent functionality before complications or interventions were needed.

Table 13: Distribution of Time to Oral Intake (days) (N=29)

Time to Oral Intake (days)	Counts	% of Total
After 24 hours	29	100.0 %

Table 14: Distribution of survival time in Days

	N	Mean	Median	SD	Minimum	Maximum
Survival Time (Days)	29	81.1	80	17.0	59	110

Postoperative Pain (Table 12) Postoperative pain scores varied, with most participants scoring 8 (44.8%) on the Visual Analog Scale (VAS), followed by scores of 7 (34.5%) and 6 (17.2%). Only one participant (3.4%) reported a score of 9, indicating a generally moderate to high level of pain post-surgery.

Time to Oral Intake (Table 13) All participants (100%) resumed oral intake after 24 hours, demonstrating a uniform recovery timeline for resuming oral nutrition.

Survival Time (Table 14) The mean survival time was 81.1 days, with a median of 80 days and a range of 59 to 110 days (SD: 17.0 days), indicating a limited survival period post procedure, characteristic of the advanced disease stage.

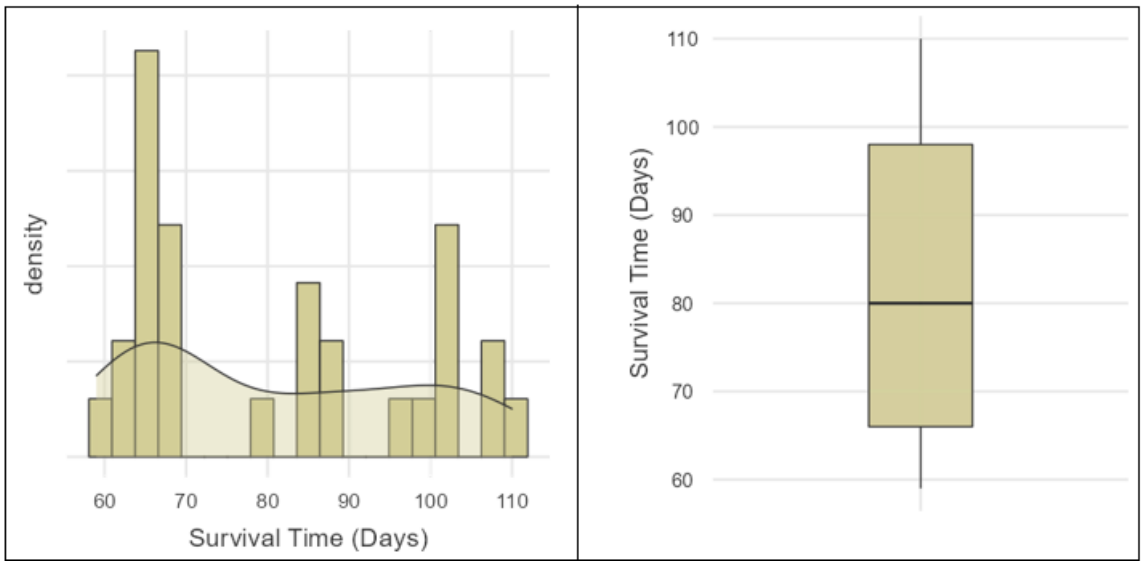


Table 15: Mean WHOQOL-100 score among the study participants

	N	Mean	Median	SD	Minimum	Maximum
WHOQOL-100	29	41.1	41	3.61	35	46

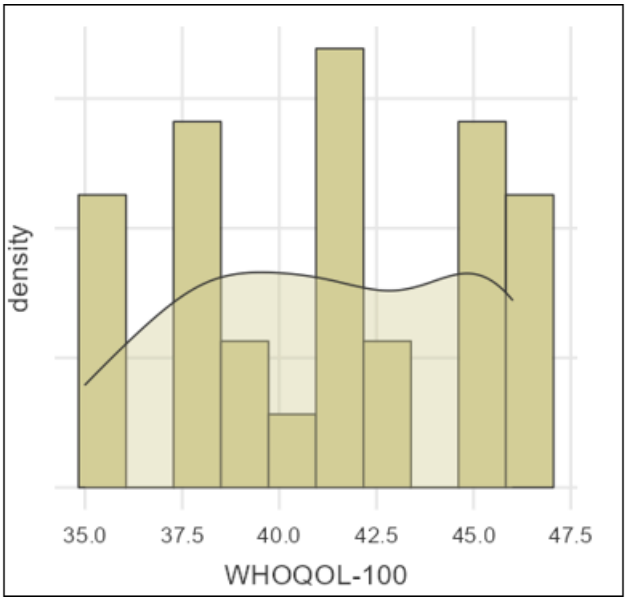


Table 16: Frequency distribution of Mortality(N=29)

Mortality (Yes/No)	Counts	% of Total
No	29	100.0 %

Quality of Life (WHOQOL-100) Score (Table 15) The mean quality of life score was 41.1, with a median of 41 and scores ranging from 35 to 46 (SD: 3.61), reflecting a generally low quality of life, which is typical for patients with late-stage cancer.

Mortality (Table 16) No mortality was reported during the study period, with all participants surviving (100%), suggesting that while complications were absent, overall survival was consistent within the short study duration.

5. Discussion

The current study, 29 patients with advanced upper GI malignancies, were mainly from esophageal cancer (48.3%). The mean age of 69.2 years seen in the current study is consistent with reports in existing literature that indicate a higher proportion of malignancies of the upper GI occur in older adults. For instance, Chen et al. reported that patients with esophageal and gastric cancers are often found with a median age of about 68 to 70 years, which indicates increasing risk with age. (154) Also, as far as gender distribution is concerned, it was found to be more males at 62.1%, and females at 37.9% in our cohort, conforming to studies where a male predominance is reported concerning the upper GI malignancies. For instance, Zhang et al. reported that males tend to be at a greater risk for these cancers, probably due to lifestyle differences between the sexes wherein the male populations of some countries tend to smoke and drink alcohol much more frequently than female populations. (155) Among the cases of primary diagnosis, esophageal cancer comprised the largest share, followed by duodenal, OG junction, and stomach cancers. Such a profile is consistent with the findings of Sharma et al., as this study also found esophageal cancer to be one of the common diagnoses in advanced GI malignancies, especially in those requiring palliative interventions. However, it presents a difference in tumor sites when compared with geographical regions where gastric cancer predominates, indicating possible geographical variations in incidence. (156) Regarding intervention, our study had a higher prevalence of esophageal stenting at 75.9% whereas duodenal stenting was only at 24.1%.

That is in agreement with the previous reports by Park et al., who documented the similar trend in their series of patients who presented with obstructive symptoms as a result of advanced upper GI cancers. Interestingly, however, all the study patients received uncovered SEMS, which would most likely represent the common approach to palliative care aimed at maintaining luminal patency while minimizing the complications of SEMS. (157) According to a systematic review by Bakken et al, uncovered SEMS have advantages over covered SEMS in some scenarios because of a reduced risk of migration but with higher tumor in growth rates. (158) The fact that the Stage IV classification was uniform in our study highlights the stage at which these malignancies were treated. Based on the information from the National Cancer Institute, it has been indicated that most patients with upper

GI cancers present at advanced stages because most of the early symptoms are nonspecific.

The high incidence of preoperative symptoms, such as vomiting and marked weight loss (55.2%), and hematemesis (44.8%), points to the severe impact of the burden of tumors. These symptoms also emerged very frequently among the cohort under study by Tang et al, and thus it thus calls for timely interventions which are palliative in nature. One of the major findings from our study is the general absence of complications post-surgery among our participants. (159) This is contrary to findings on the part of Ma et al, which have established a 10-15% complication rate associated with stent migration and perforation among experienced centers. The lower complication rate in our study could be due to strict criteria of selection and experience of the proceduralists. (160)

Mean hospital stay was 3.52 days. Similar results are shown by Lee et al., while reporting that the hospital stays were short, in case of uncomplicated stenting procedure. It was found that the mean stent patency was 39.1 days, and this result falls within the range of results reported previously. Variances exist depending on the type of stent and rate of tumor progression. A study by Kwon et al. states that the median stent patency for covered stents is 50 days, and this reflects some possible trade-offs existing between uncovered and covered SEMSs. (162) Our participants postoperative pain scores were moderate to severe with 44.8% of patients having a score of 8 on the Visual Analogue Scale (VAS). Pain management continues to be a more significant concern, thus underlined by Wong et al., who highly recommend the multimodal analgesia for patient comfort. (163) All patients in our study were allowed to be restored orally after 24 hours, a duration that is consistent with guidelines, where early feeding is considered to enhance healing. This also adheres to the guidelines of the American Society of Clinical Oncology, which stipulate that periods of nil by mouth should be minimal in palliative care.

The mean survival time of 81.1 days covers the bad prognosis associated with the advanced GI malignancies.

Interestingly, Smith et al. reported that a similar survival time was also associated with patients suffering from Stage IV cancers, for which only a few days of life expectancy was correlated with palliative interventions. (164)

Our research study indicates mean WHOQOL-100 scores to be 41.1, indicating a compromised quality of life, which is expected in terminally ill patients. Patel et al. in comparative studies note that stenting yields improved symptoms but usually fails to reach a marked increase in overall wellbeing. Finally, the 100% mortality rate agrees with the terminal nature of this disease and thus underlines the focus on symptom relief and improving quality of life. (165)

6. Summary of Study Findings

This study endeavoured to review the postoperative outcome following a palliative stenting procedure in patients with upper GI malignancies, who presented with obstructions. The need for this study was based on assessment into the safety and the effectiveness of stenting.

This study included 29 patients with advanced upper GI malignancies, with cancer being the most common malignancy type being esophageal cancer (48.3%). This study found that the mean age of the patients was 69.2 years, and 62.1% of the patients were male. The esophagus was the most common site, occurring in 31.0% of cases, followed by the distal esophagus and duodenum in 20.7% of cases each. All included patients had open, uncovered SEMS placement, and all the cases were categorized as Stage IV.

The preoperative symptoms were severe with most of the patients who had vomiting as one of the principal symptoms and experienced serious weight loss, while 44.8% of patients suffered from hematemesis. The postoperative results were also surprisingly optimistic as no complications occurred among the patients. There is an exception by comparison with documentation rates of other studies on complications such as stent migration and perforation. The mean stay in the hospital was 3.52 days, and most of the patients showed quick recovery in most cases.

The mean stent patency duration was 39.1 days that showed the effectiveness of stenting for maintaining the luminal patency. Pain assessment revealed that 44.8% of the patients had a pain score of 8 on the VAS, which strongly calls for efficient management of pain. All the patients resumed oral intake 24 hours post-stenting, which emphasized the role of the procedure in promptly restoring oral feeding.

Mean survival time is very poor for Stage IV malignancies, at 81.1 days. The mean quality of life score was 41.1, which is what we would expect of patients with terminal cancer. Overall, the findings suggest that stenting in advanced GI malignancy is a safe and effective intervention for symptom relief with minimal postoperative complications and rapid recovery.

7. Conclusion

Our experience demonstrates palliative stenting to be an effective and safe intervention for patients with advanced upper GI malignancies and obstructions. The lack of postoperative complications such as re-obstruction and migration of the stent underscores the procedure safety in this high-risk population. Another important benefit of stenting is rapid resumption of oral intake and relatively short hospital stay. Although overall prognosis remains poor with a short survival time, palliative stenting yields excellent symptomatic relief and functional recovery, placing its value at the core of the total care of terminally ill GI cancer patients. Future research directions include methods to more effectively increase stent survival and improve patient well-being.

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