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Research Article

**SELF-EXPANDABLE METALLIC STENTS (SEMS) AS AN  
ALTERNATIVE TO BYPASS SURGICAL PROCEDURE FOR  
MALIGNANT PYLORIC AND DUODENAL OBSTRUCTION PATIENTS**<sup>1</sup>Saed Enabi, <sup>2</sup>Dr. Feeha Akhtar, <sup>3</sup>Dr. Khansa Ismail, <sup>4</sup>Tawfik Rajab<sup>1</sup>Suliaman Al-Rajhi Colleges\College of Medicine, Qassem, Saudi Arabia<sup>2</sup>Jinnah Hospital, Lahore<sup>3</sup>WMO, RHC Tibbi Qaisrani Taunsa Sharif<sup>4</sup>Suliaman Al-Rajhi Colleges/College of medicine, Qassem Saudi Arabia**Abstract:**

**Objective:** This research aimed at the determination of the duodenal stenting in palliation outcomes in the duodenal obstruction and malignant pyloric patients.

**Methods:** Design of the research was non-randomized descriptive prospective which was held at the Services Hospital, Lahore (Endoscopy Unit) in the time span of December 2015 to February, 2017. We included every case of inoperable ampullary, biliary or pancreatic cancers which resulted in the shape of duodenal obstruction and respectable malignancy in the patients but surgical intervention was not possible in those cases or they were unfit for the surgical intervention. We made every surgery under the supervision of single expert endoscopist with the help of general or local anesthesia. Stents used in this research were of Boston Scientific with various sizes. One and six-month follow-up was carried out and data was analyzed on SPSS.

**Results:** During research male and females (total 15) were included with respective number and percentage as 9 males (60%) and 6 females (40%). Age bracket of the research population was in the limit of (25 – 80) years and mean age was (52.67 ± 15.07) years. We primarily diagnosed pyloric carcinoma in 7 cases (46.6%), 4 cases of carcinoma Gall bladder (26.6%), 3 cases of Duodenal carcinoma (20%) and one case of carcinoma head of pancreas (6.6%). We observed symptoms relief in 11 cases (73.3%); whereas, 2 cases reflected complications (13.3%). Technical success helped in the insertion of the stents in 14 cases (93%). Eleven cases showed clinical success (73%), mean survival rate was observed as (74.27 ± 40.7) days in the total range of (15 – 180) days. We observed no statistical significance when we compared age, survival time, diagnosis and gender.

**Conclusion:** With the utilization of self-expandable metallic stents used for the gastro-duodenal malignancies are safe, feasible and effective in their technique, especially in the cases where life expectancy is very much limited.

**Keywords:** Duodenal stenting, Self-Expandable Metallic Stent (SEMS) and Gastric outlet obstruction (GOO).

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**INTRODUCTION:**

The cause of the malignant pyloro-duodenal obstruction is either duodenal carcinomas or primary gastric or it may be the adjacent pancreatic invasion, gallbladder or biliary carcinomas. There association is found with the obstructive jaundice with an addition of unresectable malignancy that surrounds the pancreatic head, duodenal malignancy or carcinoma gallbladder and it obstructs ampulla. For the treatment of these new and advanced malignancies is challenging because of the intractable pain, vomiting, nutritional deficiencies and indigestion. Major objective is oral diet restoration and obstruction relief in these patients.

Various treatments have been used for the management of these patients such as minimal invasive technique such as (laparoscopy or endoscopy) and open surgical bypass. There is a prevalent controversy about the optimum treatment of palliative. Usually patient's survival medium is short [1], whereas, surgical procedure is also under debate. A desirable alternative has been introduced in the shape of SEMS for the bypass surgical operations [2, 3]. SEMS are effective and safe palliative option with limited outcomes as follow-up is limited because of the short life expectancy of the treated patients [5]. This SEMS efficacy have been states by numerous authors in terms of short hospitalization, enteral feeding early resumption and low treatment cost than the palliative surgical operations [6, 7].

**PATIENTS AND METHODS:**

Design of the research was non-randomized descriptive prospective which was held at the Services Hospital, Lahore (Endoscopy Unit) in the time span of December 2015 to February, 2017. We included every case of inoperable ampullary, biliary or pancreatic cancers which resulted in the shape of duodenal obstruction and respectable malignancy in the patients but surgical intervention was not possible in those cases or they were unfit for the surgical intervention.

We confirmed the incidence of obstruction through endoscopy and radiography. An inoperative case was finalized through imaging diagnostic techniques which included computed tomography (CT) scan, ultrasound and endoscopic USG. Every patients were briefed about the research protocols and ethical consent was also taken by the hospital ethical committee. Dysphagia severity was measured with the 1 – 5 score on the grounds of the ability of the patient about the diet toleration: diet was respectively

categorized as soft, regular, liquid, water/ saliva ingestion and inability of oral intake.

We used therapeutic scope for every procedure and negotiated the stricture with a guiding wire under the fluoroscopy. Injection of contrast was made with the help of a cannula for the determination of the stricture extent and position also we ruled out any distal obstruction. Appropriate duodenal stent size was selected, and placed stent assembly over guiding wire finally positioned across stricture. We also checked the deployment of the stent with the help of expansion. Injection of contrast confirmed the patency and position. In the scheme of placement first came the biliary metallic stent after that duodenal stent was placed.

With the sedative recovery twenty-four-hour observation of the patients was carried out and we monitored bleeding, perforation and an incomplete expansion. After two hours liquid diet was permitted and when the expansion was confirmed solid diet was also permitted at twenty-fourth hour. Suspected recurrence complication cases were advised Gastro-graffin studies. We documented effects of the duodenal stenting (immediate complications), stenting response (symptomatic relief) and oral intake ability.

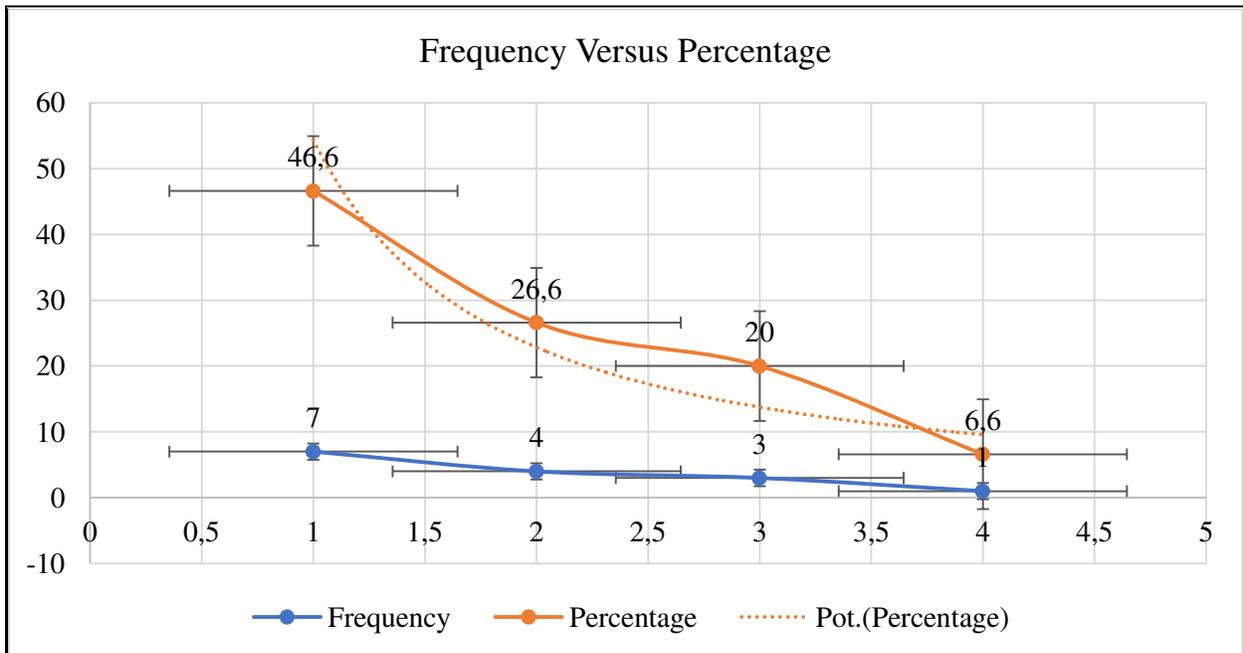
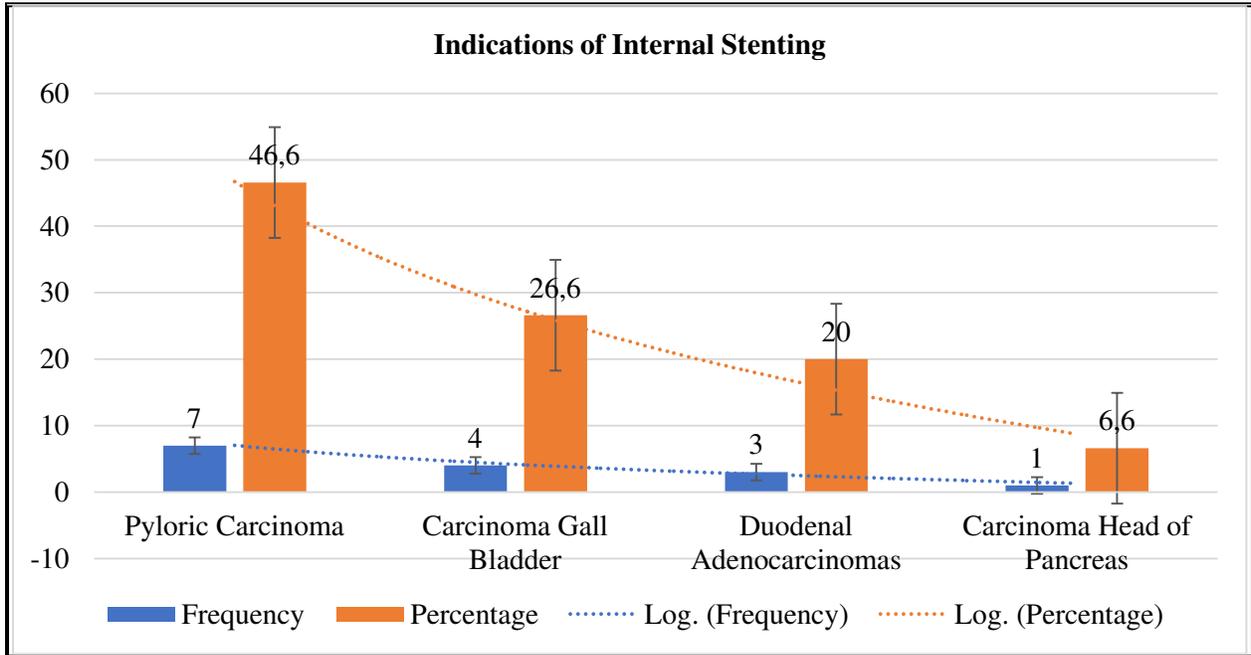
We made every surgery under the supervision of single expert endoscopist with the help of general or local anesthesia. Stents used in this research were of Boston Scientific with various sizes. One and six-month follow-up was carried out and data was analyzed on SPSS.

**RESULTS:**

During research male and females (total 15) were included with respective number and percentage as 9 males (60%) and 6 females (40%). Age bracket of the research population was in the limit of (25 – 80) years and mean age was (52.67 ± 15.07) years. We primarily diagnosed pyloric carcinoma in 7 cases (46.6%), 4 cases of carcinoma Gall bladder (26.6%), 3 cases of Duodenal carcinoma (20%) and one case of carcinoma head of pancreas (6.6%). We observed symptoms relief in 11 cases (73.3%); whereas, 2 cases reflected complications (13.3%). Technical success helped in the insertion of the stents in 14 cases (93%). Eleven cases showed clinical success (73%), mean survival rate was observed as (74.27 ± 40.7) days in the total range of (15 – 180) days. We observed no statistical significance when we compared age, survival time, diagnosis and gender as shown in the given Table.

**Table:** Indications of Internal Stenting

Indications	Frequency	Percentage
Pyloric Carcinoma	7	46.6
Carcinoma Gall Bladder	4	26.6
Duodenal Adenocarcinomas	3	20
Carcinoma Head of Pancreas	1	6.6



**DISCUSSION:**

SEMS effectiveness have been the subject of numerous research works and authors to treat the inoperable pyloro-duodenal cases and the cases having pancreaticobiliary malignancy obstructive issues. We first targeted the SEMS role in Pakistan as the best available palliative modality is still a question and under debate due to the comparative research studies paucity on surgical and endoscopic modality [8]. The same topic is also not probed much in terms of the surgical procedure and placement of duodenal stents. No fit for surgical procedure cases are mostly referred to this procedure. Higher success rate has been achieved through surgical gastroenterostomy, for the obstruction bypass, it has a rate of morbidity as (40%) including prolonged enteral feed time and hospital stay.

Advantage of the stunt have been reported by comparative studies over the effectiveness of bypass surgical procedures. According to Fioli better outcomes can be achieved with an addition of early oral diet retrieval and less stay at the hospital in the patients of stent as they are a viable option that can replace the surgical interventions [9]. Uncovered stents were in fashion in the early days for the enteral stenting which limited the tumor growth by the mesh [10, 11]. SEMS can prevent ingrowth of the tumor, it is less painful and less invasive as no balloon pre-dilation is required and insertion is also easy [12]. We also used SEMS in this particular research.

In a recent prospective randomized research, the comparison of covered SEMS against the uncovered SEMS on forty patients who had gastric cancer was carried out, which demonstrated high rate of the migration of the stent in the time of eight weeks in placement of covered SEMS observed in (25.8%) against the (2.8%) of the uncovered SEMS. In-growth of the tumor was high in the cases of uncovered SEMS as (25.0%) against (0.0%) in the patients treated with covered SEMS with normal routine endoscopy, higher rate of migration can be explained through obstruction symptoms independency [13].

Repeated metallic stent placement cause is gastric carcinoma in the obstruction of gastric outlet [14]. In our research 7 cases of pyloric cancer were observed (46.6%) who experienced enteral stenting.

We observed clinical success as (73.3%); whereas, technical success was (75% – 100%) and clinical success was (77% – 100%) [8]. No response and advanced malignancy was observed respectively in four and three patients without the achievement of

clinical response even with the placement of patent stent. The peritoneal carcinomatosis absence and numerous tiny bowel strictures are duodenal SEMS clinical success indicators [15].

According to available literary evidence technical success was reported as (93.3%) [7]. Duodenal stenting has multiple associated complications which include tumor overgrowth and ingrowth, stent migration, gastrointestinal bleeding, stent migration and perforation [16]. Patients have been observed with an overall complications rate of 2 / 15 (13.3%) which is below as observed by other authors (17% – 28%) [7, 17, 18]. One case was observed with perforation and one with stent obstruction. Metallic stent causes perforation as it is placed at the C loop of curved duodenal because the edge of the metallic stent is sharp which may result in wall pressure necrosis, perforation and bleeding when the stent is shortened and straightened while its expansion [19]. We experienced that stent placement across pylorus is easy as it develops a stent curve which is better than the duodenal area stent placement. Duodenum stented one case was observed with perforation. Surgery was carried out in the cases where bypass and retrieval of the stent was carried out [20].

**CONCLUSION:**

With the utilization of self-expandable metallic stents used for the gastro-duodenal malignancies are safe, feasible and effective in their technique, especially in the cases where life expectancy is very much limited. Gastric outlet obstruction's palliative treatment with SEMS is potent to improve the food intake tolerance.

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