GASTRO ENTEROLOGIA BELLUNO

Con il patrocinio di

PROGRESSI E NUOVE FRONTIERE IN
GASTROENTEROLOGIA ED ENDOSCOPIA DIGESTIVA
BELLUNO
15-16 GIUGNO 2023

NUOVE FRONTIERE IN ENDOSCOPIA DIGESTIVA

Stenting del tubo digerente

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There are no financial arrangements or commercial associations which might be a conflict of interest

Esophageal stenting for benign and malignant disease: European Society of Gastrointestinal Endoscopy (ESGE) Guideline – Update 2021

Spaander MCW et al. Endoscopy 2021

ASGE guideline on the role of endoscopy in the management of benign and malignant gastroduodenal obstruction

Jue TL et al. Gastrointest Endosc 2021

Self-expandable metal stents for obstructing colonic and extracolonic cancer: European Society of Gastrointestinal Endoscopy (ESGE) Guideline – Update 2020

van Hooft JE et al. Endoscopy 2020

EFFECTIVE

SAFE

ESOPHAGEAL STENTING FOR BENIGN AND MALIGNANT DISEASE

Esophageal stenting for benign and malignant disease: European Society of Gastrointestinal Endoscopy (ESGE) Guideline – Update 2021

Spaander MCW et al. Endoscopy 2021

Stent fixation → Suturing
Over-the-scope-clip (OTSC) device

New metal stents → Antimigration
Shape-modified

MIGRATION
up to 40%

LEAK

Biodegradable stents

Drug-eluting stents

Radioactive stents

Newly designed OTS Clip for preventing fully-covered self-expandable metal stent migration in the gastrointestinal tract

Manta R et al. Endosc Int Open 2023

→ **Technical success: 31/31 (100 %)**
Clinical success: 30/31 (97 %)

Reduction of esophageal stent migration rate with a novel over-the-scope fixation device (with video)

Schiemer M et al. Gastrointest Endosc 2022

→ **Technical success: 26/26 (100 %)**
Clinical success: 24/26 (82 %)

Endoscopic suturing for GI applications: initial results from a prospective multicenter European registry

Maselli R et al. Gastrointest Endosc 2022

→ **Technical success: 38/38 (100 %)**
Clinical success: 17/20 (85 %) [Follow-up]

Comparison of no stent fixation, endoscopic suturing, and a novel over-the-scope clip for stent fixation in preventing migration of fully covered self-expanding metal stents: a retrospective comparative study (with video)

Migration rates and median time to migration for no stent fixation, suturing, and OTSC

	Stent-related data					Paired tests	
	Cohort (n=433)	No fixation (n=239)	Suture (n=140)	OTSC (n=54)	P value	OTSC vs. no fixation	OTSC vs. suture
Migration, n (%)	246 (57)	148 (62)	79 (57)	19 (35)	0.013	0.015	0.018
Median time to migration,	4 (1.9, 7)	3 (1.1, 6.4)	5.1 (2.9, 8.4)	6 (4, 8)	0.023		

Secondary outcomes including clinical success, median procedure time, and adverse events

	Cohort	No fixation	Suture	OTSC	Paired tests	
					OTSC vs. no fixation	OTSC vs. suture
Clinical success rate, n (%)	93 (43)	35 (26)	27 (32)	32 (68)	0.001	0.001
Median procedure time, min (IQR)	45 (27, 70)	32 (20, 54)	68 (51, 92)	42 (28, 57)	0.062	0.002
Adverse events, n (%)	80 (18)	50 (21)	25 (18)	5 (18)	ns	ns

Park KH et al. Gastrointest Endosc 2022

Endoscopic management of gastrointestinal wall defects, fistula closure, and stent fixation using through-the-scope tack and suture system

Krishnan A et al. Endoscopy 2023

3 cases

Helix tack suspension for esophageal stent fixation

Trasolini PB et al. Gastrointest Endosc 2022

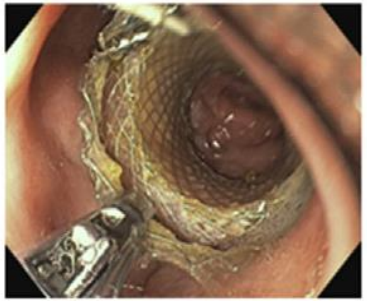
1 case

Initial multicenter experience using a novel endoscopic tack and suture system for challenging GI defect closure and stent fixation (with video)

Mahmoud T et al. Gastrointest Endosc 2022

13 cases






Palliation of malignant esophageal obstruction using an anti-migration self-expandable metal stent: Results of a prospective multicenter study

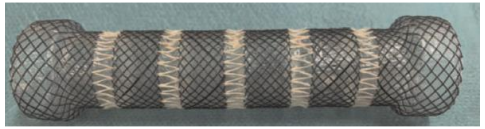
Conio M et al. Clin Res Hepatol Gastroenterol. 2021

Technical success: 53/53 (100 %)
Migration: 7 (13 %)

Palliation of malignant dysphagia with a segmented self-expanding metal stent: A STROBE-compliant article

Wiese MS et al. Medicine (Baltimore). 2021

Technical success: 20/20 (100 %)
Migration: 3 (15 %)



A novel fully covered self-expandable segmental metallic stents for the treatment of refractory esophageal stenosis

Bi Y et al. J Thorac Dis. 2019

Technical success: 24/24 (100 %)
Migration: 7 (17 %)

Clinical implantation of 92 VACStents in the upper gastrointestinal tract of 50 patients-applicability and safety analysis of an innovative endoscopic concept *Lange J et al. Front Surg. 2023*

→ **Technical success: 50/50 (100 %)**
Clinical success: 38 (76 %)

Vacuum-stent: A combination of endoscopic vacuum therapy and an intraluminal stent for treatment of esophageal transmural defects *Pattynama LMD et al. Front Surg. 2023*

→ **Technical success: 10/10(100 %)**
Clinical success: 10 (100 %)

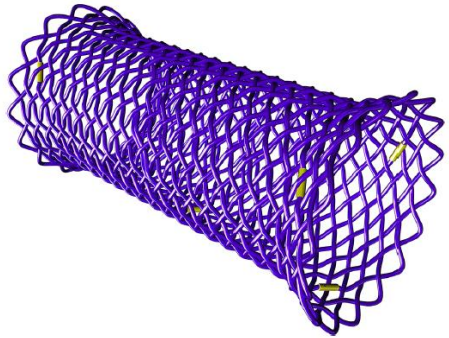
A new hybrid stent using endoscopic vacuum therapy in treating esophageal leaks: a prospective single-center experience of its safety and feasibility with mid-term follow-up *Chon SH et al. Dis Esophagus. 2022*

→ **Technical success: 20/20 (100 %)**
Clinical success: 12 (60 %)

SX-ELLA biodegradable stent for benign oesophageal strictures: a systematic review and proportion meta-analysis

Of the 1509 articles identified, 16 studies treating 246 patients were eligible for inclusion

Study Author	Technical success N (%)	Clinical success N (%)	Stent migration N (%)	Re-intervention N (%)
Canena et al. (2012) [13]	10 (100)	3 (30)	2 (20)	7 (70)
Dhar et al. (2014) [14]	9 (100)	0	–	9 (100)
Griffiths et al. (2012) [18]	6 (86)	3 (60)	0	2 (40)
Hirdes et al. (2012) [19]	26 (93)	9 (40)	3 (11)	–
Karakan et al. (2013) [20]	7 (100)	5 (100)	0	4 (80)
Kochhar et al. (2017) [21]	13 (100)	2 (15.4)	1 (7.6)	12 (92)
McCain et al. (2015) [22]	17 (94)	14 (77.8)	0	4 (22)
Nogales et al. (2017) [15]	12 (100)	8 (66.6)	0	4 (33.3)
Repici et al. (2010) [23]	21 (100)	9 (43)	2 (9.5)	11 (52)
Saeed et al. (2018) [24]	5 (100)	5 (100)	1 (20)	0
Sigounas et al. (2016) [25]	10 (100)	2 (20)	2 (20)	8 (80)
Van Boeckel et al. (2011) [16]	16 (85)	6 (33)	4 (22)	16 (42.1)
Van Hooft et al. (2011) [26]	10 (100)	6 (60)	0	4 (40)
Walter et al. (2018) [17]	32 (100)	15 (46.9)	1 (3.1)	4 (12.5)
Yano et al. (2017) [27]	18 (100)	12 (66.7)	0	–
Yano et al. (2022) [28]	29 (96.7)	4 (13.3)	0	4 (13.3)
Overall	239 (97.2)	103 (41.9)	16 (6.5)	89 (36.2)



Kailla E et al. Surg Endosc. 2023

The development of new esophageal biodegradable stents with different polymeric mixtures, currently available only for biliopancreatic diseases, could represent an attractive therapeutic option in the future

Biodegradable PTX-PLGA-coated magnesium stent for benign esophageal stricture: An experimental study **Acta Biomater. 2022**

Lin-Lin Liu[a,1], Juan Qin[a,1], Chu-Hui Zeng[a], Rui-Jie Du[a], Tao Pan[a], Jia-Jie Ji[a], Li-Gong Lu[b], Lei Chen[c], Dong-Fang Liu[d], Jian Yang[d], Shi-Cheng He[a,*], Hai-Dong Zhu[a,*], Gao-Jun Teng[a,*]

Drug-Loaded, Polyurethane Coated Nitinol Stents for the Controlled Release of Docetaxel for the Treatment of Oesophageal Cancer

Fouladian P et al. Pharmaceuticals (Basel). 2021

Pharmaceutical Development of 5-Fluorouracil-Eluting Stents for the Potential Treatment of Gastrointestinal Cancers and Related Obstructions

Arafat M, et al. Drug Des Devel Ther. 2021

Three-dimensional printed 5-fluorouracil eluting polyurethane stents for the treatment of oesophageal cancers

Fouladian P et al. Biomater Sci. 2020

A novel irradiation stent versus conventional irradiation stent for malignant dysphagia: A prospective randomized controlled trial

Zhu GY et al. J Cancer Res Ther. 2021

Dosimetric Evaluation and Clinical Application of Radioactive Iodine-125 Brachytherapy Stent in the Treatment of Malignant Esophageal Obstruction

Ji Z et al. Front Oncol. 2022

GASTRODUODENAL STENTING FOR BENIGN AND MALIGNANT DISEASE

ASGE guideline on the role of endoscopy in the management of benign and malignant gastroduodenal obstruction

Jue TL et al. Gastrointest Endosc 2021

INGROWTH
MIGRATION

- New metal stents → Antimigration, Covered
- Stent fixation → Suturing, Over-the-scope-clip (OTSC) device

New technique for management of malignant gastric outlet obstruction

Endoscopic placement of covered versus uncovered self-expandable metal stents for palliation of malignant gastric outlet obstruction

366 patients were randomised
182 patients in CSEMS group
184 patients in UCSEMS group

	CSEMS n=182	UCSEMS n=184	P value
Technical success	182 (100)	184 (100)	1.00
Clinical success	164 (90.1)	168 (91.3)	0.69
Overall adverse events	39 (21.4)	37 (20.1)	0.76
Jaundice and/or cholangitis	23 (12.6)	18 (9.8)	0.39
Bleeding	3 (1.6)	6 (3.3)	0.51
Perforation	3 (1.6)	3 (1.6)	0.69
Pancreatitis	2 (1.1)	2 (1.1)	0.62
Other	8 (4.4)	8 (4.3)	0.82
Overall stent dysfunction	64 (35.2)	43 (23.4)	0.01
Stent ingrowth	6 (3.3)	23 (12.5)	<0.01
Stent overgrowth	12 (6.6)	4 (2.2)	0.04
Stent migration	22 (12.1)	4 (2.2)	<0.01
Other	24 (13.2)	12 (6.5)	0.03

Yamao K et al. Gut. 2021

Comparison of novel large-bore and conventional-bore covered self-expandable metal stents for malignant gastric outlet obstruction: Multicenter, retrospective study

	24 mm-cSEMS (*n* = 49)	20 mm-cSEMS (*n* = 68)	*P*-value
Stent length, cm			-
8	NA	9 (13)	
9	6 (12)	NA	
10	NA	12 (6)	
12	26 (53)	38 (56)	
15	16 (33)	NA	
Multiple stenting	1 (2)	9 (13)	
Procedure time, min	31 (25–40)	35 (30–49)	0.03
Technical success	49 (100)	68 (100)	1.00
Clinical success	47 (96)	65 (96)	1.00
Time to resume oral intake, days	2 (1–8)	2 (1–8)	0.23
Best GOOSS score after SEMS placement			0.39
0 (no oral intake)	2 (4)	3 (4)	
1 (liquids possible)	0 (0)	4 (6)	
2 (soft solids possible)	3 (6)	4 (6)	
3 (low-residue or full diet possible)	44 (90)	57 (84)	
Chemotherapy after SEMS placement	21 (45)	29 (42)	0.99
Time to start chemotherapy†, days	13 (3–23)	12 (6–45)	0.83

	24 mm-cSEMS (*n* = 49)	20 mm-cSEMS (*n* = 68)	*P*-value
RGOO			
Overall	8 (16)	21 (31)	0.11
Stent migration	0 (0)	7 (10)	
Tumor ingrowth	6 (12)	4 (6)	
Tumor overgrowth	1 (2)	6 (9)	
Inadequate stent expansion	1 (2)	3 (4)	
Food impaction	0 (0)	1 (1)	
Stent fracture	0 (0)	0 (0)	
Reintervention			
Overall	8 (16)	21 (31)	0.11
Surgical procedure	2 (4)	1 (1)	
Bypass	2 (4)	0 (0)	
Removal of migrated stent	0 (0)	1 (1)	
Endoscopic procedure	6 (12)	20 (29)	
Additional SEMS placement	6 (12)	19 (28)	
Food removal	0 (0)	1 (1)	
Adverse events			
Overall	6 (12)	10 (15)	0.91
Perforation	0 (0)	2 (3)	
Bleeding	2 (4)	1 (1)	
Pancreatitis	1 (2)	1 (1)	
Cholangitis	2 (4)	1 (1)	
Asymptomatic migration	1 (2)	5 (7)	

The median cumulative time to recurrent gastric outlet obstruction was significantly longer in 24 mm-cSEMS than in 20 mm-cSEMS (380 days vs. 138 days, P = 0.01).

In multivariate analysis the 24 mm -cSEMS was associated with an Improved time to recurrent gastric outlet obstruction (95% confidence interval 0.16–0.80, P = 0.02).

Inokuma A et al. Dig Endosc. 2023

Feasibility and safety of duodenal covered self-expandable metallic stent fixation: an experimental study *Hori Y et al. Surg Endosc. 2019*

A pilot study of novel duodenal covered self-expandable metal stent fixation *Hori Y et al. Sci Rep. 2021*

Duodenal stent fixation using through-the-scope helix tack and suture device *Wilson N et al. Endoscopy 2023*

Efficacy and safety of endoscopic duodenal stent versus endoscopic or surgical gastrojejunostomy to treat malignant gastric outlet obstruction: systematic review and meta-analysis

EUS-GE had a lower rate of technical success (95.3%) than duodenal SEMS (99.4%) or surgical GJ (99.9%) [P = 0.0048].

Duodenal SEMS vs. EUS-GE vs. surgical GJ, had a similar rates of clinical success (88.9% vs. 89.0% vs. 92.3% respectively, P = 0.49).

EUS-GE had a lower rate of GOO recurrence (P = 0.0036)

Duodenal SEMS had a higher rate of reintervention (P = 0.041).

Overall procedural complications were similar (duodenal SEMS 18.7% vs. EUS-GE 21.9% vs. surgical GJ 23.8%, P = 0.32)

Bleeding rate was lowest (P = 0.0048) and stent occlusion rate was highest (P = 0.0002) for duodenal SEMS.

EUS-GE appears to be a promising treatment for patients with malignant GOO for whom surgery is contraindicated or less desirable.

Krishnamoorthi R et al. Endosc Int Open 2022

Palliative therapy for malignant gastric outlet obstruction: how does the endoscopic ultrasound-guided gastroenterostomy compare with surgery and endoscopic stenting? A systematic review and meta-analysis

ENDOSCOPIC ULTRASOUND-GUIDED GASTROENTEROSTOMY (EUS-G) VERSUS ENDOSCOPIC STENTING (ES)
Six studies – 437 patients

- Technical success: No difference (EUS-G 93.6% versus ES 96.6%; RD: –0.03; 95% CI: – 0.07 to 0.02; p = 0.29; I2 = 12%).
- Clinical success: Higher in EUS-G group (91.1% versus 78.7%, RD 0.10, 95% CI: 0.03–0.17; p = 0.003; I2 = 74%).
- Length of hospital stay: Shorter in EUS-G group (MD: –2.82; 95% CI: – 5.05 to – 0.59; p = 0.01; I2 = 94%).
- Time to tolerate an oral diet: Shorter in ES group (ES 1.38 ± 1.31 versus EUS-G 2.48 ± 0.99 p = 0.005).
- Reintervention: Higher in ES group (32.7% versus 4.2%, RD: –0.27; 95% CI: –0.36 to –0.19; p < 0.001; I2 = 41%).
- Serious adverse events: Higher in ES group (34.8% versus 12%, RD: – 0.18; 95% CI: – 0.28 to –0.09]; p < 0.001; I2 = 78%).

ENDOSCOPIC ULTRASOUND-GUIDED GASTROENTEROSTOMY (EUS-G) VERSUS SURGICAL GASTROJEJUNOSTOMY (SGJJ)
Five studies - 305 patients

- Technical success: Higher in SGJJ group (99% versus 91.5%, RD: –0.08; 95% CI: –0.14 to –0.02; p = 0.008; I2 = 0%).
- Clinical success: No difference (90.7% versus 88.6%; RD: 0.03; 95% CI: – 0.04 to 0.10; p = 0.37; I2 = 59%).
- Length of hospital stay: Shorter in EUS-G group (MD: –5.95; 95% CI: –6.99 to –4.91; p < 0.001; I2 = 95%).
- Time to tolerate an oral diet: Shorter in EUS-G group (MD: –2.89; 95% CI: –3.79 to –1.99; p < 0.001; I2 = 0%).
- Reintervention: No difference (17.7% versus 11.9%; RD: –0.07; 95% CI: –0.15 to 0.01; p = 0.07; I2 = 0%).
- Serious adverse events: No difference (EUS-G 15.7% versus SGJJ 14.2%; RD: –0.05; 95% CI: –0.17 to 0.06; p = 0.37; I2 = 35%).

Martins RK et al. Ther Adv Gastrointest Endosc 2023

COLORECTAL STENTING FOR BENIGN AND MALIGNANT DISEASE

Self-expandable metal stents for obstructing colonic and extracolonic cancer: European Society of Gastrointestinal Endoscopy (ESGE) Guideline – Update 2020

van Hooft JE et al. Endoscopy 2020

PREOPERATIVE

ESGE recommends stenting as a bridge to surgery to be discussed, within a shared decision-making process, as a treatment option in patients with potentially curable left-sided obstructing colon cancer as an alternative to emergency resection.

This discussion should include the following factors:

- **availability of required stenting expertise**
- **risk of stent-related perforation**
- **higher recurrence rates**
- **similar overall survival and postoperative mortality**
- **lower overall complication rates and permanent stoma rates**
- **higher proportion of laparoscopic one-stage surgery procedures**
- **technical and clinical failure rates of stenting**

Strong recommendation, high quality evidence

van Hooft et al. Endoscopy. 2020

Current Status of the Self-Expandable Metal Stent as a Bridge to Surgery Versus Emergency Surgery in Colorectal Cancer: Results from an Updated Systematic Review and Meta-Analysis of the Literature

A total of 12 articles were included

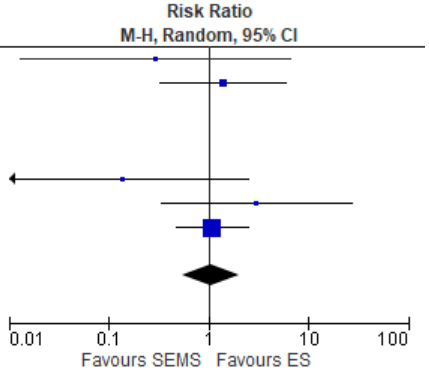
Author	Country	Number of Centres	Time of Enrollment	Premature Closure of the Trial	Number of Patients Enrolled	
					SEMS	Surgery
Arezzo et al., 2020	Italy/Spain	Multicenter	2008–2015	No	56 *	59
Elwan et al., 2020	Egypt	Single-centre	2015–2019	No	30	30
Arezzo et al., 2017	Italy/Spain	Multicenter	2008–2015	No	56 *	59
Sloothaak et al., 2014	Netherlands	Single-centre	2007–2009	Yes	26	32
Thung et al., 2013	Hong Kong, China	Single-centre	2002–2005	No	24	24
Ghazal et al., 2013	Egypt	Single center	2009–2012	No	30	30
Ho et al., 2012	Singapore	Single-centre	2004–2008	No	20	19
Pirlet et al., 2011	France	Multicenter	2002–2006	Yes	30	30
Van Hooft et al., 2011	Netherlands	Multicenter	2007–2009	Yes	47	51
Cui et al., 2011	China	Single center	2005–2009	No	29	15
Alcántara et al., 2011	Spain	Single-centre	2004–2006	Yes	15	13
Cheung et al., 2009	Hong Kong, China	Single-centre	2002–2005	No	24	24

Cirocchi R et al. Medicina 2021

Overall postoperative mortality rate

Study or Subgroup	SEMS Events	SEMS Total	ES Events	ES Total	Weight	Risk Ratio M-H, Random, 95% CI
Alcantara 2011	0	15	1	13	4.4%	0.29 [0.01, 6.60]
Arezzo 2016	4	56	3	59	20.3%	1.40 [0.33, 6.00]
Cheung 2009	0	24	0	24		Not estimable
Elwan 2020	0	30	0	30		Not estimable
Ghazal 2013	0	30	0	30		Not estimable
Ho 2012	0	20	3	19	5.1%	0.14 [0.01, 2.47]
Pirlet 2011	3	30	1	30	8.8%	3.00 [0.33, 27.23]
van Hooft 2011	9	47	9	51	61.4%	1.09 [0.47, 2.50]
Total (95% CI)		**252**		**256**	**100.0%**	**1.06 [0.55, 2.04]**
Total events	16		17			

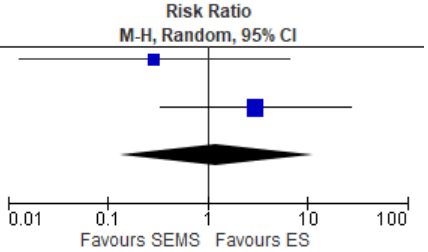
Heterogeneity: Tau² = 0.00; Chi² = 3.64, df = 4 (P = 0.46); I² = 0%
Test for overall effect: Z = 0.18 (P = 0.86)



Overall postoperative mortality rate during the hospital stay

Study or Subgroup	SEMS Events	SEMS Total	ES Events	ES Total	Weight	Risk Ratio M-H, Random, 95% CI
Alcantara 2011	0	15	1	13	38.4%	0.29 [0.01, 6.60]
Ghazal 2013	0	30	0	30		Not estimable
Pirlet 2011	3	30	1	30	61.6%	3.00 [0.33, 27.23]
Total (95% CI)		**75**		**73**	**100.0%**	**1.23 [0.13, 11.32]**
Total events	3		2			

Heterogeneity: Tau² = 0.82; Chi² = 1.43, df = 1 (P = 0.23); I² = 30%
Test for overall effect: Z = 0.18 (P = 0.86)

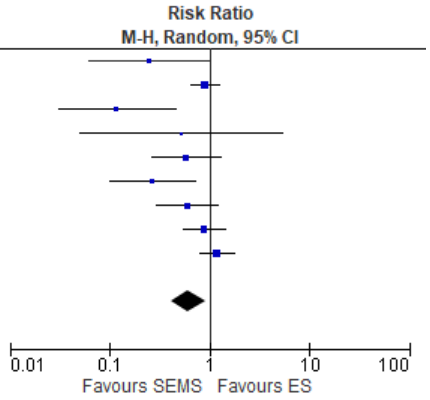


Cirocchi R et al. Medicina 2021

Overall postoperative complications

Study or Subgroup	SEMS Events	SEMS Total	ES Events	ES Total	Weight	Risk Ratio M-H, Random, 95% CI
Alcantara 2011	2	15	7	13	6.0%	0.25 [0.06, 0.99]
Arezzo 2017	29	56	34	59	18.3%	0.90 [0.64, 1.26]
Cheung 2009	2	24	17	24	6.2%	0.12 [0.03, 0.45]
Cui 2011	1	29	2	30	2.6%	0.52 [0.05, 5.40]
Elwan 2020	7	30	12	30	11.6%	0.58 [0.27, 1.28]
Ghazal 2013	4	30	15	30	9.3%	0.27 [0.10, 0.71]
Ho 2012	7	20	11	19	12.6%	0.60 [0.30, 1.23]
Pirlet 2011	15	30	17	30	16.2%	0.88 [0.55, 1.42]
van Hooft 2011	25	47	23	51	17.2%	1.18 [0.79, 1.77]
Total (95% CI)		**281**		**286**	**100.0%**	**0.61 [0.41, 0.91]**
Total events	92		138			

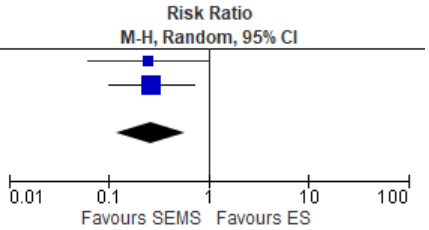
Heterogeneity: Tau² = 0.20; Chi² = 23.15, df = 8 (P = 0.003); I² = 65%
Test for overall effect: Z = 2.41 (P = 0.02)



Overall postoperative complications during the hospital stay

Study or Subgroup	SEMS Events	SEMS Total	ES Events	ES Total	Weight	Risk Ratio M-H, Random, 95% CI
Alcantara 2011	2	15	7	13	33.4%	0.25 [0.06, 0.99]
Ghazal 2013	4	30	15	30	66.6%	0.27 [0.10, 0.71]
Total (95% CI)		**45**		**43**	**100.0%**	**0.26 [0.12, 0.58]**
Total events	6		22			

Heterogeneity: Tau² = 0.00; Chi² = 0.01, df = 1 (P = 0.93); I² = 0%
Test for overall effect: Z = 3.30 (P = 0.0010)

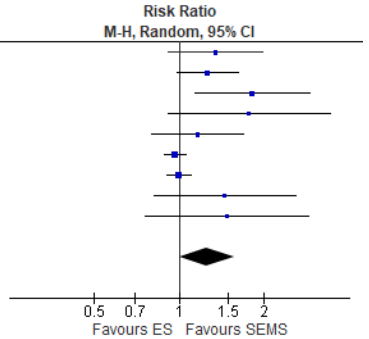


Cirocchi R et al. Medicina 2021

Success of primary anastomosis

Study or Subgroup	SEMS Events	SEMS Total	ES Events	ES Total	Weight	Risk Ratio M-H, Random, 95% CI
Alcantara 2011	14	15	9	13	11.1%	1.35 [0.92, 1.98]
Arezzo 2017	43	56	36	59	13.9%	1.26 [0.98, 1.62]
Cheung 2009	20	24	11	24	9.6%	1.82 [1.14, 2.91]
Cui 2011	18	29	7	20	6.7%	1.77 [0.92, 3.44]
Elwan 2020	21	30	18	30	11.4%	1.17 [0.80, 1.70]
Ghazal 2013	29	30	30	30	16.4%	0.97 [0.88, 1.06]
Ho 2012	20	20	19	19	16.3%	1.00 [0.91, 1.10]
Pirlet 2011	16	30	11	30	7.9%	1.45 [0.82, 2.59]
van Hooft 2011	15	47	11	51	6.6%	1.48 [0.76, 2.89]
Total (95% CI)		**281**		**276**	**100.0%**	**1.26 [1.01, 1.57]**
Total events	196		152			

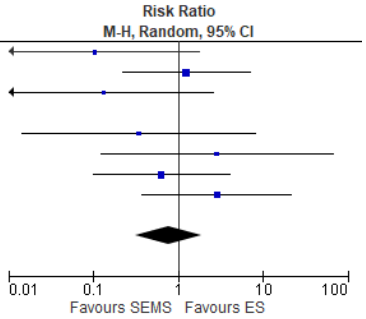
Heterogeneity: Tau² = 0.08; Chi² = 57.87, df = 8 (P < 0.00001); I² = 86%
Test for overall effect: Z = 2.02 (P = 0.04)



Anastomotic Leakage

Study or Subgroup	SEMS Events	SEMS Total	ES Events	ES Total	Weight	Risk Ratio M-H, Random, 95% CI
Alcantara 2011	0	14	4	13	9.7%	0.10 [0.01, 1.76]
Arezzo 2017	3	43	2	36	24.9%	1.26 [0.22, 7.11]
Cheung 2009	0	20	2	13	8.9%	0.13 [0.01, 2.57]
Elwan 2020	0	21	0	18		Not estimable
Ghazal 2013	0	29	1	30	7.8%	0.34 [0.01, 8.13]
Ho 2012	1	20	0	19	7.9%	2.86 [0.12, 66.11]
Pirlet 2011	2	22	2	14	22.2%	0.64 [0.10, 4.01]
van Hooft 2011	5	21	1	12	18.5%	2.86 [0.38, 21.68]
Total (95% CI)		**190**		**155**	**100.0%**	**0.78 [0.32, 1.91]**
Total events	11		12			

Heterogeneity: Tau² = 0.05; Chi² = 6.23, df = 6 (P = 0.40); I² = 4%
Test for overall effect: Z = 0.55 (P = 0.58)

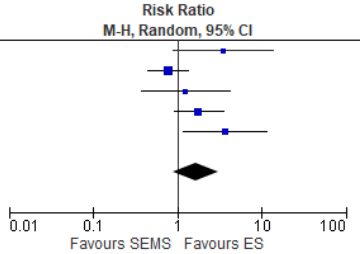


Cirocchi R et al. Medicina 2021

Overall Recurrence

Study or Subgroup	SEMS Events	SEMS Total	ES Events	ES Total	Weight	Risk Ratio M-H, Random, 95% CI
Alcantara 2011	8	15	2	13	13.4%	3.47 [0.89, 13.51]
Arezzo 2020	15	53	20	55	28.8%	0.78 [0.45, 1.35]
Ghazal 2013	5	30	4	30	15.4%	1.25 [0.37, 4.21]
Sloothaak 2014	13	26	9	32	25.9%	1.78 [0.91, 3.49]
Tung 2013	11	24	3	24	16.5%	3.67 [1.17, 11.52]
Total (95% CI)		**148**		**154**	**100.0%**	**1.63 [0.88, 3.04]**
Total events	52		38			

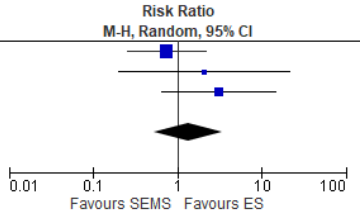
Heterogeneity: Tau² = 0.27; Chi² = 9.35, df = 4 (P = 0.05); I² = 57%
Test for overall effect: Z = 1.55 (P = 0.12)



Local Recurrence rate

Study or Subgroup	SEMS Events	SEMS Total	ES Events	ES Total	Weight	Risk Ratio M-H, Random, 95% CI
Arezzo 2020	5	53	7	55	54.4%	0.74 [0.25, 2.19]
Ghazal 2013	2	29	1	30	14.9%	2.07 [0.20, 21.60]
Sloothaak 2014	5	26	2	32	30.8%	3.08 [0.65, 14.58]
Total (95% CI)		**108**		**117**	**100.0%**	**1.34 [0.52, 3.43]**
Total events	12		10			

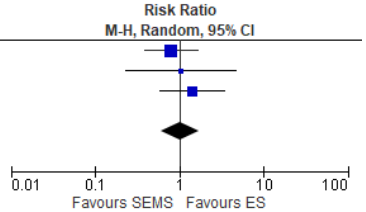
Heterogeneity: Tau² = 0.12; Chi² = 2.36, df = 2 (P = 0.31); I² = 15%
Test for overall effect: Z = 0.61 (P = 0.54)



Systemic recurrence rate

Study or Subgroup	SEMS Events	SEMS Total	ES Events	ES Total	Weight	Risk Ratio M-H, Random, 95% CI
Arezzo 2020	10	53	13	55	51.6%	0.80 [0.38, 1.66]
Ghazal 2013	3	29	3	30	12.0%	1.03 [0.23, 4.71]
Sloothaak 2014	8	26	7	32	36.4%	1.41 [0.59, 3.37]
Total (95% CI)		**108**		**117**	**100.0%**	**1.01 [0.60, 1.71]**
Total events	21		23			

Heterogeneity: Tau² = 0.00; Chi² = 0.95, df = 2 (P = 0.62); I² = 0%
Test for overall effect: Z = 0.04 (P = 0.96)



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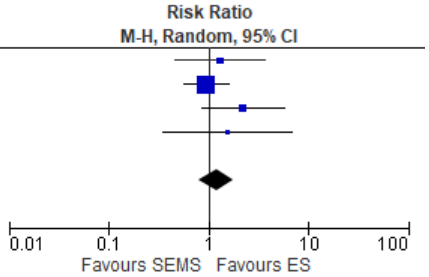
Three years overall survival

Study or Subgroup	SEMS Events	SEMS Total	ES Events	ES Total	Weight	Risk Ratio M-H, Random, 95% CI
Alcantara 2011	6	15	4	13	15.5%	1.30 [0.47, 3.62]
Arezzo 2020	18	56	20	59	59.7%	0.95 [0.56, 1.60]
Sloothaak 2014	9	26	5	32	17.5%	2.22 [0.85, 5.80]
Tung 2013	5	21	2	13	7.3%	1.55 [0.35, 6.85]
Total (95% CI)		**118**		**117**	**100.0%**	**1.20 [0.80, 1.79]**
Total events	38		31			

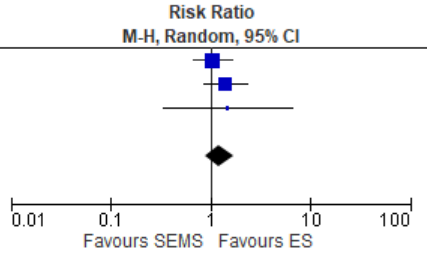
Heterogeneity: Tau² = 0.00; Chi² = 2.49, df = 3 (P = 0.48); I² = 0%
Test for overall effect: Z = 0.88 (P = 0.38)



Three years disease free survival

Study or Subgroup	SEMS Events	SEMS Total	ES Events	ES Total	Weight	Risk Ratio M-H, Random, 95% CI
Arezzo 2017	22	56	22	59	50.7%	1.05 [0.66, 1.68]
Sloothaak 2014	16	26	14	32	44.3%	1.41 [0.86, 2.31]
Tung 2013	5	22	2	13	4.9%	1.48 [0.33, 6.55]
Total (95% CI)		**104**		**104**	**100.0%**	**1.22 [0.87, 1.69]**
Total events	43		38			

Heterogeneity: Tau² = 0.00; Chi² = 0.77, df = 2 (P = 0.68); I² = 0%
Test for overall effect: Z = 1.17 (P = 0.24)



Cirocchi R et al. Medicina 2021

Critical appraisal of oncological safety of stent as bridge to surgery in left-sided obstructing colon cancer; a systematic review and meta-analysis

Five-year overall survival rate was retrievable from seven studies (230 vs. 283 patients)

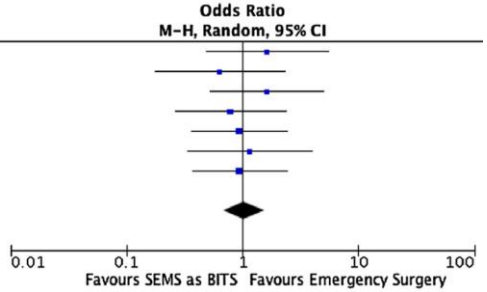
Five-year disease-free survival in six studies (206 vs. 306 patients)

Amelung et al. Critical Reviews in Oncology/Hematology 2018

Five-year overall survival rate

Study or Subgroup	SEMS as BTS Events	Total	Emergency Surgery Events	Total	Weight	Odds Ratio M-H, Random, 95% CI
Amelung, 2016	14	38	5	19	11.7%	1.63 [0.48, 5.51]
Flor, 2017	4	24	10	42	10.4%	0.64 [0.18, 2.32]
Gibor 2017	12	19	20	39	13.7%	1.63 [0.53, 5.01]
Kim, 2013	6	18	26	67	14.4%	0.79 [0.26, 2.36]
Kim, 2016	16	80	8	38	19.0%	0.94 [0.36, 2.43]
Quereshy, 2013	13	18	27	39	11.3%	1.16 [0.34, 3.97]
Saida, 2003	19	33	23	39	19.5%	0.94 [0.37, 2.42]
Total (95% CI)		**230**		**283**	**100.0%**	**1.04 [0.68, 1.57]**
Total events	84		119			

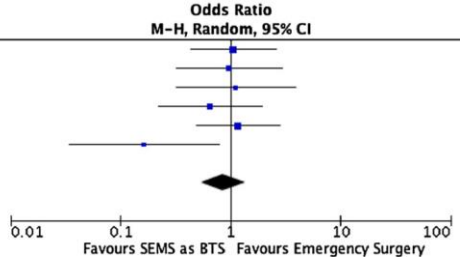
Heterogeneity: Tau² = 0.00; Chi² = 2.05, df = 6 (P = 0.92); I² = 0%
Test for overall effect: Z = 0.17 (P = 0.86)



Five-year disease-free survival

Study or Subgroup	SEMS as BTS Events	Total	Emergency Surgery Events	Total	Weight	Odds Ratio M-H, Random, 95% CI	Year
Saida, 2003	17	40	16	39	23.0%	1.06 [0.43, 2.60]	2003
Kim, 2013	7	18	19	48	15.7%	0.97 [0.32, 2.95]	2013
Quereshy, 2013	21	26	30	38	12.6%	1.12 [0.32, 3.90]	2013
Choi, 2014	5	23	29	97	16.4%	0.65 [0.22, 1.92]	2014
Kim, 2016	24	79	10	37	24.1%	1.18 [0.49, 2.81]	2016
Flor, 2017	2	20	19	47	8.2%	0.16 [0.03, 0.79]	2017
Total (95% CI)		**206**		**306**	**100.0%**	**0.86 [0.54, 1.36]**	
Total events	76		123				

Heterogeneity: Tau² = 0.03; Chi² = 5.53, df = 5 (P = 0.35); I² = 10%
Test for overall effect: Z = 0.66 (P = 0.51)



Amelung et al. Critical Reviews in Oncology/Hematology 2018

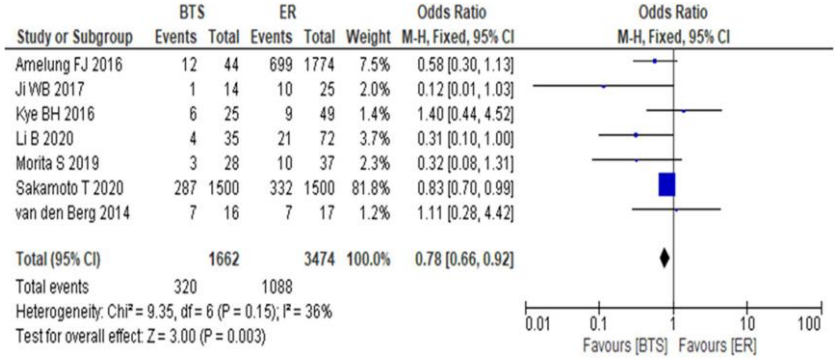
Colonic stent as a bridge to surgery versus emergency resection for right-sided malignant large bowel obstruction: a meta-analysis

Seven studies were included, comprising 5136 patients, of whom 1662 (32.4%) underwent BTS and 3474 (67.6%) underwent ER.

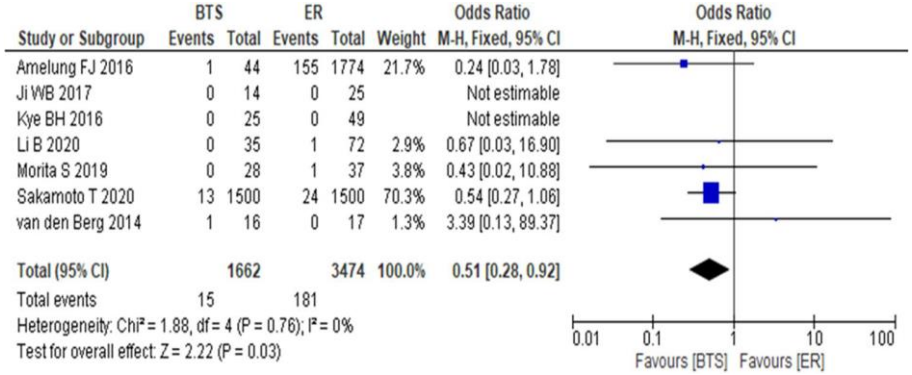
	No. of studies	Rates % (BTS[a]: ER[b])	ORs[c]	95% CI[d]	*P* value	Heterogeneity		
						χ^2	I^2(%)	*P* value
Primary anastomosis	5	97.8: 85.9	0.31	0.10–0.96	0.04	0.11	0	0.95
Stoma construction	6	2.0: 11.0	0.45	0.25–0.83	<0.01	5.09	21	0.28
Laparoscopic surgery	7	48.5: 15.7	0.21	0.10–0.42	<0.01	18.36	67	<0.01
Anastomotic leakage	6	2.6: 5.6	0.66	0.45–0.96	0.03	0.55	0	0.99
Surgical site infection	6	4.6: 5.8	0.62	0.46–0.82	<0.01	4.37	0	0.50
Ileus	6	6.7: 3.1	1.28	0.96–1.71	0.09	4.87	0	0.43

Kanaka et al. Surg Endosc 2022

Postoperative complications

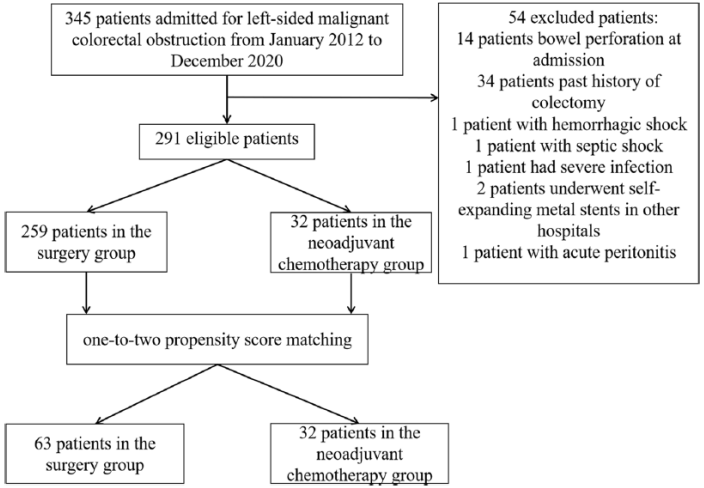


Postoperative mortality



Kanaka et al. Surg Endosc 2022

Safety and feasibility of neoadjuvant chemotherapy as a surgical bridge for acute left-sided malignant colorectal obstruction: a retrospective study



23 patients FOLFOX: median of 4 courses (IQR, 3-6 courses)
7 patients FOLFOXIRI: median of 8 courses (IQR, 6-10 courses)
2 patients XELOX: median of 2 courses (IQR, 2-2 courses)

	Surgery* ($n = 63$)	Neoadjuvant chemotherapy*($n = 32$)	*P* value
Postoperative CEA, N%			0.692
Normal	33 (63.5)	21 (67.7)	
Elevated	19 (36.5)	10 (32.3)	
Postoperative complication, N%			**0.001**
No	46 (73.0)	32 (100.0)	
Yes	17 (27.0)	0 (0.0)	
ICU, N%			**0.042**
No	53 (84.1)	32 (100.0)	
Yes	10 (15.9)	0 (0.0)	
Stoma, N%			0.198
No	21 (33.3)	15 (46.9)	
Yes	42 (66.7)	17 (53.1)	
1-year locoregional recurrence, N%			0.660
No	58 (92.1)	31 (96.9)	
Yes	5 (7.9)	1 (3.1)	
1-y Mortality, N%			0.439
No	51 (82.3)	29 (90.6)	
Yes	11 (17.7)	3 (9.4)	
1-y with stoma, N%			**0.047**
No	46 (73.0)	29 (90.6)	
Yes	17 (27.0)	3 (9.4)	
Postoperative bowel function (days), median, (IQR)	5.00 (3.00-6.00)	3.00 (2.00-3.00)	**< 0.001**
Postoperative hospital stay (days), median, (IQR)	13.00 (10.00-19.00)	8.00 (7.25-11.75)	**< 0.001**
Total Hospital stay (days), median, (IQR)	20.00 (16.00-25.00)	15.50 (13.00-18.75)	**0.002**
Surgery time (min), median, (IQR)	230.00 (180.00-300.00)	213.00 (188.50-270.00)	0.428
Intraoperative blood loss (ml), median, (IQR)	100.0 (50.0-200.0)	100.00 (50.00-187.50)	0.209

Zhang J et al. BMC Cancer 2022

Long-term outcomes of palliation for unresectable colorectal cancer obstruction in patients with good performance status: endoscopic stent versus surgery

114 patients with unresectable CRC obstruction

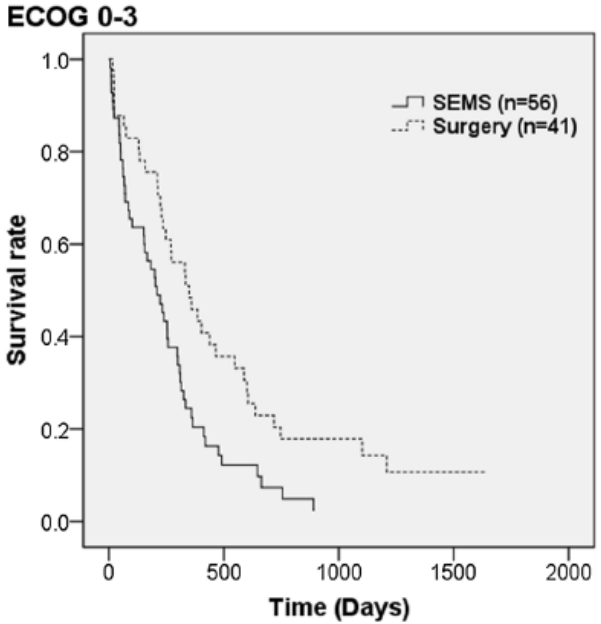
SEMS n = 73 or palliative surgery n = 41

28/41 (68.3 %) primary resection with anastomosis
4/41 (9.8 %) Hartmann's operation
4/41 (9.8 %) colostomy or ileostomy
5/41 (12.2 %) bypass

Ahn et al.Surg Endosc 2016

Long-term outcomes of palliation for unresectable colorectal cancer obstruction in patients with good performance status: endoscopic stent versus surgery

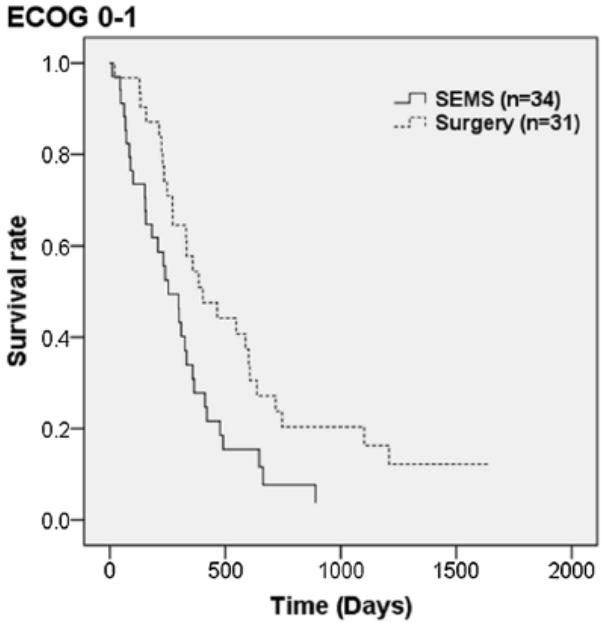
The median survival was shorter after SEMS placement than after surgery (209 vs. 349 days; P = .005).



Ahn et al.Surg Endosc 2016

Long-term outcomes of palliation for unresectable colorectal cancer obstruction in patients with good performance status: endoscopic stent versus surgery

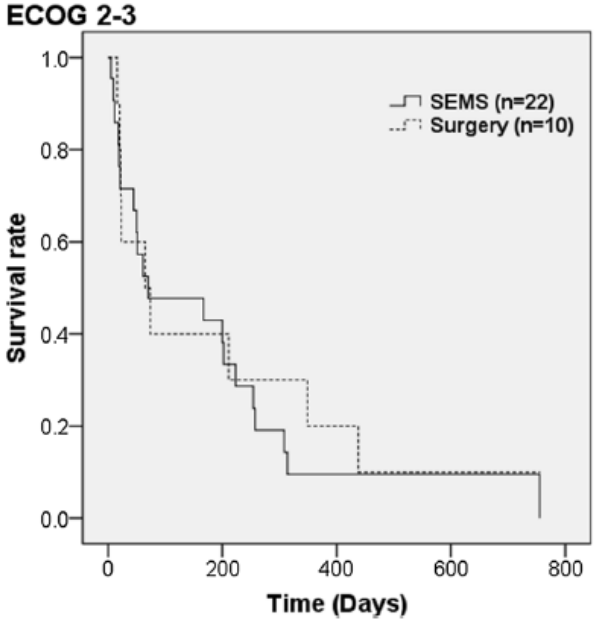
In patients with an Eastern Cooperative Oncology Group (ECOG) 0 or 1, the median survival was 253 days (95 % CI 160 – 346 days) in the SEMS group and 403 days (95 % CI 230 – 576 days) in the surgery group (P = .016).



Ahn et al.Surg Endosc 2016

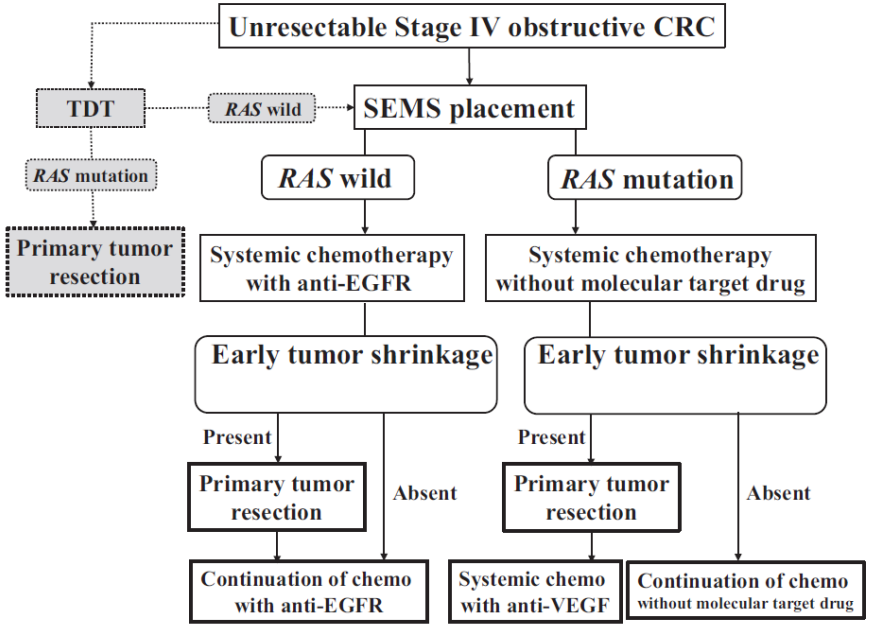
Long-term outcomes of palliation for unresectable colorectal cancer obstruction in patients with good performance status: endoscopic stent versus surgery

In patients with an ECOG performance status of 2 or 3, the median survival did not differ between groups (70 vs. 65 days, respectively; P = .487)



Ahn et al.Surg Endosc 2016

Systemic Chemotherapy is a Promising Treatment Option for Patients with Colonic Stents: A Review



Matsuda et al. J Anus Rectum Colon 2021

“Nella vita possono toglierti tutto,
ma non quello che hai imparato studiando.
Ecco perché non dovrai mai smettere
di studiare e migliorarti”

Gioacchino Cartabellotta

Medico di un piccolo paese
che pensava in grande

Alia (PA) 1922 – Palermo 1980