Obstructed colon cancer

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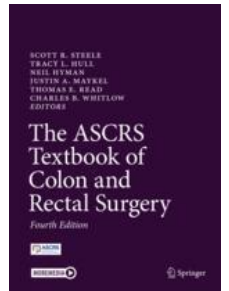
No disclosure

Background

- ❖ LBO is relatively a common entity in our practice and may be challenging.
- ✓ **Due to many underlying pathologies.**
- ✓ **Older patients who have comorbidities influence decision making.**
- ❖ **Varying C/P:**
- ✓ Gradual derangement in bowel function.
- ✓ Sub acute IO.
- ✓ Acute IO with ischemia or even perforation requiring emergency surgery.

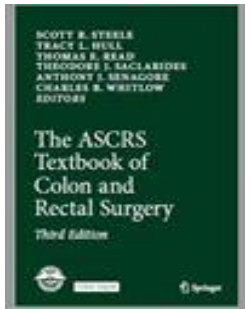


Causes

TABLE 40-1. Etiology of large bowel obstruction (LBO)

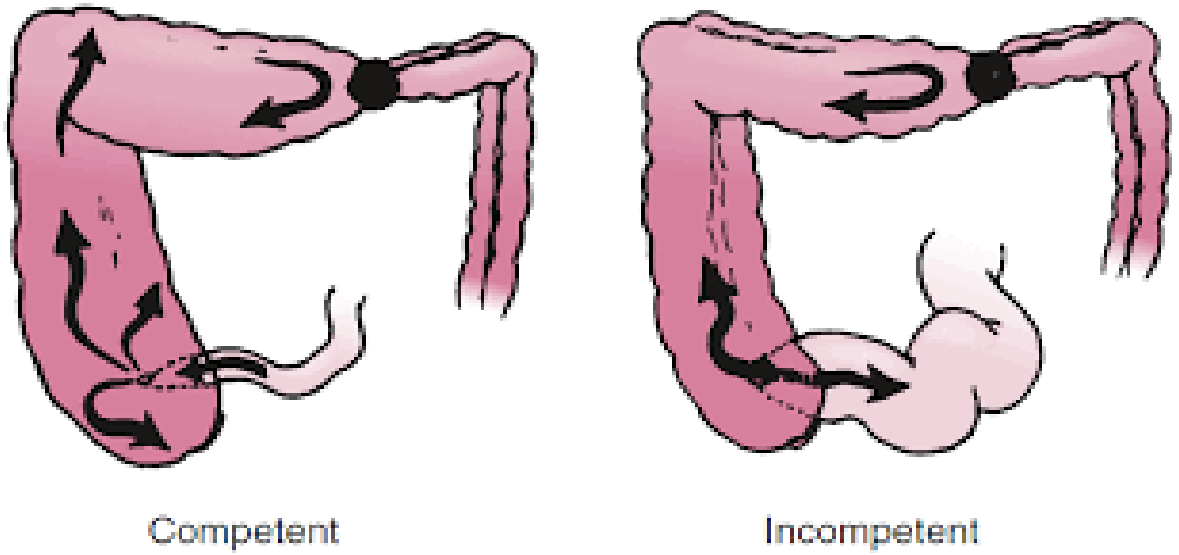
1. Intrinsic lesions
Colon cancer[a]
Diverticular disease[b]
Crohn's disease[c]
Endometriosis[c]
Radiation[c]
Ischemic[c]
2. Extrinsic lesions[c]
Non-colorectal malignancy (e.g., ovarian cancer)
Hernia
Adhesions
3. Volvulus[b]
4. Other[c]
Foreign body
Impaction
Acute colonic pseudo-obstruction (ACPO)

[a]Most common cause of LBO
[b]Common causes of LBO
[c]Uncommon causes of LBO



Pathophysiology

- **75% competent** ileocecal valve: closed loop obstruction.



Jaffe et al. Radiology. 2015;275:651–63

C/P

- ❖ Cessation of flatus(90%).
- ❖ Cessation of feces(80.6%).
- ❖ Abdominal distension(65%).
- ❖ Vomiting is late.
- ❖ **Bowel ischemia?!:**
  - ✓ Continuous abdominal pain.
  - ✓ Fever, tachycardia.
  - ✓ Signs of peritonitis with toxicity.

Markogiannakis et al. orld J Gastroenterol.2007;13:432–437.
Sawai et al. Clin Colon Rectal Surg. 2012;25:200–203.

Radiological investigations

- **CT** is the **imaging modality of choice** with a reported sensitivity and specificity of 96% and 93%.
- **Water-soluble contrast enema** has a 96% sensitivity and 98% specificity, but **does not** commonly elucidate the etiology of the process.

Taourel et al. Abdom Imaging. 2003;28:267–75.
Pisano et al. World J Emerg Surg. 2018;13:36.
Imuta et al . Radiat Med. 2007;25:113–8.

Diagnostic modality of choice

Table 2 Comparison of imaging studies for confirmation, cause and site of LBO

	Confirmation of LBO obstruction		Cause of LBO		Site of LBO	
	Sensitivity	Specificity	Sensitivity	Specificity	Sensitivity	Specificity
Plain X-ray	74–84% [26]	50–72% [26, 211, 212]	0	7% [212]	0	60% [212]
Abdominal US	88% [211]	76% [211]	0	23% [212]	0	70% [212]
Colonic enema	96% [26]	98% [26]	0	96% [26]	96% [26]	98% [26]
CT scan	93–96% [212, 213]	93–100% [212, 213]	0	66–87% [212, 214]	95% [213]	90–94% [29, 213]

Table 3 Comparison of imaging studies for confirmation and site of perforation

	Confirmation of perforation		Site of perforation	
	Sensitivity	Specificity	Sensitivity	Specificity
Abdominal plain X-ray	53% [30]	53% [30]	NS	NS
Abdominal US	92% [30]	53% [30]	NS	NS
Colonic enema	NS	NS	NS	NS
CT scan	95% [29]	90% [29]	NS	90% [29]

NS not stated

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ASCRS
1899

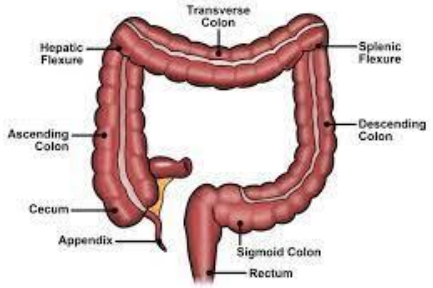
Malignant LBO

- 10-20% of CRC patient.
- The obstructive feature of colon cancer is an independent high-risk factor of **recurrence**, because of the advanced cancer stage with poor prognostic factors.
- Patients requiring emergency surgery for obstructive colon cancer have **worse short-term and long-term oncologic** outcomes compared to those with elective surgery.
- Ultimate decision making is important.

Chen et al .World J Surg Oncol 2017; 15: 164
Dahdaleh, et al. Surgery 2018; 164: 1223-1229
Cortet, et al . Colorectal Dis 2013; 15:1100-1106

Site

- Usually classified as right-sided or left-sided obstruction according to proximal or distal to the **splenic flexure.**
- Most common site is in the **sigmoid colon.**
- The larger diameter of the cecum and ascending colon allows a **bulky** and **locally advanced** characteristics of the tumor.
- Obstructed rectal cancer is **the least frequent** due to the sizeable luminal diameter of the rectum and the early symptoms.



Høydahl , et al. BMC Cancer 2020; 20: 1077
Frago, et al . Am J Surg 2014; 207: 127-138
Decker, et al. JAMA Netw Open 2020; 3: e205741

Right side

- 30-40% of LBO cancer cases.
- **Right hemicolectomy with anastomosis** has been advocated because of rich blood supply and simple manipulation of the dilated bowel with enough length.

✓ Surgeons' intraoperative judgment through **assessment of intraoperative blood supply and tissue quality** remains the corner stone for the decision either anastomosis or

	Emergency	Elective
AL rate	**12-16%**	4.1%
Morbidity rate	**46-54%**	30%
Mortality rate	**14.5%**	2.5%
Short term outcomes	bad	good

Right side

❖ **Other treatment options:**

- ✓ **Loop ileostomy after resection and anastomosis.**
- ✓ **Resection with double barrel ileo-colostomy.**
- ✓ **Loop ileostomy only.**
- ✓ **Bypass.**
- ✓ **SEMS**

	SEMS	Elective
AL rate	**5.5%**	4.1%
Morbidity rate	**7-44%**	30%
Mortality rate	**1.2%**	2.5%
Short & long term outcomes	good	good

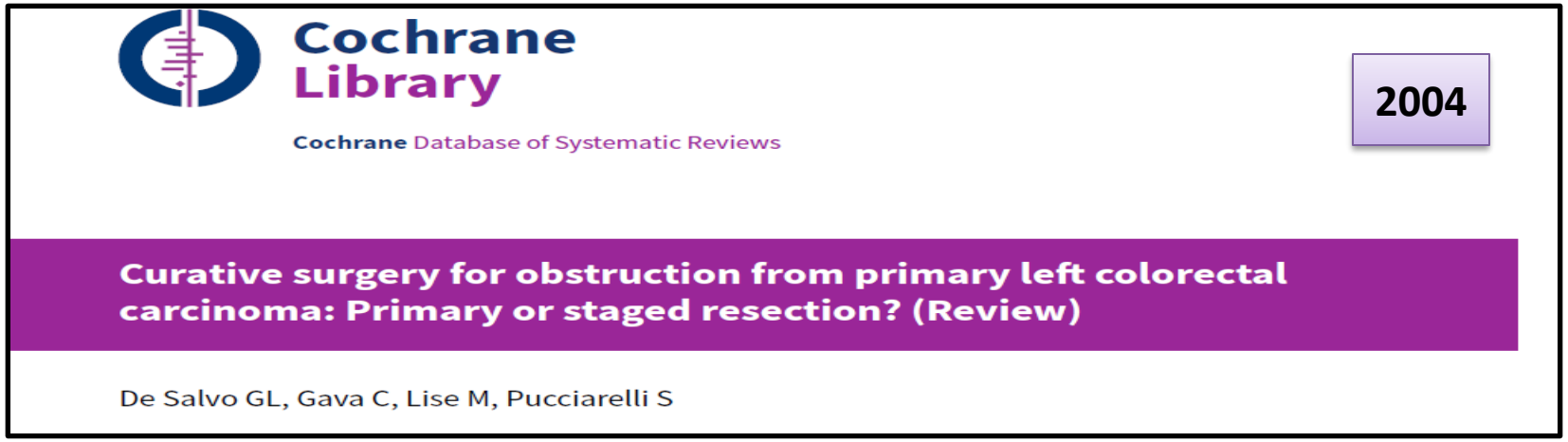
Lt side

- The treatment options for left sided obstructive colon cancer are **diverse and controversial**.
  - **Resection with an end stoma (HP).**
  - **Just diversion stoma.**
  - **Resection anastomosis ± intraoperative lavage ± covering stoma.**
  - **SEMS.**

Meyer et al, Tech Coloproctol2004;8:s226-s229.
Timmermans et al, Med Care1997; 35: 701-713.

Lt side

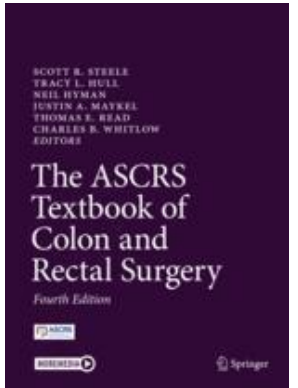
To divert or to do oncological resection?



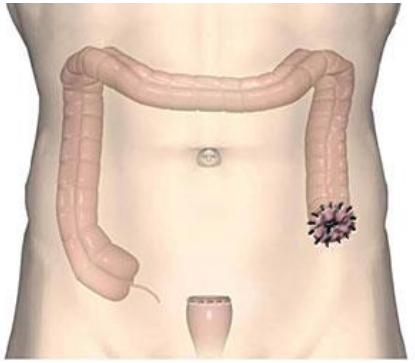
- **Defunctioning loop colostomy Vs. primary resection:**
  - No significant differences in terms of **morbidity rate** or overall survival between the two approaches.

Lt side

- ➢ Oncological resection when feasible.
- ➢ Reserve loop colostomy formation for:
- ✓ **Very frail patients.**
- ✓ **Palliative procedure to relieve the obstruction in non-resectable disease.**



Lt side



❖ HP safest but complex.

- ✓ Risk of morbidity and mortality.
- ✓ **21-36%** risk of morbidity during surgery for stoma reversal.
- ✓ **71%** of patients **never** undergo surgery for stoma reversal, affecting their quality of life.

➢ Risk factors of non reversal of stoma:

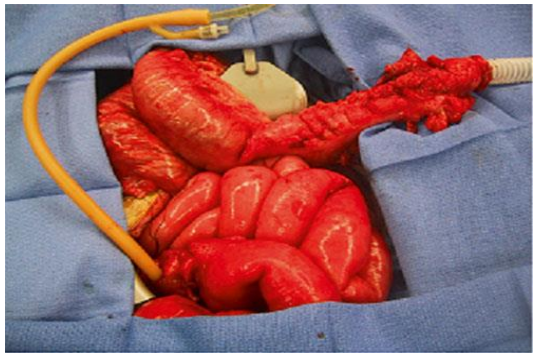
- ✓ Old age with comorbidities.
- ✓ Advanced cancer stage.
- ✓ Developed postoperative complication after emergency surgery.

Hallam et al, Ann R Coll Surg Engl 2018; 100: 301-307.
Kang et al. Sci Rep 2020; 10: 16820.
Whitney et al. Int J Colorectal Dis 2020; 35: 1875-1880.

Lt side

Diversion or anastomosis ?

- Surgical dogma was raised to make a primary anastomosis in the setting of colectomy for a left-sided LBO, as a combination of **bowel wall edema** and an **unprepared colon** made fashioning an anastomosis ill-advised.
- 2-12% AL comparable to elective 2-8%??!!



Tekkis et al. Ann Surg.2004;240:76–81.

Ansaloni et al. World J Emerg Surg.2010;5:29.

Diseases of the Colon & Rectum

Prospective, Randomized Trial Comparing Intraoperative Colonic Irrigation With Manual Decompression Only for Obstructed Left-Sided Colorectal Cancer

2005

J. F. Lim, F.R.C.S.(Glasg.), C.-L. Tang, F.R.C.S.(Edinb.),
F. Seow-Choen, F.R.C.S.(Edinb.), S. M. Heah, F.R.C.S.(Edinb.)

Department of Colorectal Surgery, Singapore General Hospital, Singapore

- **On table lavage vs. decompression**, **no** difference in leakage rate.
- Long operative time for irrigation.
- Manual decompression is **safe.**

To do covering ileostomy or not?

Surgical practices for malignant left colonic obstruction in Germany

R. Kube [a,c,*], D. Granowski [a,c], P. Stübs [a,c], P. Mroczkowski [a,c], H. Ptok [b,c], U. Schmidt [d], I. Gastinger [b,c], H. Lippert [a,c]
for the study group *Qualitätssicherung Kolon/Rektum-Karzinome (Primärtumor)*
(Quality assurance in primary colorectal carcinoma)

EJSO 2010

- **743 patients**
- 1 stage vs. anastomosis with covering ileostomy vs. HP.
- No difference between 1st two groups at **AL rate 7% vs. 8%??!!**
- No difference in morbidity and hospital stay between all groups.

- **Conclusion:** Primary anastomosis for emergency left colon carcinoma obstruction should only be regarded as indicated in cases where the risk profile is **favorable.**
- **High-risk** cases **HP** should be used.
- A protective stoma **did not** appear to confer any advantage.

When to perform total colectomy?

- **Proximal colonic ischemia.**
- **Cecal serosal tearing not amenable for primary repair or cecal perforation.**
- **Synchronous colonic lesion.**
- Anastomotic leak rates of 0–10% and mortality rates of 0–11% .
- **Bowel function?!**

Klatt et al. Am J Surg. 1981;141:577–8.
Finan et al. Colorectal Dis. 2007;9:1–17.

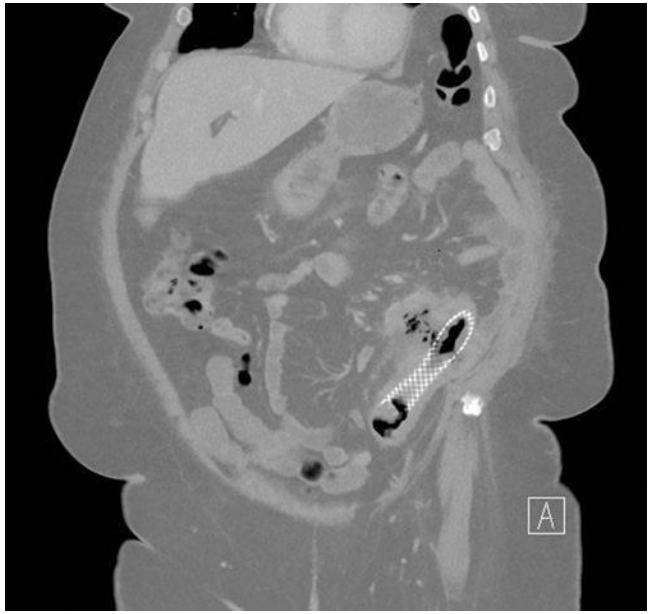
British Journal of Surgery 1995, **82**, 1622–1627

Single-stage treatment for malignant left-sided colonic obstruction: a prospective randomized clinical trial comparing subtotal colectomy with segmental resection following intraoperative irrigation

The SCOTIA Study Group

- **SCOTIA trial**: **Segmental colectomy Vs. subtotal colectomy.**
- **No** difference in morbidity or mortality rates.
- **Increased bowel frequency** (≥3 bowel motions /day) in the **subtotal colectomy** group up to 4 months of follow up.

Self Expandable Metallic Stent (SEMS)



SEMS

- **Dohmoto 1991**, described the use of a palliative stent for malignant obstruction.
- **Tejero et al. 1997** reported his experience with SEMS to relieve colonic obstruction before curative resection with 92-100% success rate.
- Then the era of the colonic stent was **born**.

The aim:

- **Bridge to surgery.**
- **Decrease morbidity rates compared to emergent resection.**
- **Patient could be liable for MIS.**
- **Reduction in stoma rate.**

Dohmoto.Endosc Dig.1991;3:1507–1512.
Tejero et al. Dis Colon Rectum. 1997;40(4):432–6.
Cheung et al. Arch Surg. 2009;144(12):1127–32.

Some technical tips for SEMS

- CT or barium enema to show the anatomy.
- The stent should be deployed with at least **2 cm** of overlap above and below the stricture.
- To prevent re-obstruction, the diameter should be **24 mm** at the mid-stent position .
- Ballon dilatation should be avoided.
- For patients with resectable tumors, definitive surgery is best done within **7–14 day** of stent placement.
- Success rate **78-83%**. However still **30-40%** of patients required **stoma** during surgery.

van Hooft et al. Gastrointest Endosc. 2014;80(5):747–61. e1-75.
Small et al. Gastrointest Endosc. 2010;71(3):560–72.

SEMS

❖ **Complications:**

- Failure.
- Migration.
- Perforation with **Bevacizumab(Avastin).**
- Tumor regrowth.
- Obstruction.

Small et al. Gastrointest Endosc. 2010;71(3):560–72.
Cennamo et al. Clin Gastroenterol Hepatol. 2009;7(11):1174–6.

SEMS

Stent as bridge to surgery for left-sided malignant colonic obstruction reduces adverse events and stoma rate compared with emergency surgery: results of a systematic review and meta-analysis of randomized controlled trials CME

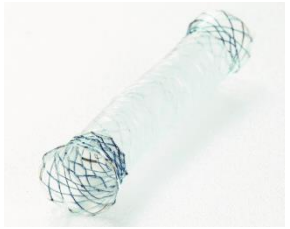
2017

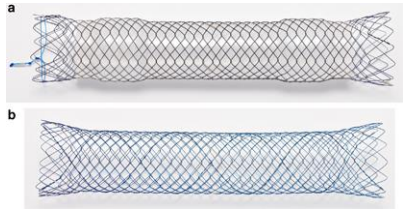
Alberto Arezzo, MD,[1] Roberto Passera, PhD,[2] Giacomo Lo Secco, MD,[1] Mauro Verra, MD,[1] Marco Augusto Bonino, MD,[1] Eduardo Targarona, MD,[3] Mario Morino, MD[1]

Turin, Italy; Barcelona, Spain

- 8 RCT, 497 patients.
- **Comparing SEMS Vs. Emergent surgery**
- No significant difference in **60-day mortality.**
- **Higher 60-day mortality in emergency group**
- Significant difference in the **temporary stoma rate** SEMS (33.9%) Vs. ES (51.4%) [p<0.001].

SEMS





Covered Vs. uncovered stents?

- While covered stents were thought to inhibit the rate of tumor ingrowth.
- However, covered stents may **not anchor** to the bowel wall as effectively as an uncovered stent and may **migrate** more easily.

Mashar et al. International Journal of Colorectal Disease. 2019;34;773-785.

SEMS

International Journal of Colorectal Disease (2019) 34:773–785
https://doi.org/10.1007/s00384-019-03277-3

REVIEW

Uncovered versus covered stent in management of large bowel obstruction due to colorectal malignancy: a systematic review and meta-analysis

Meghavi Mashar[1] · Ruchir Mashar[2] · Shahab Hajibandeh[3]

- 10 studies.
- The **uncovered stent** group was associated with a **lower risk of tumor overgrowth, decreased risk of stent migration, and lower need for stent reinsertion.**

Conclusions Our results suggest that uncovered stents are superior as indicated by fewer complications, lower rates of stent migration, longer duration of patency and a reduced need for stent reinsertion. The best available evidence is mainly derived from non-randomised studies; there is a need for more RCTs.

SEMS

- **Possible tumor cell dissemination??!!** after stenting, especially in cases complicated by subtle or iatrogenic perforation.

Colonic stenting versus emergency surgery for acute left-sided malignant colonic obstruction: a multicentre randomised trial

2011

*Jeanin E van Hooft, Willem A Bemelman, Bas Oldenburg, Andreas W Marinelli, Martijn F Lutke Holzik, Marina J Grubben, Mirjam A Sprangers, Marcel G Dijkgraaf, Paul Fockens, for the collaborative Dutch Stent-In study group**

- Perforation rate 13% & Failure rate 17%.

Interpretation Colonic stenting has no decisive clinical advantages to emergency surgery. It could be used as an alternative treatment in as yet undefined subsets of patients, although with caution because of concerns about tumour spread caused by perforations.

SEMS oncologic outcomes

Table 1 Oncological outcome after self-expandable metal stent placement as a bridge to surgery *vs* emergency surgery in malignant colonic obstruction

Ref.	Year	Study population	Study design	Location of obstructive cancer	Survival outcome
Matsuda *et al* [75]	2015	*n* = 1136: (1) BTS = 432; and (2) ES = 704	Meta-analysis: (1) 2 RCTs; (2) 2 prospective nonrandomized comparative studies; and (3) 7 retrospective comparative studies	Right- and left-sided	(1) No difference in disease-free survival and overall survival; and (2) No difference in recurrence
Ceresoli *et al* [76]	2017	*n* = 1333: (1) BTS = 688; (2) ES = 655	Meta-analysis: (1) 5 RCTs; (2) 3 prospective nonrandomized comparative studies; and (4) 9 retrospective comparative studies	Left-sided	(1) No difference in local recurrence and overall recurrence; (2) No difference in 3-yr and 5-yr recurrence; and (3) No difference in 3-yr and 5-yr mortality
Yang *et al*[53]	2018	*n* = 497: (1) BTS = 251; and (2) ES = 246	Meta-analysis: 8 RCTs	Left-sided	Higher tumor recurrence rate in BTS with an odds ratio of 1.79, 95%CI: 1.09–2.93
Amelung *et al*[51]	2018	*n* = 1919: (1) BTS = 938; and (2) ES = 981	Meta-analysis: (1) 5 RCTs; (2) 4 prospective nonrandomized comparative studies; and (3) 12 retrospective comparative studies	Left-sided	(1) No difference in locoregional recurrence and overall recurrence; (2) No difference in 3-yr and 5-yr disease-free survival; and (3) No difference in 3-yr and 5-yr overall survival
Foo *et al*[54]	2019	*n* = 448: (1) BTS = 222; and (2) ES = 226	Meta-analysis: 7 RCTs	Left-sided	(1) Overall recurrence rate: 37.0% in BTS *vs* 25.9% in ES; (2) The risk ratio of systemic recurrence 1.627 for BTS; and (3) No difference in 3-yr overall survival and disease-free survival
Arezzo *et al* [52] (ESCO trial)	2020	*n* = 115: (1) BTS = 56; and (2) ES = 59	RCT	Left-sided	No difference in 3-yr overall survival, time to progression, and disease-free survival

BTS: Bridge to surgery; ES: Emergency surgery; RCT: Randomized controlled trial; CI: Confidence interval.

SEMS

- Only for ; Patients with **non-metastatic LBO** who are **poor surgical candidates and need medical optimization.**

2014

2014

van Hooft et al. Gastrointest Endosc. 2014;80(5):747–61-75.

SEMS

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

1 ESGE recommends colonic stenting to be reserved for patients with clinical symptoms and radiological signs of malignant large-bowel obstruction, without signs of perforation. ESGE does not recommend prophylactic stent placement.
Strong recommendation, low quality evidence.

2 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.
Strong recommendation, high quality evidence.

3 ESGE recommends colonic stenting as the preferred treatment for palliation of malignant colonic obstruction.
Strong recommendation, high quality evidence.

SEMS

The Association of Coloproctology of Great Britain and Ireland consensus guidelines in emergency colorectal surgery

Andrew S. Miller[1] | Kathryn Boyce[2] | Benjamin Box[3] | Matthew D. Clarke[4] | Sarah E. Duff[5] | Niamh M. Foley[6] | Richard J. Guy[7] | Lisa H. Massey[8] | George Ramsay[9] | Dominic A. J. Slade[10] | James A. Stephenson[11] | Phil J. Tozer[12] | Danette Wright[13]

Are self-expanding metal stents as a bridge to surgery for malignant large bowel obstruction oncologically safe for patients?

Recommendation: Self-expanding metal stents appear to be as oncologically safe as emergency surgery. The 3- and 5-year loco-regional recurrence rates, disease-free survival rates and overall survival rates are comparable for these two groups of patients on the basis of current data. However, there is a risk of perforation and perforated cancers are at a higher risk of local recurrence. A fully informed consent process is mandatory.

Level of evidence: I

Grade of recommendation: A

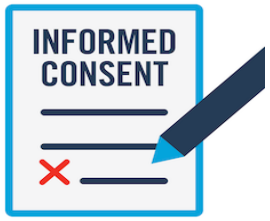
Consensus: 100% (SA 77.8%, A 22.2%)

What are the indications and contraindications for self-expanding metal stents?

Recommendation: Self-expanding metal stents can be used for the treatment of malignant large bowel obstruction as either a definitive procedure for palliation or as a bridge to surgery.

Level of evidence: I

Grade of recommendation: A



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Guidelines

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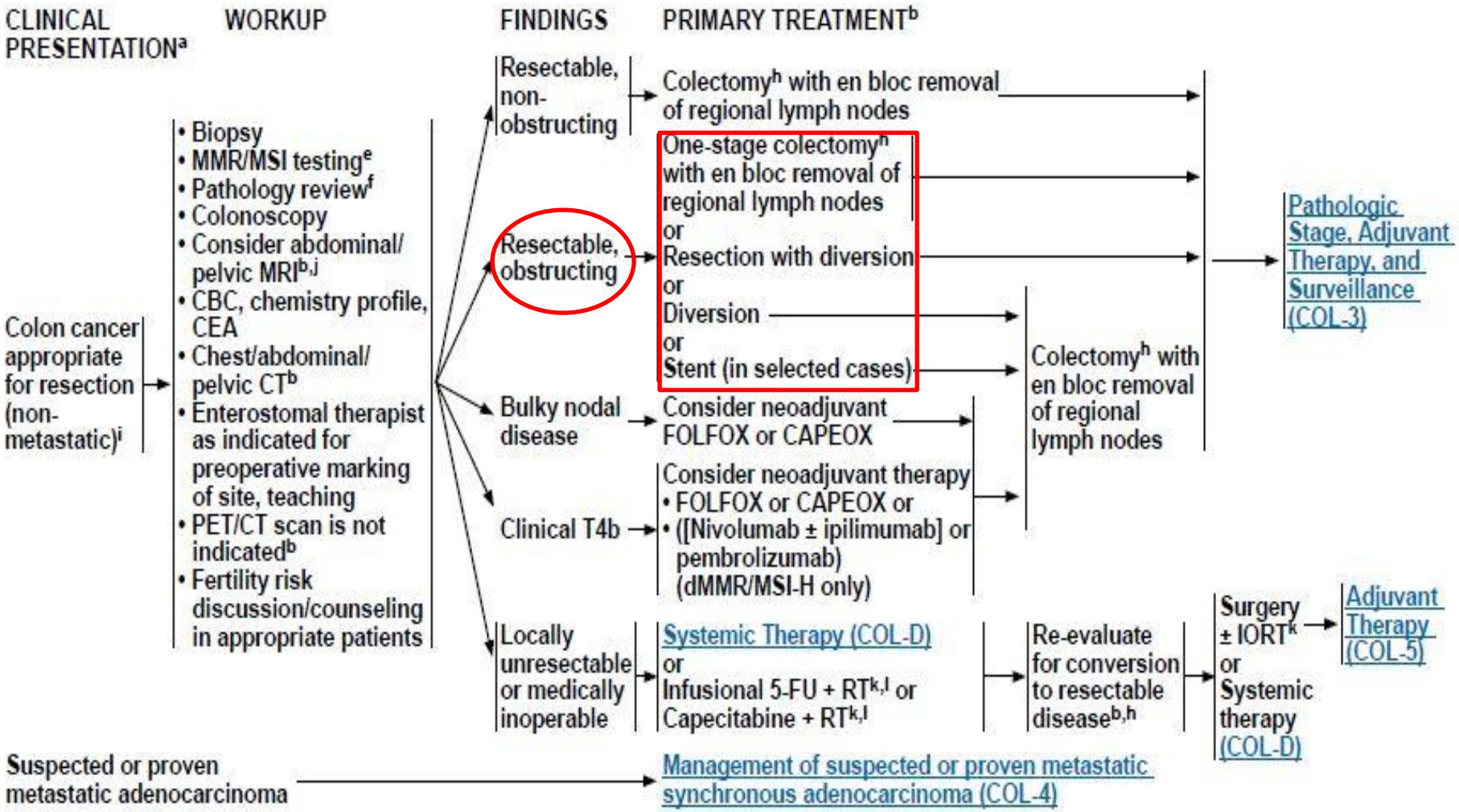

SPECIAL ARTICLE

ESMO GOOD SCIENCE BETTER MEDICINE BEST PRACTICE

2020, 2021

Pan-Asian adapted ESMO Clinical Practice Guidelines for the diagnosis treatment and follow-up of patients with localised colon cancer

T. Yoshino[1*], G. Argilés[2], E. Oki[3], E. Martinelli[4], H. Taniguchi[1], D. Arnold[5], S. Mishima[1], Y. Li[6], B. K. Smruti[7], J. B. Ahn[8], I. Faud[9], C. E. Chee[10], K.-H. Yeh[11,12], P.-C. Lin[13], C. Chua[14], H. H. Hasbullah[15], M. A. Lee[16], A. Sharma[17], Y. Sun[18], G. Curigliano[19], H. Bando[20], F. Lordick[21], T. Yamanaka[22], J. Tabernero[23], E. Baba[24], A. Cervantes[25], A. Ohtsu[1], S. Peters[26], C. Ishioka[27] & G. Pentheroudakis[28]

- **Obstructive CRCs can be treated using one- or two-stage procedures.**

- Total colectomy with ileorectal anastomosis or segmental colectomy with intraoperative lavage may be offered in **selected cases.**

- **Colonic stenting** in expert centers especially in **high risk patients**(Age>70ys & ASA>II).

Colon cancer ASCRS

Obstruction

1. For patients with obstructing left-sided colon cancer and curable disease, initial colectomy or initial endoscopic stent decompression and interval colectomy may be performed. Grade of Recommendation: Strong recommendation based on moderate-quality evidence, 1B.

2. For patients with obstructing right or transverse colon cancer and curable disease, initial colectomy or initial endoscopic stent decompression and interval colectomy may be performed. Grade of Recommendation: Strong recommendation based on low-quality evidence, 1C.

3. When emergent surgery is performed for an obstructing colon cancer, intraoperative colonic lavage is not required. Grade of Recommendation: Strong recommendation based on moderate-quality evidence, 1B.

WSES 2017

- **Lt side:** SEMS, when available, offers interesting advantages as compared to emergency surgery; however, it carries some **long-term oncologic disadvantages,** which are still under analysis.
- In emergency surgery, resection and primary anastomosis is preferable to HP, whenever the **characteristics of the patient and the surgeon are permissive.**

WSES 2017

❖ **Rt side: right hemicolectomy** is the procedure of choice.

- Alternatives, such as internal bypass and loop ileostomy, are of limited value.
- In **selected** cases, a damage control approach may be required.

❖ **Non resectable disease:** Stent or stoma.

Conclusion

Summary and conclusion

- Management of obstructed colon cancer is complex.
- **CT** is recommended for diagnosis.
- No single approach is suitable for all patients.
- Decisions should be made based on the patient's presentation, the general condition and risk factors that affect the short-term outcome.
- Either resection ± stoma or SEMS are available options.
- Patient's shared decision is an essential point especially when offering SEMS.


THANK YOU
ahmadsakr1987@gmail.com