Indian Association of
Gastrointestinal Endo Surgeons

THERAPEUTIC ENDOSCOPY

Guidelines and Recommendations

2018-2019

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Therapeutic Endoscopy – Review of Current Guidelines and Recommendations – IAGES 2018-2019

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THERAPEUTIC ENDOSCOPY

Therapeutic endoscopy has revolutionised the outcome of various gastrointestinal disorders. Virtually endoscopy has replaced uncertainties with options to diagnose and treatment interventions. Data and publications are scrutinised carefully by various bodies of eminence viz. American Society for Gastrointestinal Endoscopy, European Society for Gastrointestinal Endoscopy and similar types across diverse micro specialised ones like American Society for Metabolic and Bariatric Surgery. The article is an issue based systematic compilation of diverse guidelines based on sound evidence.

The Grading of Recommendations Assessment, Development, and Evaluation (GRADE) system was adopted to define the strength of recommendations and the quality of evidence. These guidelines represent a consensus of best practice based on the available evidence at the time of preparation. They may not apply in all situations and should be interpreted in the light of specific clinical situations and resource availability. The gradation is fundamentally based on the levels of available evidence.

Many of these evidences are based on multinational data. Hence they needed to be applied with caution as ethnic variations are bound to influence the therapeutic options. Further controlled clinical studies may be needed to clarify aspects of these statements, and revision may be necessary as new data appear. Clinical consideration may justify a course of action at variance to these recommendations. These guidelines are intended to be an educational device to provide information that may assist endoscopists in providing care to patients. They are not rules and should not be construed as establishing a legal standard of care or as encouraging, advocating, requiring, or discouraging any particular treatment.

STANDARDS ADAPTED IN STRATIFICATION

Quality of evidence Definition Symbol

+=Ö; Ø=-;

High quality

Further research is very unlikely to change our confidence in the estimate of effect. (Ö ÖÖ Ö)

Moderate quality

Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate. (Ö ÖÖØ)

Low quality

Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.(Ö ÖØ Ø)

Very low quality

Any estimate of effect is very uncertain.

Levels of evidence

1++ High-quality meta-analysis, systematic reviews of RCTs, or RCTs with a very low risk of bias

1+ Well-conducted meta-analysis, systematic reviews of RCTs, or RCTs with a low risk of bias

1- Meta-analysis, systematic reviews or RCTs with a high risk of bias

2++High-quality systematic reviews of case-control or cohort studies; high-quality case-control or cohort studies with a very low risk of confounding, bias, or chance and a high probability that the relationship is causal

2+ Well-conducted case-control or cohort studies with a low risk of confounding, bias, or chance and a moderate probability that the relationship is causal

2- Case-control or cohort studies with a high risk of confounding, bias, or chance and a significant risk that the relationship is not causal

3 Non-analytic studies (e g, case reports or case series)

4 Expert opinion

Grades of recommendation

A At least 1 meta-analysis, systematic review, or RCT rated as 1++ and directly applicable to the target population or a systematic review of RCTs or a body of evidence consisting principally of studies rated as 1þ directly applicable to the target population and demonstrating overall consistency of results

B A body of evidence including studies rated as 2++ directly applicable to the target population and demonstrating overall consistency of results or extrapolated evidence from studies rated as 1++ or 1+

C A body of evidence including studies rated as 1- or 2+ directly applicable to the target population and demonstrating overall consistency of results or extrapolated evidence from studies rated as 2++

D Evidence level 2-, 3, or 4 or extrapolated evidence from studies rated as 2+

THE ROLE OF ENDOSCOPY IN THE MANAGEMENT OF GERD

A diagnosis of GERD can be made based on symptoms and confirmed by a favourable response to anti secretory medical therapy. It is important to note that epigastric pain can be the major symptom of GERD. If the patient's history is consistent with typical or uncomplicated GERD, an initial trial of empiric medical therapy is appropriate before consideration of endoscopy in most patients. (1) Endoscopy at presentation should be considered in patients who have symptoms suggestive of complicated disease (eg, dysphagia, unintentional weight loss, hematemesis) or those with multiple risk factors for Barrett's esophagus (BE).

RECOMMENDATIONS:

1. Uncomplicated GERD may be diagnosed on the basis of typical symptoms without the use of diagnostic testing, including EGD. (ÖÖÖÖ)
2. EGD is recommended for patients who have symptoms suggesting complicated GERD or alarm symptoms. (ÖÖÖØ)

3. EGD need not be routinely performed solely for the assessment of extra esophageal GERDsymptoms.(ÖÖÖØ)
4. Endoscopic findings of reflux esophagitis may be classified according to an accepted grading scale (Los Angeles Classification). (ÖÖÖØ)
5. Repeat EGD is to be performed in patients with severe erosive esophagitis after at least an 8-week course of PPI therapy to exclude underlying BE or dysplasia.(ÖÖØØ)
6. Obtaining tissue samples from endoscopically normal tissue is not recommended to diagnose GERD or exclude BE in adults.(ÖÖÖØ)
7. Endoscopy is to be considered in patients with multiple risk factors for Barrett's esophagus. (ÖØØØ)
8. Tissue samples are to be obtained to confirm endoscopically suspected Barrett's esophagus. (ÖÖÖÖ)
9. Endoscopic antireflux therapy be considered for selected patients with uncomplicated GERD after careful discussion with the patient regarding potential adverse effects, benefits, and other available therapeutic options.(ÖÖØØ)

ENDOLUMINAL THERAPY FOR GERD

Endoscopic anti-reflux procedures(2) offer a minimally invasive option for select patients with GERD not controlled by PPIs, with randomized trials showing a variable degree of improvement in patient-oriented outcomes such as GERD-HRQL scores and the ability to decrease or discontinue acid suppressive medication. Although results from current clinical trials have not shown consistent improvement in objective disease-oriented outcomes such as normalization of esophageal pH values and augmentation of LES pressure, patients do report subjective clinical improvement. Currently, use of these devices should be limited to dedicated anti-reflux centres with appropriate training and expertise to carefully evaluate patients with PPI-unresponsive GERD while offering them expanded medical, endoscopic, and surgical options for management.

RECOMMENDATION FOR TRANSORAL INCISIONLESS FUNDOPLICATION (TIF)

With currently available evidence, TIF can be performed with an acceptable safety risk in appropriately selected patients. The procedure leads to better control of GERD symptoms compared with PPI treatment in the short term (6 months), but appears to lose effectiveness during longer term follow up and is associated with moderate patient satisfaction scores. Objective GERD measures improve similarly after TIF 2.0 compared with PPI. No comparative, controlled trials exist between TIF and surgical fundoplication, but preliminary evidence suggests that the latter can be used safely after TIF failure (Level of evidence ÖÖÖØ, strong recommendation).

THE ROLE OF ENDOSCOPY IN THE EVALUATION OF DYSPHAGIA

Endoscopy is indicated in patients with dysphagia to determine the underlying etiology, exclude malignant and premalignant conditions, assess the need for therapy, and perform therapy, such as dilation.(3) Esophageal dilation is a therapeutic procedure performed for the management of dysphagia. The primary indication for dilation is to provide immediate and durable symptomatic relief of dysphagia.

RECOMMENDATIONS

1. Endoscopic dilation is recommended for patients with dysphagia secondary to benign intrinsic strictures of the esophagus. (ÖÖÖÖ)

2. Wire-guided dilation, preferably under fluoroscopic guidance, or TTS(through the scope) balloon dilation for complex esophageal strictures is safe. (ÖÖÖØ)

3. Antisecretory treatment in conjunction is mandatory with dilation to reduce the recurrence rate of peptic strictures. (ÖÖÖÖ)

4. We recommend that dilation for adult patients with EoE be reserved for those who have a dominant esophageal stricture or ring and those who remain symptomatic despite medical therapy. (ÖÖÖØ)

5. We suggest adjunctive treatment with corticosteroid injection into recurrent or refractory benign esophageal peptic strictures. (ÖÖØØ)

6. We suggest that esophageal stent placement be reserved for refractory esophageal strictures that do not respond to sequential dilation and/or steroid injection. (ÖÖØØ)

7. We recommend that both endoscopic and surgical treatment options for achalasia be discussed with the patient. In patients who opt for endoscopic management and are good surgical candidates, we recommend pneumatic dilation with large-caliber balloon dilators for the endoscopic treatment of achalasia. (ÖÖÖÖ)

8. We recommend botulinum toxin injection for endoscopic treatment of achalasia in patients who are poor candidates for surgery or pneumatic dilation. (ÖÖÖØ)

OBESITY THERAPY GUIDELINES:

Endoscopic bariatric therapy (4) has always been looked with caution inspite of many newer therapies. More so the expectations and minimal safety statutory norms restrict the use of newer therapies duly taking patient safety into consideration. Any new EBT (Endoscopic Bariatric Therapy) should include a defined threshold of efficacy balanced with the risks of the intervention. The combined team of American Society for Gastrointestinal Endoscopy and the American Society for Metabolic and Bariatric Surgery defined these thresholds in a Preservation and Incorporation of Valuable endoscopic Innovations (PIVI) document as follows:

EBT intended as a primary obesity intervention in Class II/III obese individuals (body mass index [BMI] >35 kg/ m2) should achieve a mean minimum threshold of 25% excess weight loss (%EWL) measured at 12 months.

In addition to the absolute threshold of weight loss, the mean %EWL difference between a “primary” EBT and control groups should be a minimum of 15% EWL and be statistically significant.

Five percent of the total body weight lost should represent the absolute minimum threshold for any non primary EBT (e g, early intervention, bridging, or metabolic therapy).

The risk associated with EBT should equate to a 5% incidence of serious adverse events. If a low-risk EBT proves to have a significant impact on 1 or more obesity-related co morbidities, the threshold for intervention may extend to Class I obese individuals (BMI 30-35 kg/m2).

An EBT that meets these established PIVI thresholds would be considered appropriate to incorporate into clinical practice, presuming that the appropriate training and credentialing in that EBT has been achieved.

Of the EBTs discussed in the referenced technology review, the following had sufficient (3 or more human trials, with at least 1 of them a randomized, controlled trial [RCT]) published data to evaluate in meta-analyses: (1) BioEnterics Intragastric Balloon (Allergan, Irvine, Calif), currently known as Orbera Intragastric Balloon (IGB) (Apollo Endo surgery, Austin, Tex) and (2) Endo Barrier duodenal-jejunal bypass sleeve (DJBS) (GI Dynamics, Lexington, Mass).

At this point, the recommendations are moderate and endoscopic bariatric therapy are to be judiciously used.

THE ROLE OF THERAPEUTIC ENDOSCOPY IN PATIENTS WITH CIRRHOSIS-RELATED CAUSES OF GASTROINTESTINAL BLEEDING

The aim of therapeutic endoscopy in these patients is to prevent clinical decomposition, which includes but is not limited to variceal haemorrhage.(5) A Cochrane review of 19 randomized control trials (RCTs) comparing esophageal

variceal band ligation (EVL) to non-selective beta-blockers (NSBB) for the primary prevention of VH found that EVL decreases upper GI and varietal bleeding but has no effect on mortality when compared to NSBB.

Primary prophylaxis

American Association for the Study of Liver Disease (AASLD) published Practice Guidance which states that either NSBBs or EVLmay be used for primary prevention of VH in patients with medium or large varices.

Small varices are less than 5 mm in diameter and large varices are≥ 5 mm in diameter. AASLD recommends that EVL be performed every 2–8 weeks until the varices are eradicated followed by EGD 3-6 months after eradication and every 6–12 months thereafter [5••].

The only RCT comparing the combination of EVL and NSBBs, specifically propranolol, vs EVL alone showed no difference in esophageal bleeding or mortality; however, the combination of EVL and NSBBs resulted in more side effects resulting in the current AASLD recommendation against combination therapy for primary prevention of VH [7].

EVL in acute variceal bleeding to be done if source of bleed is variceal.

Secondary Prophylaxis

EVL with B Blocker is the therapy of choice

Sclerotherapy in Variceal Bleed

It is advocated over an EVL in situations where EVL is technically difficult. Rebleeding and ulcers are higher in sclerotherapy when compared to EVL.

Esophageal Strictures are less common in EVL

Combination of EVL and Sclerotherapy is not indicated and has higher incidence of ulceration and stricture formation.

Gastric Varices:

Primary Prophylaxis

AASLD published Practice Guidance recommends that patients bleeding from GOV1 varices be treated with either EVL (if technically feasible) or cyanoacrylate glue injection, if available. AASLD recommends TIPS for cardiofundal varices and cyanoacrylate glue injection as an alternative if TIPS is not technically feasible. ASGE recommends cyanoacrylate-based compounds for the treatment of acute gastric VH with EVL as an alternative if glue injection is not available

Secondary Prophylaxis

After haemostasis is achieved, repeated glue injection treatments are performed on a 2–4-week basis until variceal obliteration is achieved. Combination of EVL and Glue with B Blocker therapy is the current choice for Gastric varices.

EUS Guided Therapy for Gastric Varices

Glue delivery to varices close to 100%. Combination therapy of Glue and fibered coils may reduce the remobilization of glue and improve the outcome.

While endoscopic ultrasound-guided therapy and coil placement appear safe and effective, RCTs need to be performed in order to determine if they should be considered part of the standard of care in the treatment of gastric varices.

Ectopic varices

EVL is better than surgical therapy.

No RCTs have been performed on ectopic varices, and so there are currently no recommendations for management. The case reports available in the literature suggest that endoscopic management, particularly glue injection, can be

successfully used to treat ectopic varices with lower rates of adverse events than would be seen with more invasive surgical treatments.

Gastric Antral Vascular Ectasia

The mainstay of treatment for GAVE is endoscopic therapy.

Argon plasma coagulation (APC) is a non-contact thermal treatment modality that uses argon gas to deliver plasma to tissue

Argon Plasma Coagulation is the first line therapy, has higher complications when compared to band ligation.

APC is safe and effective for GAVE, these results are short-lived and most treated patients do not achieve long-term results. Adverse effects of APC ablation are rare but include intestinal gas distension, wall emphysema, intestinal pneumatises, asymptomatic antral stenosis, upper GI hemorrhage, sepsis, and stricture formation.

Argon Plasma coagulation in conjunction with band ligation gives optimal outcome.

Radiofrequency Ablation in GAVE

Radiofrequency ablation (RFA) is an endoscopic therapy that emits rapid pulses of radiofrequency energy to ablate the superficial layer of the mucosa.

Based on the current literature, RFA appears to be an effective alternative for patients refractory to APC. Future RCTs need to be performed with long-term follow-up to further evaluate the effectiveness of RFA. Additionally, future studies need to be dedicated to determining a validated treatment schedule for RFA.

THE ROLE OF ENDOSCOPY IN THE MANAGEMENT OF PATIENTS WITH PEPTIC ULCER DISEASE

A peptic ulcer is a defect in the gastric or duodenal wall that extends through the muscular is mucosa (the lowermost limit of the mucosa) into the deeper layers of the wall (Submucosal or the muscular is propria).(6) Signs and symptoms of PUD include dyspepsia, GI bleeding, anaemia, and gastric outlet obstruction. Dyspepsia is a nonspecific term denoting upper abdominal discomfort that is thought to arise from the upper GI tract.

Therapy and diagnostic endoscopy are basically for Known Ulcer disease, Atypical ulcer disease, Complications of Ulcer Disease viz. Perforation and outlet obstruction. Surveillance of high risk ulcers and monitoring of response to therapy is of paramount importance.

RECOMMENDATIONS

1. Testing for the presence of H Pylori be performed in all patients with PUD because it is a common etiology is essential. (ÖÖÖØ)

2. Duodenal ulcers are extremely unlikely to be malignant, and routine biopsy of these ulcers is not recommended. (ÖÖÖØ)

3. Endoscopy is not recommended to evaluate benign appearing, uncomplicated duodenal ulcers identified on radiologic imaging. (ÖÖÖØ)

4. Surveillance endoscopy be considered in patients with duodenal ulceration who experience persistent symptoms despite an appropriate course of therapy, specifically to rule out refractory peptic ulcers and ulcers with no peptic etiologies. (ÖÖØØ)

5. Most gastric ulcers should undergo biopsy because malignant gastric ulcers may appear endoscopically benign. However, in some clinical situations (eg, young patients taking NSAIDs with multiple benign-appearing ulcers), the risk

of malignancy is very low. Therefore, the decision to perform biopsy and/ or surveillance endoscopy should be individualized. (ÖÖØØ)

6. The decision to perform surveillance endoscopy in patients with a gastric ulcer be individualized. Surveillance endoscopy is suggested for those gastric ulcer patients who remain symptomatic despite an appropriate course of medical therapy. It should also be considered in patients with gastric ulcers without a clear etiology and in those who did not undergo biopsy at the index EGD. (ÖØØØ)

7. In patients with refractory PUD, surveillance endoscopy is to be performed until the ulcer has healed or the etiology has been defined. (ÖÖØØ)

8. Because endoscopy is an effective tool in the diagnosis, prognostication, and therapy of bleeding peptic ulcers, we recommend that it be performed early in the course of hospitalization.(ÖÖÖÖ)

9. In patients who rebleed after initial endoscopic hemostasis, repeat endoscopic therapy is recommended before considering surgical or radiologic intervention. (ÖÖÖØ)

10. The current evidence is against endoscopy in patients with clinical evidence of acute perforation. (ÖÖÖØ)

11. Endoscopy is mandatory for the evaluation of gastric outlet obstruction. (ÖÖÖÖ)

12. Endoscopic balloon dilation is to be considered for the management of benign gastric outlet obstruction. (ÖÖØØ)

THE ROLE OF ENDOSCOPY IN ENTERAL FEEDING

Enteral nutrition (EN) should be considered for patients who have an intact, functional GI tract but are unable to consume sufficient calories to meet metabolic demands.(7)Nasoenteric feeding is the preferred approach to feeding patients who are expected to resume peroral nutrition within 30 days. When longer term EN is required, either feeding gastrectomy or jejunostomy is indicated. In patients with acute dysphagic stroke, PEG placement should be considered in those patients who do not improve after a 2- to 3-week trial of nasoenteric tube feeding.

RECOMMENDATIONS

1. Nasoenteric feeding is the preferred approach to feeding patients who are expected to resume per oral nutrition within 30 days. (ÖÖØØ)

2. It is suggested a variety of factors, including patient preferences, quality of life, and prognosis be addressed with the patient and the family before placement of feeding tubes. (ÖÖØØ)

3. In patients not predicted to resume per oral nutrition within 30 days, we suggest that nutrition be provided via a percutaneous endoscopic feeding tube. (ÖÖØØ)

4. We suggest that PEGJ or DPEJ are indicated in patients with severe gastroesophageal reflux, gastroparesis, or repeated tube feeding-related aspirations.(ÖÖØØ)

5. It is recommended a prophylactic dose of antibiotic be given intravenously before percutaneous endoscopic feeding tube placement. (ÖÖÖÖ)

6. Tube feeds may be safely started in most patients within 4 hours of endoscopic percutaneous tube placement. (ÖÖØØ)

THE ROLE OF ENDOSCOPY IN THE DIAGNOSIS AND TREATMENT OF INFLAMMATORY PANCREATIC FLUID COLLECTIONS

Inflammatory pancreatic fluid collections (PFCs) arise as an adverse event of acute and chronic pancreatitis, pancreatic trauma, and pancreatic surgery.(8) Due to similarities in their radiographic appearance, pancreatic cystic neoplasms frequently are misclassified as inflammatory PFCs. Although inflammatory PFCs were initially treated via surgical and percutaneous techniques, endoscopy is increasingly used to characterize and treat these fluid collections. This guideline will discuss the role of GI endoscopy in the evaluation, diagnosis, and treatment of inflammatory PFCs.

RECOMMENDATIONS

1. It is recommended that endoscopic drainage of PFCs be performed only after sufficient exclusion of alternative diagnoses, such as cystic pancreatic neoplasm's and pseudo aneurysms.(ÖÖÖÖ)

2. Waiting for maturation of the cyst wall of PFCs is recommended before endoscopic intervention.(ÖÖÖØ)

3. Symptomatic pancreatic pseudo cysts are to be drained.(ÖÖÖØ)

4. Drainage of rapidly enlarging pancreatic pseudo cysts is recommended.(ÖÖØØ)

5. Drainage of all infected PFCs in patients who fail to improve with conservative management alone.(ÖÖÖÖ)

6. Drainage of symptomatic sterile necrosis lasting more than 8 weeks after the onset of acute pancreatitis is recommended.(ÖÖÖØ)

7. Routine FNA of PFCs is not required to diagnose infected necrosis.(ÖÖØØ)

8. Endoscopic drainage is to be considered for initial therapy before surgical drainage of pancreatic pseudocysts.(ÖÖÖØ)

9. We recommend using EUS for transmural drainage of PFCs in the absence of a luminal bulge or when portal hypertension is suspected.(ÖÖÖÖ)

10. We recommend initial endoscopic transmural and/or percutaneous drainage of Walled Off Necrosis before consideration of endoscopic transmural necrosectomy or surgical drainage.(ÖÖÖØ)

11. We recommend that endoscopic drainage of PFCs be performed only with the availability of surgical and interventional radiology support.(ÖÖÖÖ)

12. We suggest using CO2 when performing transmural drainage procedures.(ÖÖØØ)

THE ROLE OF ENDOSCOPY IN THE DIAGNOSIS AND TREATMENT OF CYSTIC PANCREATIC NEOPLASMS

Cystic lesions and fluid collections of the pancreas often present a diagnostic and therapeutic challenge.(9) Their pathology ranges from pseudo cysts and pancreatic necrosis to benign and malignant neoplasm's. Pancreatic cystic lesions may be encountered during the evaluation of a patient with pancreatitis or abdominal pain. However, these lesions are found incidentally in 2.5% of patients undergoing abdominal imaging performed for unrelated reasons, and their frequency increases with age to 10% in those aged 70 years.

RECOMMENDATIONS

1. It is recommended EUS-FNA of any pancreatic cystic lesion over 3 cm in diameter or when cross-sectional or EUS imaging confirms an epithelial nodule, dilated main pancreatic duct, or suspicious mass lesion. (ÖÖÖØ)

2. We suggest that EUS-FNA is optional in asymptomatic patients in whom cross-sectional imaging demonstrates a cyst <3 cm and without either a mass and/or epithelial nodule or associated dilated main pancreatic duct. (ÖÖØØ)

3. We recommend initial testing of aspirated pancreatic cyst fluid for CEA, amylase, and cytology. (ÖÖÖØ)

4. We suggest that molecular testing of the cyst be considered when initial ancillary testing of cytology and CEA is inconclusive and when test results may alter management. (ÖÖØØ)

5. We suggest administration of prophylactic antibiotics for patients undergoing EUS-FNA for the evaluation of cystic pancreatic neoplasm's. (ÖÖØØ)

6. We suggest that ERCP, pancreatoscopy, and intraductal US may be helpful in the diagnosis and characterization of suspected main duct IPMNs. (ÖÖØØ)

BENIGN BILIARY STRICTURES

The primary goal of treatment for benign biliary strictures (BBSs) is to resolve bile duct obstruction, to achieve long-term ductal patency, and to maintain liver function.(10) The endoscopic approach has become the first-line option for most cases of BBS. Biliary drainage can be maintained through a combination of endoscopic stricture dilation and biliary stenting. The effectiveness, clinical success, and outcomes of endoscopic intervention for BBSs largely depend on specific etiologist, endoscopic techniques used, and the selection of appropriate accessories and stents, which varies in the literature. New endoscopic techniques have been developed to improve the success of endoscopic therapy. Therefore, we established this consensus recommendation to better assist clinical decision making and standardize endoscopic techniques in endoscopic management of BBSs.

RECOMMENDATIONS

Imaging Prior to Endotherapy

Non-invasive imaging such as MRCP and/or multiple detector-CT are necessary before an ERCP, because it can provide a useful roadmap and clarify the pre procedure plan. Level of evidence: 1++ Recommendation grade: A

Role of endoscopic therapy

ERCP is the first-line interventional option for the management of most patients with BBS with accessible papilla. Level of evidence: 2++ Recommendation grade: B

Biliary Access

Negotiating the biliary stricture with a guidewire requires reasonable skill from the endoscopist and assistant and use of an appropriate catheter and guidewire. Level of evidence: 4 Recommendation grade: D

Dilation

Serial incremental (balloon or bougie catheter) dilation usually is necessary for the management of severe BBSs, but particular caution should be taken during the early postoperative period. Level of evidence: 4 Recommendation grade: D

Balloon dilation alone, without subsequent stenting, is associated with a high rate of BBS recurrence. Level of evidence: 1+ Recommendation grade: A

Stenting

To place multiple plastic stents side-by-side for up to 1 year by using the strategy of either several sessions with an increasing number of stents or 1 session with a maximal number of stents has become the current standard of care for the majority of BBSs. Level of evidence: 1+ Recommendation grade: A

Placement of uncovered SEMSs in patients with BBSs or indeterminate biliary strictures is strongly discouraged. Level of evidence: 4 Recommendation grade: D

Placement of FCSEMSs (fully covered) has success similar to that of multiple plastic stent therapy, but it requires fewer endoscopic sessions and shorter stent duration in BBSs such as post-liver transplantation ABSs. Level of evidence: 1+ Recommendation grade: A

To improve the effectiveness of FCSEMS therapy, efforts should be made to prevent stent migration. Level of evidence: 2+ Recommendation grade: B

Percutaneous intervention

A percutaneous approach may be useful in cases of failed ERCP for rendezvous techniques and in patients with surgically altered anatomy and inaccessible papillas. Level of evidence: 2+ Recommendation grade: B

Surgical intervention

Surgery is a valid option in cases of complete transection or ligation of a bile duct in selected patients with unsuccessful ERCPs. (Level of evidence 2+ Grade B)

Innovative techniques

Novel techniques, such as magnetic compression anastomosis, intraductal bipolar radiofrequency ablation, and biodegradable biliary stenting, may have a role in selected cases when conventional endoscopic and percutaneous approaches are not successful. Level of evidence: 3 Recommendation grade: D

BBS with specific disorders Post-liver transplantation.

ERCP therapy is the first-line management approach for patients with ABSs and localized NABSs. Earlier intervention provides better response. Level of evidence: 1þ Recommendation grade: A

Surgical injury

Endoscopic therapy with biliary stenting is an effective approach for postoperative bile duct strictures, and it has a successful long-term outcome compared with surgical repair. Level of evidence: 2+ Recommendation grade: C

Chronic Pancreatitis

FCSEMS therapy is associated with an optimal resolution rate in BBSs caused by CP. Level of evidence: 1++ Recommendation grade: A

Primary Sclerosing Cholangitis

Differentiating benign strictures from cholangiocarcinoma in patients with PSC is crucial but challenging. Level of evidence: 2++ Recommendation grade: B

ERCP intervention is recommended for symptomatic patients with PSC with dominant stricture by balloon or bougie catheter dilation without or with short term stent placement. Level of evidence: 2++ Recommendation grade: B

IgG4 Sclerosing Cholangitis

For patients with IgG4-related bile duct strictures, ERCP with biliary stenting may be unnecessary, unless deep obstructive jaundice or acute cholangitis occurs. Level of evidence: 2+ Recommendation grade: C

Bilioenteric anastomotic stricture

In experienced hands, ERCP by using balloon-assisted enteroscopy has acceptable success and adverse event rates in treating BBSs in patients with surgically altered anatomy. Level of evidence: 1++ Recommendation grade: A

ENDOSCOPY IN BENIGN PANCREATIC DISEASE

A variety of benign pancreatic disorders can be diagnosed and treated with endoscopy. Endoscopy may be useful in the evaluation of idiopathic acute recurrent pancreatitis, suspected chronic pancreatitis (CP), or differentiation of focal CP from malignancy.(11) EUS and endoscopic retrograde pancreatography (ERP) are the 2 most common endoscopic procedures used to evaluate the pancreas. EUS provides high-resolution imaging of both the pancreatic parenchyma and ductal structures and can be used to guide FNA or other interventional procedures. ERP is a more invasive procedure that provides information about pancreatic duct (PD) structures, but not the pancreatic parenchyma. Compared with EUS, ERP is associated with a higher risk of pancreatitis and is often reserved for therapeutic indications such as management of CP-associated PD strictures, stones, leaks, and symptomatic fluid collections.

RECOMMENDATIONS

1. It is suggested EUS for the evaluation of idiopathic AP for patients older than 40 years of age if history, physical examination, laboratory testing, and abdominal imaging with MRI or CT are unrevealing.(ÖÖØØ)

2. It is recommended against diagnostic ERCP for a single episode of AP.(ÖÖÖØ)

3. We suggest that ERCP with sphincter of Oddi manometry may be considered for the evaluation of idiopathic acute recurrent pancreatitis (suspected type 2 pancreatic SOD) when findings on EUS and/or MRCP are normal and without suspicion for biliary stones, sludge, or CP. Alternate strategies include ERCP with empiric biliary and/or pancreatic sphincterotomy. (ÖÖØØ)

4. It is recommended biliary and/or pancreatic sphincterotomy in patients with type 1 pancreatic SOD or patients with type 2 pancreatic SOD confirmed by manometry. (ÖÖÖØ)

5. We recommend against the use of ERCP for the evaluation of recurrent or chronic abdominal pain interpreted as type 3 SOD. (ÖÖÖÖ)

6. The use of rectal indomethacin and/or PD stenting is recommended for the prevention of post-ERCP pancreatitis in high-risk patients. (ÖÖÖÖ)

7. We recommend EUS-guided tissue biopsy for suspected but unproved cases of AIP. Although FNA is useful for excluding underlying malignancy in older patients, larger gauge core tissue devices may be required to confirm the diagnosis of AIP. (ÖÖÖØ)

8. We suggest ePFT (pancreatic function tests and/or EUS without pancreatic biopsy for the diagnosis of CP not readily evident by previous non invasive imaging. (ÖÖØØ)

9. We recommend ERP with dilation and/or plastic stent placement for the treatment of symptomatic dominant PD strictures for individuals in whom multidisciplinary review considers endoscopic therapy as the preferred initial therapy. (ÖÖÖÖ)

10. We recommend the adjunctive use of ESWL for patients with symptoms attributed to pancreatolithiasis refractory to standard endoscopic stone extraction techniques. (ÖÖÖØ)

11. We recommend that ERP with stenting be the first-line therapy for the management of PD leaks.(ÖÖÖÖ)

THE ROLE OF ENDOSCOPY IN SUBEPITHELIAL LESIONS OF THE GI TRACT

Subepithelial lesions (SELs) of the GI tract are tumors that originate from the muscular is mucosa, sub mucosa, or muscular is propria.(12) The term sub epithelial lesion is preferred to the term sub mucosal tumor, which should be reserved for those that originate from the sub mucosal layer. SELs are most commonly found in the stomach, as often as 1 in every 300 endoscopies. They usually are identified during routine upper and lower endoscopy as rounded protuberances with normal overlying mucosa. The majority are small (<2 cm in diameter) and found incidentally; however, SELs can present with bleeding, obstruction, or metastases, depending on tumor size, location, and histopathology.

RECOMMENDATIONS

1. We suggest that EUS be used to further characterize indeterminate SELs. (ÖÖÖØ)

2. We suggest surveillance EUS for gastric GI stromal tumors<2 cm in size. (ÖÖØØ)

3. We recommend surgery for gastric and colorectal GI stromal tumors>2 cm in size and those with high risk features. (ÖÖÖØ)

4. We recommend that rectal GI neuroendocrine neoplasms <1 cm in size may be managed by local endoscopic or transanal excision. (ÖÖÖØ)

5. We suggest EUS for staging of rectal GI neuroendocrine neoplasms >1 cm. Endoscopic or transanal excision may be considered for rectal tumors 1 to 2 cm in diameter that do not invade the muscularis propria. (ÖÖØØ)

6. We recommend surgical resection for GI neuroendocrine neoplasms identified in the jejunum and ileum. (ÖÖÖØ)

7. We recommend that asymptomatic leiomyomas do not require endoscopic surveillance or therapy unless symptomatic. (ÖÖÖØ)

8. We recommend that GI lipomas do not require follow up or therapy unless symptomatic. (ÖÖÖØ)

9. We suggest that lesions arising from the muscularis propria be sampled with FNA or fine-needle biopsy for histologic evaluation. (ÖÖØØ)

10. We suggest that a firm, round sub epithelial lesion with central umbilication along the greater curve of the antrum of the stomach be considered diagnostic for a pancreatic rest. Further investigation with EUS and follow-up is not required. (ÖÖØØ)

11. We suggest that lesions with malignant potential requiring treatment can be removed either endoscopically or surgically based on the type of lesion, size, location, patient preference, and available expertise. (ÖÖØØ)

THE ROLE OF ENDOSCOPY IN THE MANAGEMENT OF SUSPECTED SMALL-BOWEL BLEEDING

Obscure GI bleeding (OGIB) has been defined as overt or occult bleeding of unknown origin that persists or recurs after an initial negative bidirectional endoscopic evaluation including ileo colonoscopy and EGD.(13) Overt OGIB refers to visible bleeding (eg, melena or hematochezia), whereas occult OGIB refers to cases of fecal occult blood positivity and/or unexplained iron deficiency anemia. Recent advances in small-bowel imaging, including video capsule endoscopy (VCE), angiography, and device assisted enteroscopy (DAE), have made it possible to identify a small-bowel bleeding source and therefore manage the majority of patients who present with OGIB. As a result, a recent clinical guideline recommends a shift from the term obscure GI bleeding to small-bowel bleeding. The term OGIB would be reserved for patients in whom the sources of bleeding cannot be identified anywhere in the GI tract after completion of comprehensive evaluation of the entire GI tract, including the small bowel.

RECOMMENDATIONS

1. For patients with signs or symptoms consistent with recurrent upper or lower GI sources of bleeding, we suggest repeating EGD and colonoscopy, respectively, before small-bowel evaluation. (ÖÖØØ)

2. We suggest VCE as the initial test for patients with overt or occult small-bowel bleeding. Positive VCE results should be followed with push enteroscopy if within reach or DAE.(ÖÖØØ)

3. We suggest DAE or push enteroscopy if VCE is unavailable or non diagnostic in patients with overt small bowel bleeding. (ÖÖØØ)

4. We suggest that in select circumstances (eg, high level of suspicion of small-bowel angiectasias or in patients with surgically altered anatomy) DAE may be considered as the initial small-bowel diagnostic procedure in patients with small-bowel bleeding.(ÖÖØØ)

5. We suggest that after an appropriate negative evaluation, clinically stable patients without recurrent bleeding may be treated with iron therapy and clinically followed if iron deficiency is present.(ÖÖØØ)

6. We suggest multiphase CTE or MRE in patients with obscure bleeding and suspected small-bowel neoplasms. (ÖÖÖØ)

7. Following appropriate hemodynamic resuscitation, we recommend angiography for selective embolization in patients who present with hemodynamically unstable suspected small-bowel bleeding.(ÖÖÖØ)

8. We suggest a CTA or RBC scan for localization of the bleeding site and to guide timing of angiography in hemodynamically stable patients with suspected active small-bowel bleeding. (ÖÖØØ)

THE ROLE OF ENDOSCOPY IN CONSTIPATION

Patients with constipation should undergo colonoscopy if they have rectal bleeding, heme-positive stool, iron deficiency anemia, weight loss, or obstructive symptoms. In addition, colonoscopy should be considered in selected patients to exclude obstruction from cancer, stricture, and extrinsic compression. (14) Colonoscopy also should be done prior to surgery for constipation. In younger patients, a flexible sigmoidoscopy may be sufficient to exclude distal disease. Suspected Hirschsprung's disease requires anorectal manometry and deep biopsy to examine for the absence of myenteric neurons

RECOMMENDATIONS

1. We recommend that GI endoscopy should not be performed in the initial evaluation of patients presenting with symptoms of chronic constipation in the absence of alarm features or suspicion of organic GI disease.(ÖÖÖØ)

2. We recommend that patients with constipation undergo colonoscopy to exclude organic disease if they have rectal bleeding, heme-positive stool, iron deficiency anemia, or weight loss prior to surgical therapy for chronic constipation. (ÖÖÖÖ)

3. We recommend that patients aged O50 years presenting with constipation who have not previously had colon cancer screening should have a colonoscopy. (ÖÖÖÖ)

4. We recommend colonoscopy to allow dilation of benign colon strictures and creation of percutaneous cecostomy when clinically appropriate and feasible. (ÖÖÖØ)

ROLE OF ENDOSCOPY IN INFLAMMATORY BOWEL DISEASE

Colonoscopy with ileoscopy allows direct visualization and biopsy of the mucosa of the rectum, colon, and terminal ileum. (15) Prospective studies have demonstrated that colonoscopy with ileoscopy is a safe procedure with a low rate of adverse events in patients with IBD. Relative contraindications to performing endoscopic procedures in patients with IBD include severe colitis and toxic megacolon. Unless contraindicated, a full colonoscopy with intubation of the terminal ileum should always be performed during the initial evaluation of patients with clinical presentations suggestive of IBD. Sodium phosphate–based bowel cleansing regimens and non steroidal anti-inflammatory drug (NSAID) use should be discouraged before the examination, because both can cause mucosal changes mimicking IBD. Ideally, at least 2 biopsy specimens should be taken from 5 sites throughout the examined bowel, including the ileum and rectum, during the initial endoscopic evaluation.

RECOMMENDATIONS

1. Recommended - colonoscopy with ileoscopy for the initial evaluation of IBD and for differentiating IBD subtypes. (ÖÖÖÖ)

2. Recommended - mucosal biopsy specimens from multiple sites during the initial endoscopic evaluation of IBD. (ÖÖÖÖ)

3. Recommended - flexible sigmoidoscopy in patients with IBD when colonoscopy is contraindicated and to evaluate for other inflammatory aetiologies before escalating therapies in patients with refractory disease. (ÖÖÖØ)

4. Recommended - that EGD be performed in paediatric patients with suspected IBD at the time of ileocolonoscopy. (ÖÖÖØ)

5. Recommended CE to evaluate the small intestine in patients with suspected CD who have no obstructive symptoms and negative ileocolonoscopy results. (ÖÖÖØ)

6. Recommended - that a patency capsule, small-bowel follow-through, CT enterography, or magnetic resonance enterography be performed before CE in patients with known small-bowel CD involvement. (ÖÖÖØ)

7. We recommend CE in patients with known CD and unexplained symptoms only when abnormalities detected with CE will alter management. (ÖÖÖØ)

8. We suggest enteroscopy in patients with IBD who have abnormalities within reach of the enteroscope seen on other imaging studies to facilitate endoscopic and histologic evaluation and the potential for therapeutic interventions. (ÖÖÖØ)

9. We suggest EUS for characterizing and managing fistulous perianal CD in conjunction with other imaging modalities.(ÖÖØØ)

10. We recommend the Montreal Classification System26 be used to standardize reporting of disease extent and IBD phenotypes for both UC and CD. (ÖÖÖØ)

11. We recommend endoscopic and histologic assessment of the pouch and afferent limb in symptomatic patients. (ÖÖÖÖ)

12. We suggest endoscopic evaluation of the neoterminal ileum 6 to 12 months after surgery in order to risk stratify patients whose medical management may be affected by endoscopic recurrence. (ÖÖÖØ)

13. We recommend that all patients with UC or CD colitis undergo a screening colonoscopy 8 years after disease onset to (1) re-evaluate extent of disease and (2) initiate surveillance for colorectal neoplasia. (ÖÖÖØ)

14. We recommend surveillance colonoscopy be performed every 1 to 3 years beginning after 8 years of disease in patients with UC with macroscopic or histologic evidence of inflammation proximal to and including the sigmoid colon and for patients with Crohn's colitis with greater than one-third of colon involvement. (ÖÖÖØ)

15. We recommend chromoendoscopy with targeted biopsies as the preferred surveillance technique to maximize dysplasia detection. (ÖÖÖØ)

16. We suggest that chromo endoscopy-targeted biopsies are sufficient for dysplasia surveillance in patients with IBD and that consideration should be given to taking two biopsies from each colon segment for histologic staging to assess extent and severity of inflammation. (ÖÖØØ)

17. We suggest that random biopsies with targeted biopsies of any suspicious appearing lesions remain a reasonable alternative for dysplasia surveillance if the yield of chromo endoscopy is reduced by significant underlying inflammation, significant pseudopolyposis, or poor preparation or if chromo endoscopy is not available. (ÖÖØØ)

18. We recommend that patients with IBD whose polypoid dysplastic lesions have been removed completely receive endoscopic surveillance at 1 to 6 months and at 12 months, with yearly surveillance thereafter. (ÖÖÖØ)

19. We suggest that patients with IBD whose non-polypoid dysplastic lesions have been removed completely receive endoscopic surveillance at 1 to 6 months and at 12 months, with yearly surveillance thereafter. (ÖÖØØ)

20. We recommend proctocolectomy in patients with IBD if a detected lesion is not endoscopically resectable, if there is evidence of dysplasia at the base of the lesion, or if endoscopically invisible HGD or multifocal LGD is found in the colon during a high-quality chromo endoscopy examination. (ÖÖÖØ)

21. We recommend IBD-associated benign strictures 4 cm in length manifesting obstructive symptoms be managed with endoscopic balloon dilation when feasible. (ÖÖØØ)

THE ROLE OF ENDOSCOPY IN PATIENTS WITH LOWER GASTROINTESTINAL BLEEDING

Definitions of LGIB: LGIB historically has been defined as bleeding that emanates from a source distal to the ligament of Treitz. (16) After the advent of deep enteroscopy, small-bowel sources have been placed in the category of midgut bleeding, and a new definition of LGIB has been proposed as bleeding from a source distal to the ileocecal valve.

RECOMMENDATIONS

1. We recommend colonoscopy in patients with occult GI bleeding. (ÖÖÖÖ)

2. We recommend EGD in patients with occult GI bleeding if a bleeding source is not identified in the colon, especially in those patients with upper GI symptoms, iron deficiency anemia, or nonsteroidal antiinflammatory drug use. (ÖÖÖØ)

3. We suggest small-bowel evaluation after negative EGD and colonoscopy results in patients with occult GI bleeding who have persistent anemia. (ÖÖØØ)

4. We recommend colonoscopy for the evaluation of chronic intermittent scant hematochezia in patients aged O50 years and for patients who have iron deficiency anemia, risk factors for colorectal neoplasia, or the alarm symptoms of weight loss or bowel habit changes. (ÖÖÖØ)

5. We suggest that in younger patients presenting with chronic intermittent scant hematochezia without alarm symptoms, a digital rectal examination and flexible sigmoidoscopy may be sufficient evaluation. (ÖÖØØ)

6. We recommend EGD in the initial evaluation of patients with melena followed by colonoscopy if the EGD result is negative. (ÖÖÖÖ)

7. We recommend an initial EGD in patients with severe hematochezia and hemodynamic instability to evaluate for a high-risk upper GI lesion, followed by colonoscopy if the EGD result is negative. (ÖÖÖÖ)

8. We suggest colonoscopy within 24 hours of admission after a rapid bowel preparation in the evaluation of patients with severe hematochezia. (ÖÖÖØ)

9. We recommend endoscopic treatment with epinephrine solution injection combined with thermal coagulation or endoscopic clip placement as the preferred management in patients presenting with diverticular bleeding. (ÖÖÖÖ)

10. We recommend endoscopic clip or tattoo placement adjacent to a bleeding diverticulum if identified at colonoscopy for future localization in the event of recurrent bleeding. (ÖÖÖØ)

11. We recommend endoscopic treatment with argon plasma coagulation as the preferred management in patients with bleeding angioectasias. (ÖÖÖÖ)

12. We recommend surgical and radiologic consultation in patients presenting with severe hematochezia who cannot be stabilized for endoscopy or in whom endoscopic evaluation has failed to reveal a bleeding source. (ÖÖÖØ)

COLORECTAL POLYPECTOMY AND ENDOSCOPIC MUCOSAL RESECTION (EMR)

The endoscopic removal of colorectal polyps reduces the incidence and mortality of colorectal cancer (CRC) and is considered an essential skill for all endoscopists who perform colonoscopy. (17) Various polypectomy techniques and devices are available, their use often varying based on local preferences and availability. This evidence-based Guideline was commissioned and validated by the European Society of Gastrointestinal Endoscopy (ESGE). It addresses all major issues concerning the practical use of polypectomy and endoscopic mucosal resection (EMR), to inform and underpin this fundamental technique in colonoscopy and in CRC prevention.

RECOMMENDATIONS

1. It is recommended cold snare polypectomy (CSP) as the preferred technique for removal of diminutive polyps (size ≤ 5mm). This technique has high rates of complete resection, adequate tissue sampling for histology, and low complication rates. (High quality evidence, strong recommendation.)

2. It is suggested CSP for sessile polyps 6 – 9mm in size because of its superior safety profile, although evidence comparing efficacy with hot snare polypectomy (HSP) is lacking. (Moderate quality evidence, weak recommendation.)

3. It is suggested HSP (with or without sub mucosal injection) for removal of sessile polyps 10 – 19 mm in size. In most cases deep thermal injury is a potential risk and thus sub mucosal injection prior to HSP should be considered. (Low quality evidence, strong recommendation.)

4. It is recommended HSP for pedunculated polyps. To prevent bleeding in pedunculated colorectal polyps with head ≥ 20 mm or a stalk ≥ 10 mm in diameter, ESGE recommends pretreatment of the stalk with injection of dilute adrenaline and/or mechanical hemostasis. (Moderate quality evidence, strong recommendation.)

5. It is recommended that the goals of endoscopic mucosal resection (EMR) are to achieve a completely snare-resected lesion in the safest minimum number of pieces, with adequate margins and without need for adjunctive ablative techniques. (Low quality evidence, strong recommendation.)

6. It is recommended careful lesion assessment prior to EMR to identify features suggestive of poor outcome. Features associated with incomplete resection or recurrence include lesion size > 40 mm, ileocecal valve location, prior failed attempts at resection, and size, morphology, site, and access (SMSA) level 4. (Moderate quality evidence; strong recommendation.)

7. For intraprocedural bleeding, it is recommended endoscopic coagulation (snare-tip soft coagulation or coagulating forceps) or mechanical therapy, with or without the combined use of dilute adrenaline injection. (Low quality evidence, strong recommendation.)

SELF EXPANDING METALLIC STENT FOR COLONIC TUMOURS

RECOMMENDATIONS

The following recommendations should only be applied after a thorough diagnostic evaluation including a contrast enhanced computed tomography (CT) scan.

Prophylactic colonic stent placement is not recommended.

Colonic stenting should be reserved for patients with clinical symptoms and imaging evidence of malignant large-bowel obstruction, without signs of perforation (strong recommendation, low quality evidence).

Colonic self-expandable metal stent (SEMS) placement as a bridge to elective surgery is not recommended as a standard treatment of symptomatic left-sided malignant colonic obstruction (strong recommendation, high quality evidence).

For patients with potentially curable but obstructing left-sided colonic cancer, stent placement may be considered as an alternative to emergency surgery in those who have an increased risk of postoperative mortality, i.e. American Society of Anesthesiologists (ASA) Physical Status RIII and/or age OVER 70 years (weak recommendation, low quality evidence).

SEMS placement is recommended as the preferred treatment for palliation of malignant colonic obstruction (strong recommendation, high quality evidence), except in patients treated or considered for treatment with antiangiogenic drugs (e.g. bevacizumab) (strong recommendation, low quality evidence).

A contrast-enhanced computed tomography (CT) scan is recommended as the primary diagnostic tool when malignant colonic obstruction is suspected (strong recommendation, low quality evidence).

Examination of the remaining colon with colonoscopy or CTcolonography (CTC) is recommended in patients with potentially curable obstructing colonic cancer, preferably within 3 months after alleviation ofthe obstruction (strong recommendation, low quality evidence).

Colonic stenting should be avoided for diverticular strictures or when diverticular disease is suspected during endoscopy and/or CT scan (strong recommendation, low quality evidence). Pathological confirmation of malignancy by endoscopic biopsy and/or brush cytology is not necessary in an urgent setting, such as before stent placement. However, pathology results may help to modify further management of the stented patient (strong recommendation, low quality evidence).

Preparation of obstructed patients with an enema to clean the colon distal to the stenosis is suggested to facilitate the stent placement procedure (weak recommendation, low quality evidence). Antibiotic prophylaxis in obstructed patients undergoing colon stenting is not indicated because the risk of post-procedural infections is very low (strong recommendation, moderate quality evidence).

Colonic stent placement should be performed or directly supervised by an experienced operator who has performed at least 20 colonic stent placement procedures (strong recommendation, low quality evidence).

Colonic stent placement is recommended with the combined use of endoscopy and fluoroscopy (weak recommendation, low quality evidence)

Stricture dilation either before or after stent placement is discouraged in the setting of obstructing colorectal cancer (strong recommendation, low quality evidence).

Covered and uncovered SEMS are equally effective and safe (high quality evidence). The stent should have a body diameter R24 mm (strong recommendation, low quality evidence) and a length suitable to extend at least 2 cm on each side of the lesion after stent deployment (weak recommendation, low quality evidence).

Surgical resection is suggested as the preferred treatment for malignant obstruction of the proximal colon in patients with potentially curable disease (weak recommendation, low quality evidence). In a palliative setting, SEMS can be an alternative to emergency surgery (weak recommendation, low quality evidence).

SEMS placement is a valid alternative to surgery for the palliation of malignant extra colonicobstruction (weak recommendation, low quality evidence). The technical and clinical success rates of stenting for extracolonic malignancies are inferior to those reported in stenting ofprimary colonic cancer (low quality evidence).

There is insufficient evidence to discourage colonic stenting based on the length of the stenosis (weak recommendation, low quality evidence) or the degree of obstruction (strong recommendation, low quality evidence).

Clinical indication: SEMS placement as a bridge to elective surgery (Table e3, available online at www. giejournal.org) Colonic SEMS placement as a bridge to elective surgery is not recommended as a standard treatment of symptomatic left-sided malignant colonic obstruction (strong recommendation, high quality evidence). For patients with potentially curable left-side dobstructing colonic cancer, stentplacement may be considered as an alternative to emergency

surgery in those who have an increased risk of post operative mortality, i.e. ASARIIIand/or age>70 years (weak recommendation, low quality evidence).

A time interval to operation of 5–10 days is suggested when SEMS is used as a bridge to elective surgery in patients with potentially curable left sided colon cancer (weak recommendation, low qualityevidence).

Clinical indication: Palliative SEMS placement SEMS placement is the preferred treatment for palliation of malignant colonic obstruction (strong recommendation, high quality evidence).

Patients who have undergone palliative stenting can be safely treated with chemotherapy without antiangiogenic agents (strong recommendation, low quality evidence). Given the high risk of colonic perforation, it is not recommended to use SEMS as palliative decompression if a patient is being treated or considered for treatment with antiangiogenic therapy (e.g. bevacizumab) (strong recommendation, low quality evidence).

Adverse events related to colonic stenting

When stent obstruction or migration occurs in the palliative setting, endoscopic re-intervention by stent-in-stent placement or SEMS replacement is suggested (weak recommendation, low quality evidence). Surgery should always be considered in patients with stent-related perforation (strong recommendation, low quality evidence).

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