









Curriculum for bariatric endoscopy and endoscopic treatment of the complications of bariatric surgery: European Society of Gastrointestinal Endoscopy (ESGE) Position Statement



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MAIN RECOMMENDATIONS

Obesity is a chronic, relapsing, degenerative, multifactorial disease that is associated with many co-morbidities. The global increasing burden of obesity has led to calls for an urgent need for additional treatment options. Given the rapid expansion of bariatric endoscopy and bariatric surgery across Europe, the European Society of Gastrointestinal Endoscopy (ESGE) has recognized the need to formalize and enhance training in bariatric endoscopy and the endoscopic treatment of bariatric surgical adverse events. This manuscript represents the outcome of a formal Delphi process resulting in an official Position Statement of the ESGE and provides a framework to develop and maintain skills in bariatric endoscopy and the endoscopic treatment of bariatric surgical adverse events. This curriculum is set out in terms of the prerequisites prior to training, minimum number of procedures, the steps for training and quality of training, and how competence should be defined and evidenced before independent practice.

1 ESGE recommends that every endoscopist should have achieved competence in upper gastrointestinal endoscopy before commencing training in bariatric endoscopy and the endoscopic treatment of bariatric surgical adverse events.

2 Trainees in bariatric endoscopy and the endoscopic treatment of the complications of bariatric surgery should have basic knowledge of the definition, classification, and social impact of obesity, its pathophysiology, and its related comorbidities. The recognition and management of gastro-

intestinal diseases that are more common in patients with obesity, along with participation in multidisciplinary teams where obese patients are evaluated, are mandatory.

3 ESGE recommends that competency in bariatric endoscopy and the endoscopic treatment of the complications of bariatric surgery can be learned by attending validated training courses on simulators initially, structured training courses, and then hands-on training in tertiary referral centers.

ABBREVIATIONS

BMI	body mass index
DOPS	Direct Observation of Procedural Skills
ERCP	endoscopic retrograde cholangiopancreatography
ESG	endoscopic sleeve gastroplasty
ESGE	European Society of Gastrointestinal Endoscopy
EUS	endoscopic ultrasound
GI	gastrointestinal
GLP-1	glucagon-like peptide-1
GRADE	Grading of Recommendations Assessment, Development and Evaluation
IGB	intra-gastric balloon
MDT	multidisciplinary team
NASH	nonalcoholic steatohepatitis
OTS	over the scope
PEG	percutaneous endoscopic gastrostomy
POSE	primary obesity surgery endoluminal
SADI-S	single anastomosis duodeno-ileal bypass with sleeve gastrectomy
UGI	upper gastrointestinal

SOURCE AND SCOPE

This Position Statement is an official statement of the European Society of Gastrointestinal Endoscopy (ESGE). It provides recommendations for a European core curriculum aimed at providing high quality training in bariatric endoscopy and the endoscopic treatment of the adverse events of bariatric surgery. The recommendations presented are based on a consensus among endoscopists considered to be experts in bariatric endoscopy who are involved in training and the provision of training courses.

Introduction

Obesity is a globally widespread disease. Over 650 million people in the world were obese in 2016, and it is predicted that 25% of the world population will be obese by 2025 [1]. Currently, the most effective therapy to treat obesity in the long term consists of bariatric surgery, which has seen a massive increase in the last few years [2]. Despite this, only a small proportion of eligible obese patients (approximately 0.25%) undergo bariatric surgery [3].

Bariatric surgery is associated with acute and chronic post-operative complications, such as bleeding, leakage, and gastric fistulas, that rarely can be fatal, and which sometimes discourage patients from undergoing surgery [4]. Consequently, two necessities have emerged: first, the development of new techniques that could be effective for weight loss while, at the same time, being less invasive and having fewer adverse events; second, the growth of expertise in managing the complications of bariatric surgery. Bariatric endoscopy has risen as an answer to both necessities. New endoscopic bariatric techniques, such as endoscopic sleeve gastroplasty (ESG) [5], have been developed that are based on the availability of new full-thickness suturing devices. The new full-thickness suturing devices, together with stents, clips, and fistula closure methods, among other tools [6–10], make endoscopy the first approach to managing the complications of bariatric surgery, especially because of its minimally invasive nature and repeatability.

For these reasons, ESGE deemed it appropriate to develop a curriculum that will guide endoscopists in becoming experts in bariatric endoscopy and competent in managing bariatric complications. The 38 recommendations presented in this curriculum (► **Table 1**) are based on a consensus among endoscopists considered experts in bariatric endoscopy and who are involved in training. In 2017, the ESGE board convened the Curricula Working Group, which was responsible for developing curricula that defined the minimum training standards for more advanced and therapeutic endoscopic practices that may often go beyond the core endoscopy training curricula in each country. This process has been outlined previously [11], and Position Statements on four endoscopy topics have already been published [12–15].

► **Table 1** Summary of the recommendations made, with their quality of evidence and strength of recommendation.

Number	Recommendation	Quality of evidence	Strength of recommendation
Training in bariatric endoscopy			
Pre-adoption requirements to start bariatric endoscopy training			
1	ESGE recommends that every endoscopist should have achieved competence in upper gastrointestinal (UGI) endoscopy before commencing training in bariatric endoscopy (of any level), meaning personal experience of at least 300 gastroscopies and having met the ESGE quality measures for UGI endoscopy. Competence in level 2 procedures will be achieved after proper training and may require additional formal training following the achievement of independent practice (i.e. fluoroscopy, guidewire maneuvering, contrast injection etc.)	Low	Strong
2	ESGE recommends that every endoscopist should be able to recognize the anatomy related to bariatric endoscopy or bariatric surgical procedures and any other surgically altered anatomy	Low	Strong
3	ESGE recommends that endoscopists should have a basic understanding of the physiology and pathophysiology of energy metabolism, gut hormones, and orexigenic and anorexigenic factors, as well as obesity-related GI conditions and co-morbidities, and a general knowledge of body composition and the distribution of macronutrients and micronutrients within it	Low	Strong
4	ESGE recommends that endoscopists should have a basic knowledge of the site/mechanism of absorption along the GI tract, obesity-related vitamin and mineral homeostasis, including calcium, parathyroid hormone, vitamin B12, and vitamin D	Low	Strong
5	ESGE recommends that endoscopists should have basic competence in lifestyle changes, dietary plans, eating disorders, and relevant psychiatric conditions, and be familiar with medications that can promote weight gain and advise the prescribing physicians accordingly	Low	Weak
6	ESGE recommends that endoscopists should be able to contribute to case discussion and patient selection in multidisciplinary teams	Low	Strong
7	ESGE recommends that trainees in bariatric endoscopy should have knowledge of the most commonly used and commercially available CE-marked devices for bariatric endoscopy and recognize their basic indications, contraindications, and weight loss outcomes	Low	Strong
8	ESGE recommends that trainees with competence in the placement of intragastric balloons (IGBs), with adequate experience in conventional therapeutic endoscopy (i.e. over-the-scope [OTS] clip placement/suturing, foreign body removal, and esophageal stents etc.) can be considered competent to manage complications secondary to IGB placement	Low	Strong
9	ESGE suggests that trainees with competence in placement of percutaneous endoscopic gastrostomy (PEG)/aspiration devices who have adequate experience in conventional therapeutic endoscopy can be considered competent to manage complications secondary to aspiration devices	Low	Weak
10	ESGE suggests that trainees with adequate experience in conventional therapeutic endoscopy and competence in endoscopic suturing/endoscopic gastric plication can be considered competent in the management of complications secondary to endoscopic suturing/endoscopic gastric plication and/or intraoperative perforations	Low	Weak
11	ESGE suggests that trainees with adequate experience in conventional therapeutic endoscopy who are competent in the placement of duodenal devices can be considered competent to manage related complications	Low	Weak
Definition of competence in primary bariatric endoscopy			
12	ESGE recommends that competence in primary bariatric endoscopy should be defined as the ability to independently assess the need for and carry out technically successful and safe procedures in level 1 and 2 primary bariatric endoscopy procedures across a range of case difficulties and clinical contexts	Low	Strong
13	ESGE suggests that, although most trainees should perform > 20 endoscopic suturing/endoscopic gastric plication procedures and 10 gastric balloons to gain competence, the performance of this number of independent primary bariatric endoscopy procedures might not always be a sufficient marker of experience and competence	Low	Weak

▶ Table 1 (Continuation)			
Number	Recommendation	Quality of evidence	Strength of recommendation
Minimum requirements for restrictive primary bariatric endoscopy procedures			
14	ESGE recommends that at least 10 IGBs should be placed and removed during training	Low	Strong
15	ESGE recommends that at least 10 implanted PEGs should be required before training for aspiration therapy is started	Low	Strong
16	ESGE recommends that at least 20 endoscopic suturing/endoscopic gastric plication procedures should be done with the same device during training	Medium	Strong
Minimum requirements for redo bariatric endoscopy procedures			
17	ESGE recommends that competency in endoscopic reduction of gastrojejunal bypass procedures with suturing devices should be defined as a minimum of five procedures for trainees competent in endoscopic suturing/endoscopic gastric plication or a minimum of 20 endoscopic reductions of gastrojejunal bypass in the absence of sufficient experience in endoscopic suturing/endoscopic gastric plication	Low	Weak
Minimum requirements for metabolic procedures			
18	At present duodenal bariatric procedures (i.e. duodenal mucosal resurfacing, duodenal bypass liners) are not clinically available but, if they are going to be performed, ESGE recommends that at least 10 such procedures should be done during training	Low	Weak
Training in the endoscopic treatment of bariatric surgical adverse events			
Pre-adoption requirements to start training in the endoscopic treatment of bariatric surgical adverse events			
19	ESGE recommends that trainees should have knowledge of the multidisciplinary approaches for the treatment of complications associated with bariatric surgery, and should be able to recognize and have knowledge of the anatomy of bariatric surgical procedures. Trainees should have knowledge of when and which procedure should be performed to treat specific types of surgical complications	Low	Strong
20	ESGE recommends that knowledge of diagnostic and operative UGI endoscopy, including endoscopic hemostasis, plastic and metal stent placement and removal, and the use of fluoroscopy, and patient nutrition is mandatory for endoscopic treatment of the complications of bariatric surgery	Low	Strong
21	ESGE recommends that competence in the treatment of the complications of bariatric surgery should be defined as the ability to independently assess the need for and carry out technically successful and safe procedures for the treatment of complications across a range of case difficulties and clinical contexts	Low	Strong
Minimum requirements for endoscopic treatment of the complications of bariatric surgery			
22	ESGE recommends that endoscopic placement of at least 10 double-pigtail plastic stents and at least 10 esophageal metal stents under radiographic control should be done during training	Low	Strong
23	ESGE recommends that at least five OTS clips should be placed during training	Low	Weak
24	ESGE recommends that trainees in the complications of bariatric surgery should have experience in conventional therapeutic endoscopy, endoscopic hemostasis, placement of OTS clips, esophageal metal stent placement and removal, the use of fluoroscopy, and the management of patient nutrition. Competence in therapeutic endoscopic ultrasound and endoscopic suturing is recommended	Medium	Strong
25	ESGE recommends that training in primary bariatric endoscopy procedures and the treatment of the complications of bariatric surgery should be undertaken in bariatric centers with multidisciplinary teams for evaluation of patients	Medium	Strong

► **Table 1** (Continuation)

Number	Recommendation	Quality of evidence	Strength of re-commendation
26	The following are the ESGE recommendations for topics that should be covered systematically in primary bariatric endoscopy procedures and complications of bariatric surgery	Low	Strong
i	Acquisition of consent, fluoroscopy, sedation, accessories, report writing, choice of devices etc., and how to recognize the overall risks associated with endoscopic procedures in patients with obesity		
ii	Awareness of the risks of airway problems with sedation and identification of patients with obesity who require anesthetic assistance for endoscopic procedures to be safely performed		
iii	Accurate reporting of anatomy in common bariatric surgical procedures (Roux-en-Y gastric bypass, mini-bypass, sleeve gastrectomy, and the single anastomosis duodeno-ileal bypass with sleeve gastrectomy [SADI-S] procedure, etc.)		
iv	Recognition and treatment of pathology in the gastric pouch and at the gastrojejunal anastomosis, including strictures, dehiscence, and bleeding, etc.		
v	Recognition of the indications for treatment		
Learning methods			
ESGE recommendations for training and experiential (“on the job”) learning			
27	ESGE recommends that ex vivo simulators should be the first choice for training	High	Strong
28	Given that training for bariatric endoscopy and the treatment of the complications of bariatric surgery can only be done on patients or explanted organs, ESGE recommends that the optimal training format could be the establishment of a minimum training period on explanted organs for each procedure or a training curriculum before starting to train on patients	Medium	Strong
Minimum training time, quality of training environment, and quality of trainers			
29	ESGE recommends a minimum training period of 1–3 months, including at least the minimum number of procedures defined, for competence in level 1 bariatric endoscopy; and 3–6 months, including at least the minimum number of procedures defined, for competence in level 2. Where training is interrupted, a longer period/higher number may be required	Low	Strong
30	ESGE recommends that training in both primary bariatric endoscopy and the treatment of the complications of bariatric surgery should be centered around bariatric centers that are able to offer individual trainees a sufficient volume of experience over the training period to achieve competence reliably, and include the availability of ex vivo simulators and participation in multidisciplinary meetings	Low	Strong
31	ESGE recommends that a trainee’s principal trainer should ideally fulfill the following: more than 1 year of experience/more than 30 independent level 1 bariatric endoscopy procedures, and to be part of and have experience with a preoperative multidisciplinary team (MDT)	Low	Weak
32	ESGE recommends that a trainee’s principal trainer should ideally fulfill the following: more than 3 years of experience of independent level 2 bariatric endoscopy procedures with not less than 50 procedures/year and/or treatment of the complications of bariatric surgery with not less than 10–20 procedures/year, and be part of and have experience with a preoperative MDT	Low	Strong
Self-assessment and objective assessment			
33	ESGE recommends that trainees should log all cases and their contribution to the cases to their ePortfolio to show their acquisition of competence	Low	Weak
34	ESGE recommends that the development of Direct Observation of Procedural Skills (DOPS) for objective assessment of competence should be pursued	Low	Strong
35	ESGE recommends that, for level 1 procedures, trainees must be able to demonstrate, in the last 6 months, a minimum of 15 cases/procedures or at least 50% of the numbers performed by their trainers	Low	Weak

▶ Table 1 (Continuation)			
Number	Recommendation	Quality of evidence	Strength of re-commendation
36	ESGE recommends that, for level 2 procedures, trainees must be able to demonstrate, in the last 6 months, a minimum of 30 cases/procedures or at least 50% of the numbers performed by their trainers	Low	Weak
37	ESGE recommends that, for the endoscopic treatment of the complications of bariatric surgery, trainees must be able to demonstrate, in the last 12 months, a minimum of 10 cases/procedures or at least 50% of the numbers performed by their trainers)	Low	Weak
38	ESGE recommends that a minimum period of mentored practice after competence is required during independent practice in primary bariatric endoscopy procedures and the treatment of the complications of bariatric surgery. This includes the availability of an expert in the department or on the telephone or telemonitoring for the next 6 months	Low	Strong

Aims

The aim of this Position Statement is to recommend best practices to optimize training in bariatric endoscopy and the endoscopic treatment of the complications of bariatric surgery in Europe, based on the currently published evidence and knowledge. This paper focuses on training and aims to help trainees develop evidence and maintain their skills in bariatric endoscopy and the endoscopic treatment of the complications of bariatric surgery.

Methods

In 2020, the ESGE Curricula Working group invited I.B. to develop a working subgroup of practitioners of bariatric endoscopy and endoscopic treatment of the complications of bariatric surgery with an open call via ESGE communications. This curriculum was developed through a formal Delphi consensus method among European experts in bariatric endoscopy and the endoscopic treatment of the complications of bariatric surgery [16]. During the voting process, literature data reviews and discussions were conducted. All the rounds of anonymous electronic voting were based on a 5-point Likert scale, ranging from “Strongly disagree,” through to “Strongly agree.” Any statement that received at least an 80% level of “agreement” or “strong agreement” after at least three voting rounds was accepted. A total of 84 questions were asked.

The curriculum was developed using consensus methodology, so the constitution of this working party was selected initially by I.B. and R.B. to ensure that the group was broadly representative in terms of a wide range of nationalities, levels of clinical experience, and clinical backgrounds, and included trainee representation. The first meeting of the subgroup took place online in December 2020, owing to the pandemic. At this meeting, the overall aims of the project were defined and the methodology was agreed upon. At this kick-off meeting, two principal topics were identified: training in primary bariatric endoscopy and training in the treatment of bariatric surgical adverse events. For training in primary bariatric endoscopy, two levels were identified (▶ **Table 2**). As trainees may opt to train exclusively in bariatric endoscopy or in the endoscopic treatment of the complications of bariatric surgery, the working group decided to divide the paper into two parts: part 1 on training in bariatric endoscopy; part 2 on training in the endoscopic treatment of the complications of bariatric surgery. For each statement, articles were individually assessed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system for grading evidence levels and recommendation strengths [17].

1 Training in bariatric endoscopy

A Pre-adoption requirements to start bariatric endoscopy training

Obesity is a chronic, relapsing, degenerative, and multifactorial disease in which the gut is the primary organ for nutrient sensing. Trainees in bariatric endoscopy should have a basic

► **Table 2** Types of endoscopic bariatric therapy and their levels of difficulty.

Level 1	Level 2
Balloons (all types)	Endoscopic sutured gastroplasty (OverStitch, Endomina)
Gastric aspiration	Primary obesity surgery endoluminal (POSE)
	Duodenal mucosal resurfacing
	Other (duodenal bypass liners, transpyloric shuttle, small-bowel interventions, etc.)

knowledge of the roles of the gut–brain axis, of the pancreas, liver, and gut microbiome, of adipose tissue, and of energy metabolism; a basic knowledge of signaling between the central nervous system, nutrient sensing metabolism, and energy-storing is also required [18]. In addition, a basic knowledge of the influence of genetics, epigenetics, environment, medical conditions, habits, and psychosocial factors is required.

Trainees in bariatric endoscopy should be able to define and classify obesity and be able to estimate its social impact. Moreover, trainees should learn to diagnose and treat gastrointestinal diseases that are more common in patients with obesity. Similarly to all other biochemical processes, glucose and insulin metabolism also require macronutrients and micronutrients for their proper functioning [18]. Deficiencies might impair glucose metabolism and cause insulin resistance. Both hydro- and liposoluble vitamins are known to be deficient in the obese. Trainees in bariatric endoscopy should have a proper understanding of these mechanisms and should be able to address possible deficiencies of these micronutrients when advising obese patients on any type of bariatric treatment.

Bariatric endoscopy requires the skilled execution of endoscope maneuvers to obtain a stable position of the endoscope in order either to undertake specific device placement or removal, or therapy. Proficiency in diagnostic gastroscopy, as defined by the ESGE performance measures [19], is therefore a prerequisite before training in bariatric endoscopy, and experience in therapeutic upper gastrointestinal (UGI) endoscopy and colonoscopy is also desirable. Furthermore, recognition of previously endoscopically or surgically altered anatomy is fundamental before undertaking any kind of bariatric endoscopy treatment. Trainees should be able to recognize the existence of any alteration of the UGI tract, describe it well, and eventually be able to decide if bariatric endoscopy of any level can be applied to that anatomy or condition.

With regard to the role of the multidisciplinary team (MDT) for preoperative patient evaluation, weight-loss interventions have been demonstrated to achieve superior outcomes when the intervention is performed as part of a comprehensive MDT [20]. The MDT should be composed of specialists that treat obesity, with the main involved profiles being endocrinologists, psychologists (or psychiatrists in case of necessity), bariatric surgeons, clinical nutritionists, and gastroenterologists/endoscopists [21]. Having a specialized bariatric nurse is also of help. Bariatric endoscopy should be performed in this context to achieve maximal benefit. Trainees in bariatric endoscopy should participate in all case discussions and patient selection

for all the different types of treatment and should be able to give the indications for these treatments.

RECOMMENDATION 1

ESGE recommends that every endoscopist should have achieved competence in upper gastrointestinal (UGI) endoscopy before commencing training in bariatric endoscopy (of any level), meaning personal experience of at least 300 gastroscopies and having met the ESGE quality measures for UGI endoscopy. Competence in level 2 procedures will be achieved after proper training and may require additional formal training following the achievement of independent practice (i.e. fluoroscopy, guidewire maneuvering, contrast injection etc.). Level of agreement 100%. Strong recommendation, low quality evidence.

All bariatric endoscopy procedures require the skilled execution of endoscope maneuvers in order either to undertake placement of a specific device, perform suturing, or perform treatment of bariatric endoscopy-related adverse events. Proficiency in diagnostic gastroscopy, as defined by the ESGE performance measures [19], is therefore a prerequisite before training in this field. Furthermore, experience with therapeutic UGI endoscopy and colonoscopy is also desirable.

RECOMMENDATION 2

ESGE recommends that every endoscopist should be able to recognize the anatomy related to bariatric endoscopy or bariatric surgical procedures and any other surgically altered anatomy. Level of agreement 100%. Strong recommendation, low quality evidence.

Knowing and recognizing a surgically altered anatomy is a basic prerequisite for any level of bariatric endoscopy and for endoscopic revision of bariatric surgical procedures. For instance, a trainee should be able to recognize even minor changes in the gastric anatomy before placing a gastric balloon.

RECOMMENDATION 3

ESGE recommends that endoscopists should have a basic understanding of the physiology and pathophysiology of energy metabolism, gut hormones, and orexigenic and anorexigenic factors, as well as obesity-related GI conditions and co-morbidities, and a general knowledge of body composition and the distribution of macronutrients and micronutrients within it.

Level of agreement 100%. Strong recommendation, low quality evidence.

All trainees in bariatric endoscopy should have a basic understanding of energy metabolism, gut hormones, and micro- and macronutrients. It is not unusual to see patients referred for a bariatric endoscopy treatment who do not have an indication for it (i. e. patients with adrenal gland tumors). Moreover, trainees are expected to understand all of the options available for obese patients seeking nonsurgical weight-loss therapies. These include dietary and lifestyle modifications, and weight-loss medications, in particular glucagon-like peptide-1 (GLP-1) agonists. Trainees should understand the mechanism of action of GLP-1 agonists, in particular their indications, risks, weight-loss expectations, and suitability for particular patient populations.

RECOMMENDATION 4

ESGE recommends that endoscopists should have a basic knowledge of the site/mechanism of absorption along the GI tract, obesity-related vitamin and mineral homeostasis, including calcium, parathyroid hormone, vitamin B12, and vitamin D.

Level of agreement 100%. Strong recommendation, low quality evidence.

A basic knowledge of the sites and mechanisms of absorption of vitamins, especially of obesity-related vitamins, is crucial, especially in patients with surgically altered anatomy that require endoscopic revision. In some cases, short-term vitamin supplementation could also be necessary after some types of bariatric endoscopy procedures, especially those that bypass the duodenum.

RECOMMENDATION 5

ESGE recommends that endoscopists should have basic competence in lifestyle changes, dietary plans, eating disorders, and relevant psychiatric conditions, and be familiar with medications that can promote weight gain and advise the prescribing physicians accordingly.

Level of agreement 94%. Weak recommendation, low quality evidence.

Clinical nutrition evaluation of obese patients should be done by specialists in the field; however, bariatric endoscopists should have at least a basic knowledge of the available dietary plans. Furthermore, the MDT should encourage patients to make changes to their lifestyles. Correction of eating disorders and relevant psychiatric conditions should be performed by specialized personnel in the field (psychologists and psychiatrists), but trainees in bariatric endoscopy should know of at least the basic eating disorders and the relative indications and contraindications of bariatric surgery and endoscopy. Familiarity with medications that can promote weight gain is also important to avoid patients having the wrong indications for bariatric treatment.

RECOMMENDATION 6

ESGE recommends that endoscopists should be able to contribute to case discussion and patient selection in multidisciplinary teams.

Level of agreement 100%. Strong recommendation, low quality evidence.

Obesity is a chronic, relapsing, degenerative, and multifactorial disease, and every patient must be evaluated by a specialized MDT. Patient selection for bariatric endoscopy is essential as the procedure is less invasive, but also less effective than bariatric surgery. Taking this into account, and considering that obesity is a chronic disease, the patients should also be followed up by the MDT after bariatric endoscopy. Overall, contribution to case discussion is also based on the general indications of procedures. For instance, patients who are candidates for bariatric endoscopy are those with a body mass index (BMI) of 27 kg/m² and nonalcoholic steatohepatitis (NASH), or a BMI of 30–40 kg/m², but also those who have a BMI >40 kg/m² who refuse surgery, are poor surgical candidates, are obese and require organ transplantation, or who need bariatric endoscopy as a bridge to surgery [22–25]. Trainees in bariatric endoscopy should contribute to MDTs with knowledge of the contraindications of the procedure (i. e. patients with gastric neuroendocrine tumors, history of gastric dysplasia, atrophic gastritis etc.).

RECOMMENDATION 7

ESGE recommends that trainees in bariatric endoscopy should have knowledge of the most commonly used and commercially available CE-marked devices for bariatric endoscopy and recognize their basic indications, contraindications, and weight loss outcomes.

Level of agreement 100%. Strong recommendation, low quality evidence.

Trainees should familiarize themselves with the CE-marked devices, but also with investigational endoscopic procedures for primary bariatric endoscopy. These include, but are not limited to, ESG/gastric plication, intragastric balloons (IGBs), aspirational therapy, transpyloric shuttle, duodenal resurfacing, and duodenal–jejunal bypass liners. Trainees should understand the mechanism by which these procedures promote weight loss, their indications, contraindications, possible complications and how to troubleshoot them, and their availability on the market.

There are many different devices used in bariatric endoscopy. Knowing the commercially available ones and their performances help trainees in making the best choice of device for their future practice. With regard to IGBs (level 1), there are many different types, which have different placement and removal characteristics, and fillings. Because IGBs differ substantially between brands, separate training should be undertaken if a trainee wants to use a specific brand. As well as knowing the indications for IGB placement, trainees should be able to manage any potential adverse events related to the placement and removal procedures, such as nausea, vomiting, dehydration, gastric perforation, small-bowel obstruction, pancreatitis, abdominal spasm, balloon hyperinflation, and balloon leak [26–28].

Gastric aspiration therapy is also among the level 1 procedures. Currently, the gastric aspiration system is the Aspire-Assist system (FDA and CE marked), which is not available on the market. This system consists of an A-tube, a percutaneous endoscopic gastrostomy (PEG) tube with a long fenestrated tube inside the stomach. The device allows the removal of approximately 30% of ingested calories 20–30 minutes after a meal. Trainees who are comfortable with standard PEG placement may start by performing the percutaneous steps of the A-tube placement using the standard pull technique. Competence in PEG placement and a comprehensive understanding of how the device works prior to instructing patients are fundamental for his procedure. Furthermore, trainees should learn to identify and manage potential adverse events following aspiration therapy, which include granulation tissue, infection, abdominal pain, irritation, buried bumper syndrome, and electrolyte disturbances [29].

Gastric suturing and plication for obesity are classified as being of level 2 difficulty. These procedures require adequate experience in conventional therapeutic endoscopy and management of adverse events (knowing how), and in the use of conventional endoscopy devices. If possible, it is recommended that a trainee become familiar with endoscopic revision of gastrojejunal bypass prior to advancing to gastric suturing. Although currently there are no definitive FDA and CE-marked approved duodenal implantable bariatric endoscopy devices, it is important to emphasize the need for adequate training in conventional endoscopy including the maneuvering of guidewires, fluoroscopy, and the management of any related adverse events.

RECOMMENDATION 8

ESGE recommends that trainees with competence in the placement of intragastric balloons (IGBs), with adequate experience in conventional therapeutic endoscopy (i. e. over-the-scope [OTS] clip placement/suturing, foreign body removal, and esophageal stents etc.) can be considered competent to manage complications secondary to IGB placement.

Level of agreement 100%. Strong recommendation, low quality evidence.

There are many different types of IGBs, which can differ in their structure, placement methods, and filling material. Both placement and removal of IGBs can be associated with complications. The most common complications of IGBs are nausea, vomiting, and abdominal pain, but not infrequently IGBs can induce bleeding gastric ulcers. Gastroesophageal perforations may also occur, mostly during removal or displacement [30–37]. Trainees with competence in IGB placement should be able to promptly recognize and treat these complications.

RECOMMENDATION 9

ESGE suggests that trainees with competence in the placement of PEG/aspiration devices who have adequate experience in conventional therapeutic endoscopy can be considered competent to manage complications secondary to aspiration devices.

Level of agreement 100%. Weak recommendation, low quality evidence.

PEG/aspiration devices are currently unavailable on the market; however, the most relevant adverse events related to PEG/aspiration devices are bleeding, wound infection, displacement, buried bumper syndrome, injury to the adjacent viscera, aspiration, leakage, and gastrocutaneous fistula. [38–58]. Competency in the treatment of these adverse events is necessary for trainees to be competent in the placement of this device should it become available again.

RECOMMENDATION 10

ESGE suggests that trainees with adequate experience in conventional therapeutic endoscopy and competence in endoscopic suturing/endoscopic gastric plication can be considered competent in the management of complications secondary to endoscopic suturing/endoscopic gastric plication and/or intraoperative perforations.

Level of agreement 100%. Weak recommendation, low quality evidence.

The most significant adverse events that can occur during gastric suturing are intragastric bleeding and perforation. Both events, in most cases, can be managed endoscopically during the procedure. Delayed gastric perforation and intraperitoneal bleeding require surgical treatment, while delayed intragastric bleeding should be initially managed endoscopically. Rare adverse events of gastric suturing are intra-abdominal collections, refractory pain that requires ESG reversal, pneumothorax, and pulmonary embolism [59–61]. Trainees competent in gastric suturing should be competent in treating UGI hemorrhage and/or perforation, promptly recognize any other kind of adverse events related to the procedure, and be able to treat these themselves or involve other specialists.

RECOMMENDATION 11

ESGE suggests that trainees with adequate experience in conventional therapeutic endoscopy who are competent in the placement of duodenal devices can be considered competent to manage related complications. Level of agreement 100%. Weak recommendation, low quality evidence.

The placement and removal of duodenal devices (duodenal-jejunal bypass liner), as well as requiring good endoscopic skills, in most cases, requires experience in guidewire maneuvering and fluoroscopy. Adverse events might occur in any stage: placement, in the duodenum, or during removal. The most relevant adverse events of these devices are perforation (at the level of either the esophagus, stomach, duodenum, or jejunum), cholangitis, cholecystitis, gastrointestinal hemorrhage, bowel occlusion, and hepatic abscess [62]. Trainees competent in the placement and removal of these devices should be competent in treating UGI hemorrhage and/or perforation, promptly recognize any kind of adverse events related to the procedure, and be able to treat these themselves or involve other specialists.

B Definition of competence in primary bariatric endoscopy

The definition of competence in primary bariatric endoscopy should consider the predicted procedure complexity. All those delivering any kind of independent primary bariatric endoscopy practice should be able to demonstrate competent management of patients, procedures, and any related adverse events. For procedures that involve placement and removal of devices during a treatment period, competency should be defined as the ability to place and remove the device(s). Currently, in the literature, there is either no minimum required numbers (for all levels) of bariatric endoscopy procedures or these numbers differ substantially. These numbers were defined through the Delphi process in this work.

RECOMMENDATION 12

ESGE recommends that competence in primary bariatric endoscopy should be defined as the ability to independently assess the need for and carry out technically successful and safe procedures in level 1 and 2 primary bariatric endoscopy procedures across a range of case difficulties and clinical contexts. Level of agreement 100%. Strong recommendation, low quality evidence.

Competency in any level of primary bariatric procedure is a process that starts with a comprehensive understanding of the pathophysiology of obesity and an understanding of the important elements of an interdisciplinary obesity management team, and goes through to establishing technical proficiency in endoscopic bariatric and metabolic therapies. Technical proficiency should be acquired for all levels of primary bariatric endoscopy procedure and should cover a range of case difficulties, clinical contexts, and scenarios.

RECOMMENDATION 13

ESGE suggests that, although most trainees should perform >20 endoscopic suturing/endoscopic gastric plication procedures and 10 gastric balloons to gain competence, the performance of this number of independent primary bariatric endoscopy procedures might not always be a sufficient marker of experience and competence. Level of agreement 94%. Weak recommendation, low quality evidence.

Learning curves for specific procedures are different from one trainee to another. Therefore, the number of independent primary bariatric endoscopy procedures performed might not always be a sufficient marker of experience and competence. Bariatric endoscopy procedures require both cognitive and technical abilities, so a trainee's procedure volume does not necessarily correlate with their performance.

C Minimum requirements for restrictive primary bariatric endoscopy procedures

RECOMMENDATION 14

ESGE recommends that at least 10 intragastric balloons should be placed and removed during training. Level of agreement 100%. Strong recommendation, low quality evidence.

In the literature, there are no threshold numbers regarding IGB placement. In the Delphi process, the minimum number of 10 was decided upon by the panel of experts. IGB placement is a level 1 procedure and, even though there are many different types of balloons, the procedure of placement and removal is similar for all of them.

RECOMMENDATION 15

ESGE recommends that at least 10 implanted PEGs should be required before training for aspiration therapy is started.

Level of agreement 100%. Strong recommendation, low quality evidence.

Like for IGB placement, in the literature, there are no threshold numbers for PEG placement. In the Delphi process, the minimum number of 10 was decided upon as gastric aspiration is a level 1 procedure.

RECOMMENDATION 16

ESGE recommends that at least 20 endoscopic suturing/endoscopic gastric plication procedures should be done with the same device during training.

Level of agreement 100%. Strong recommendation, medium quality evidence.

In Europe, three different tools are used for endoscopic suturing/endoscopic gastric plication. These are: the OverStitch (Apollo Endosurgery, Austin, Texas, USA), which has two different devices – one that uses a double-channel endoscope (the first version) and a later one that can be placed over any type of gastroscope (the SX version); the Endomina (EndoTools, Brussels, Belgium); and POSE (USGI Medical, San Clemente, California, USA). The three devices differ substantially in their mechanism of action, but are all full-thickness suturing/plication devices.

The learning curves and length of operative time differ substantially in the literature, and all reference the OverStitch device as it is the most commonly used device, but mostly the earlier version. For instance, Hill et al. retrospectively evaluated the learning curves of endoscopists proficient in endoscopic suturing for non-bariatric procedures during a 1-day ESG training session, before offering bariatric procedures to patients [63]. In this study, there was a reduction in the length of the procedure and the number of plications per procedure in successive cases, with progress plateauing at seven and nine cases, respectively [63]. In a study from 2017, Saumoy et al. defined a procedure range of 29–38 to achieve a reduction in operative time and a cutoff number of 55 procedures to reach the absence of outliers [64]. Furthermore, Sharaiha et al. found a significant reduction in operative time after 35 procedures for

novices [65]. Therefore, training on models before starting clinical cases could dramatically reduce the number of procedures required to guarantee technical efficiency.

Given these considerations, during the Delphi process, the minimum number of procedures that a trainee should perform was set to 20 for all of the above-mentioned devices. Furthermore, because all these devices differ substantially between brands and subtypes of the same brand, separate training should be undertaken if a trainee wants to use a different specific brand or subtype.

D Minimum requirements for redo bariatric endoscopy procedures

RECOMMENDATION 17

ESGE recommends that competency in endoscopic reduction of gastrojejunal bypass procedures with suturing devices should be defined as a minimum of five procedures for trainees competent in endoscopic suturing/endoscopic gastric plication or a minimum of 20 endoscopic reductions of gastrojejunal bypass in the absence of sufficient experience in endoscopic suturing/endoscopic gastric plication.

Level of agreement 94%. Weak recommendation, low quality evidence.

Endoscopic reduction of a gastrojejunal bypass with suturing devices is a less invasive step in the management of weight regain compared with surgical revision [66]. This procedure is performed in patients who have regained their initially lost weight, have dumping syndrome, or both [67–71]. During the Delphi process, competence was defined as a minimum of five procedures under supervision for trainees competent in endoscopic suturing/gastric plication, or a minimum of 20 endoscopic reductions of gastrojejunal bypasses in the absence of sufficient experience in endoscopic suturing/gastric plication.

E Minimum requirements for metabolic procedures

RECOMMENDATION 18

At present, duodenal bariatric procedures (i.e. duodenal mucosal resurfacing, duodenal bypass liners) are not clinically available but, if they are going to be performed, ESGE recommends that at least 10 such procedures should be done during training.

Level of agreement 94%. Weak recommendation, low quality evidence.

These procedures are complex endoscopic skills and require knowledge in guidewire maneuvering and fluoroscopy. The minimum number was set to 10 as endoscopists that will perform these procedures are generally advanced endoscopists.

2 Training in the endoscopic treatment of bariatric surgical adverse events

A Pre-adoption requirements to start training in the endoscopic treatment of bariatric surgical adverse events

Bariatric surgery is very effective for the treatment of obesity but is linked to risks, complications, and side effects [72]. These can be intraoperative, perioperative, or long term, and their treatment can be endoscopic, surgical, or medical. Endoscopic treatment of the complications of bariatric surgery consists of the treatment of bleeding, leakage, and dehiscence.

RECOMMENDATION 19

ESGE recommends that trainees should have knowledge of the multidisciplinary approaches for the treatment of complications associated with bariatric surgery, and should be able to recognize and have knowledge of the anatomy of bariatric surgical procedures. Trainees should have knowledge of when and which procedure should be performed to treat specific types of surgical complications.

Level of agreement 100%. Strong recommendation, low quality evidence.

When indicated, early endoscopic treatment of the complications of bariatric surgery is very important for achieving best outcomes. Because, in this timeframe, the patients are still obese, patient evaluation and the choice of the best treatment should be made within a multidisciplinary group. Moreover, other specialties, such as interventional radiology or surgery, may also need to be involved.

RECOMMENDATION 20

ESGE recommends that a knowledge of diagnostic and operative UGI endoscopy, including endoscopic hemostasis, plastic and metal stent placement and removal, and the use of fluoroscopy, and patient nutrition is mandatory for endoscopic treatment of the complications of bariatric surgery.

Level of agreement 100%. Strong recommendation, low quality evidence.

RECOMMENDATION 21

ESGE recommends that competence in the treatment of the complications of bariatric surgery should be defined as the ability to independently assess the need for and carry out technically successful and safe procedures for the treatment of complications across a range of case difficulties and clinical contexts.

Level of agreement 100%. Strong recommendation, low quality evidence.

Endoscopy centers that are involved in the treatment of bariatric surgery are mainly tertiary referral centers where fluoroscopy is available and advanced procedures are performed. The complications of bariatric surgery can be very complex and may require urgent interventions. In these circumstances, endoscopists should be trained to perform a safe and successful procedure rapidly and independently.

B Minimum requirements for endoscopic treatment of the complications of bariatric surgery

RECOMMENDATION 22

ESGE recommends that endoscopic placement of at least 10 double-pigtail plastic stents and at least 10 esophageal metal stents under radiographic control should be done during training.

Level of agreement 100%. Strong recommendation, low quality evidence.

RECOMMENDATION 23

ESGE recommends that at least five OTS clips should be placed during training.

Level of agreement 94%. Weak recommendation, low quality evidence.

In setting the minimum requirements for endoscopic treatment of the complications of bariatric surgery in recommendations 22 and 23, it should be underlined that the placement of esophageal metal stents, double-pigtail plastic stents, and over-the-scope (OTS) clips are procedures of medium complexity. These devices are widely available and used routinely. Currently, in the literature, there are no studies on the minimum number of procedures required to gain competency for the placement of esophageal metal and double-pigtail plastic stents, and OTS clips in the UGI tract. The sole study available is on metal stents in colorectal cancer; in this case, it was suggested that at least 20 cases are required for an operator to be considered experienced [73]. Given the medium complexity of these procedures and the absence of threshold numbers for competency, during the Delphi process, it was decided that endoscopic placement of at least 10 double-pigtail plastic

stents, at least 10 esophageal metal stents under radiographic control, and five OTS clips should be done during the training period.

RECOMMENDATION 24

ESGE recommends that trainees in the complications of bariatric surgery should have experience in conventional therapeutic endoscopy, endoscopic hemostasis, placement of OTS clips, esophageal metal stent placement and removal, the use of fluoroscopy, and the management of patient nutrition. Competence in therapeutic endoscopic ultrasound and endoscopic suturing is recommended.

Level of agreement 100%. Strong recommendation, medium quality evidence.

RECOMMENDATION 25

ESGE recommends that training in primary bariatric endoscopy procedures and the treatment of the complications of bariatric surgery should be undertaken in bariatric centers with multidisciplinary teams for the evaluation of patients.

Level of agreement 100%. Strong recommendation, medium quality evidence.

Recommendations 24 and 25 emphasize the fact that trainees should familiarize themselves with the endoscopic treatment of acute and chronic complications of bariatric surgery. These include, but are not limited to, the treatment of bleeding ulcers and bleeding anastomoses, the placement of esophageal metal stents, double-pigtail plastic stents, and OTS clips, the pneumatic dilation of sleeve stenosis, and the placement of nutrition tubes. Knowledge of fluoroscopy, guidewire maneuvering, and therapeutic endoscopic ultrasound (EUS) for the drainage of collections or placement of luminal stents is also recommended. For competency on this topic and training,

RECOMMENDATION 26

The following are the ESGE recommendations for topics that should be covered systematically in training for primary bariatric endoscopy procedures and complications of bariatric surgery:

- I. acquisition of consent, fluoroscopy, sedation, accessories, report writing, choice of devices etc., and how to recognize the overall risks associated with endoscopic procedures in patients with obesity
- II. awareness of the risks of airway problems with sedation and identification of patients with obesity who require anesthetic assistance for endoscopic procedures to be safely performed

please refer to the ESGE curriculum on endoscopic retrograde cholangiopancreatography (ERCP) and EUS [15].

3 Learning methods

A ESGE recommendations for training and experiential (“on the job”) learning

RECOMMENDATION 27

ESGE recommends that ex vivo simulators should be the first choice for training.

Level of agreement 100%. Strong recommendation, high quality evidence.

RECOMMENDATION 28

Given that training for bariatric endoscopy and the treatment of the complications of bariatric surgery can only be done on patients or explanted organs, ESGE recommends that the optimal training format could be the establishment of a minimum training period on explanted organs for each procedure or a training curriculum before starting to train on patients.

Level of agreement 100%. Strong recommendation, medium quality evidence.

Regarding recommendations 27 and 28, it should be underlined that, before being hands-on with patients and after ex vivo training, trainees should be assisting (“see one”) on cases/lists with at least 10 primary bariatric procedures and/or treatments of the complications of bariatric surgery. In addition, there should be access to teaching resources, and time allowed for a training case or step within the procedure (i.e. steps in suturing before the trainer takes the endoscope). They should be taking part in the context of the wider MDT for preoperative patient evaluation, follow-up visits etc. The treatment of the complications of bariatric surgery can start after the acquisition of competence in advanced fluoroscopy-based procedures. Training in the process of obtaining valid informed consent for the

- III. accurate reporting of anatomy in common bariatric surgical procedures (Roux-en-Y gastric bypass, mini-bypass, sleeve gastrectomy, and the single anastomosis duodenoileal bypass with sleeve gastrectomy [SADI-S] procedure, etc.)
- IV. recognition and treatment of pathology in the gastric pouch and at the gastrojejunal anastomosis, including strictures, dehiscence, and bleeding, etc.
- V. recognition of the indications for treatment.

Level of agreement 100%. Strong recommendation, low quality evidence.

procedure is recommended. Training in comprehensive and standardized post-procedure report writing is recommended.

Generally, trainees learn the technical aspects of a device, its placement, and removal outside the patient and on ex vivo simulators. In the clinical setting, this is done under the supervision of an expert endoscopist, originating in the so-called master-apprentice model. This teaching method benefits from being on-the-job training and allowing immediate feedback from the supervisor to be given. It has several drawbacks and hence simulators are important, but it is worth noting that, for bariatric endoscopy and the treatment of the complications of bariatric surgery, there are no virtual reality or mechanical simulators.

As mentioned, currently, simulation-based training in these fields can be done solely on explanted organs, which allows for repetitive instruction in a non-patient care environment without stress and risks [74–77]. Beginners will benefit from becoming familiar with assembling devices in dry labs and practicing maneuvers in a simulated setting with less cognitive overload. Simulation-based training should be integrated with attendance during endoscopy lists and formal courses. As these interventions increase in their complexity, hands-on training on patients is often limited owing to concerns about maintaining patient safety; simulation can therefore fulfil an important role. The implementation of simulator training in bariatric endoscopy training is essential from the beginning, given the potential for more rapid progression up the early learning curve [20, 78, 79].

B Minimum training time, quality of training environment, and quality of trainers

RECOMMENDATION 29

ESGE recommends a minimum training period of 1–3 months, including at least the minimum number of procedures defined, for competence in level 1 bariatric endoscopy; and 3–6 months, including at least the minimum number of procedures defined, for competence in level 2. Where training is interrupted, a longer period/higher number may be required.

Level of agreement 100%. Strong recommendation, low quality evidence.

The rates at which trainees achieve competence in different aspects of bariatric endoscopy may vary. Factors contributing to this variation are related to innate skills, the dedication of the trainee, any previous experience, the skills of the trainer, the training environment, the quality of the training program, and exposure to simulators. Given this, it is difficult to define a minimum training period. A training period of 1–3 months for competence in level 1 bariatric endoscopy and 3–6 months for competence in level 2 is likely to be required for trainees to undertake the indicated minimum number of procedures required for competence.

Data on the interruption of training are quite contradictory. Short breaks to colonoscopy training (less than 6 weeks) in a US study had only a small effect on the cecal intubation rate, but the detrimental effect increased for each subsequent 4-week break [80]. The other two studies on learning curves for gastroscopy and colonoscopy found that training breaks of up to 6 months were not detrimental to the learning curves [81, 82].

RECOMMENDATION 30

ESGE recommends that training in both primary bariatric endoscopy and the treatment of the complications of bariatric surgery should be centered around bariatric centers that are able to offer individual trainees a sufficient volume of experience over the training period to achieve competence reliably, and include the availability of ex vivo simulators and participation in multidisciplinary meetings.

Level of agreement 100%. Strong recommendation, low quality evidence.

A sufficient period of training in high volume specialist centers with a multidisciplinary environment and the availability of ex vivo simulators for the management of obese patients is beneficial to trainees. There is evidence that procedure experience is an important determinant of competence [83–85]. Moreover, there is evidence from UK colonoscopy training that the intensity of training may have a positive effect on training [82].

RECOMMENDATION 31

ESGE recommends that a trainee's principal trainer should ideally fulfil the following: more than 1 year of experience/more than 30 independent level 1 bariatric endoscopy procedures, and to be part of and have experience with a preoperative MDT.

Level of agreement 94%. Weak recommendation, low quality evidence.

RECOMMENDATION 32

ESGE recommends that a trainee's principal trainer should ideally fulfil the following: more than 3 years of experience of independent level 2 bariatric endoscopy procedures with not less than 50 procedures/year and/or treatment of the complications of bariatric surgery with not less than 10–20 procedures/year, and to be part of and have experience with a preoperative MDT.

Level of agreement 100%. Strong recommendation, low quality evidence.

Regarding the requirements in recommendations 31 and 32, currently, there are no data that have scientifically analyzed the necessary qualifications of trainers for bariatric endoscopic procedures. However, based on a nationwide audit of colonoscopy in the UK, it was highlighted that the traditional “see one, do one, teach one” training model is limited by several pitfalls and inaccuracies [86]. It is therefore important to implement dedicated teaching programs to “train the trainers.” Train-the-trainer models will promote standardized training by educating the trainer in effective training of bariatric endoscopic procedures and help to develop structured curricula and fellowships. Train-the-trainer models will be endorsed by ESGE.

C Self-assessment and objective assessment

RECOMMENDATION 33

ESGE recommends that trainees should log all cases and their contribution to the cases to their ePortfolio to show their acquisition of competence.
Level of agreement 94%. Weak recommendation, low quality evidence.

The definition of competence in bariatric endoscopy and the endoscopic treatment of bariatric surgical adverse events includes the attainment of key performance measures, as well as a minimum number of procedures before a trainee can perform the procedures independently. Therefore, a trainee should be encouraged to keep a record of all their cases and the degree to which the trainer was involved. It has been shown that continuous self-assessment using the Rotterdam Assessment Form for ERCP (RAF-E) can demonstrate a trainee’s learning curve and key performance measures [87,88]. For example, trainees in the UK use a nationwide electronic portfolio (Joint Advisory Group Endoscopy Training System [JETS]) where they log procedures and provide a record of their formative assessments [87].

RECOMMENDATION 34

ESGE recommends that the development of Direct Observation of Procedural Skills (DOPS) for objective assessment of competence should be pursued.
Level of agreement 100%. Strong recommendation, low quality evidence.

Determining a trainee’s competence requires assessment. Trainers undertake formative evaluations to identify a trainee’s strengths and weaknesses to enhance the quality of feedback and increase performance [78,89]. Data from the UK national trainee ePortfolio was used by Siau et al. to demonstrate the validity and reliability of the ERCP Direct Observation of Procedural Skills (DOPS) formative assessment, which is to be used for summative assessment [85]. When the level of supervision needed by the trainee is considered when evaluating their per-

formance, the dependability of the DOPS has been shown to be increased [84]. Because there are no DOPS scales for either bariatric endoscopy or the endoscopic treatment of the complications of bariatric surgery and given their usefulness, ESGE suggests their development.

RECOMMENDATION 35

ESGE recommends that, for level 1 procedures, trainees must be able to demonstrate, in the last 6 months, a minimum of 15 cases/procedures or at least 50% of the numbers performed by their trainers.
Level of agreement 94%. Weak recommendation, low quality evidence.

RECOMMENDATION 36

ESGE recommends that, for level 2 procedures, trainees must be able to demonstrate, in the last 6 months, a minimum of 30 cases/procedures or at least 50% of the numbers performed by their trainers.
Level of agreement 94%. Weak recommendation, low quality evidence.

RECOMMENDATION 37

ESGE recommends that, for the endoscopic treatment of the complications of bariatric surgery, trainees must be able to demonstrate, in the last 12 months, a minimum of 10 cases/procedures or at least 50% of the numbers performed by their trainers.
Level of agreement 94%. Weak recommendation, low quality evidence.

RECOMMENDATION 38

ESGE recommends that a minimum period of mentored practice after competence is required during independent practice in primary bariatric endoscopy procedures and the treatment of the complications of bariatric surgery. This includes the availability of an expert in the department or on the telephone or telemonitoring for the next 6 months.
Level of agreement 100%. Strong recommendation, low quality evidence.

Reaching the requirements outlined in recommendations 35, 36, 37, and 38 does not mark the conclusion of the learning process for an endoscopist; rather, it serves as a benchmark after which autonomous practice can begin. According to ESGE, newly independent endoscopists should get mentorship from a more seasoned colleague for a set amount of time. When an endoscopist requests assistance with a difficult case, a mentor should be present to assist. As part of a regular appraisal process, newly independent endoscopists should con-

tinue to keep a record of their cases to show that their key performance indicators and complication rates are still acceptable. They should also look for opportunities to advance their skills or engage in additional supervised practice as needed.

Currently, there are not enough data to provide a suggestion about how long the training program should last, but it is likely that it needs to be at least 6 months for bariatric endoscopy and 12 months for the endoscopic treatment of the complications of bariatric surgery to be effective.

Conclusions

The working group for this paper included experts in bariatric endoscopy and the endoscopic treatment of adverse events following bariatric surgery from all over Europe, as well as individuals with a variety of training backgrounds and professional experiences. The proposed and agreed-upon statements relating to the requirements for training in bariatric endoscopy and the endoscopic treatment of the complications of bariatric surgery, the steps in training and the quality of training, and the definition and assessment of competence in these two topics prior to independent practice were developed using the standard Delphi methodology.

This ESGE Position Statement comprehensively addresses the major steps of training in bariatric endoscopy and the endoscopic treatment of bariatric surgical adverse events. These suggestions serve to recommend best practices in training but have no legal implication. It is hoped that they will help National Societies, program directors, and trainees improve the training in bariatric endoscopy and the endoscopic treatment of adverse events following bariatric surgery. The main steps of training in bariatric endoscopy and the endoscopic treatment of adverse events following bariatric surgery are covered in detail in this ESGE Position Statement. Both of the topics discussed in this paper need specific skills and dedicated and structured training to achieve and maintain proficiency. Obesity is a chronic, relapsing, multifactorial, and degenerative disease and correct execution of procedures enables us to give these patients the best care possible.

Disclaimer

ESGE Position Statements represent a consensus of best practice based on the available evidence at the time of preparation. This is NOT a guideline but a proposal for training in bariatric endoscopy and the endoscopic treatment of bariatric surgical adverse events. The statements may not apply in all situations and should be interpreted in the light of specific clinical situations and resource availability. Further studies may be needed to clarify aspects of these statements, and revision may be necessary as new data appear. Clinical considerations may justify a course of action at variance with these recommendations. This ESGE Position Statement is intended to be an educational device to provide information that may assist bariatric 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. The legal disclaimer for ESGE guidelines applies to the present position statement [16].

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