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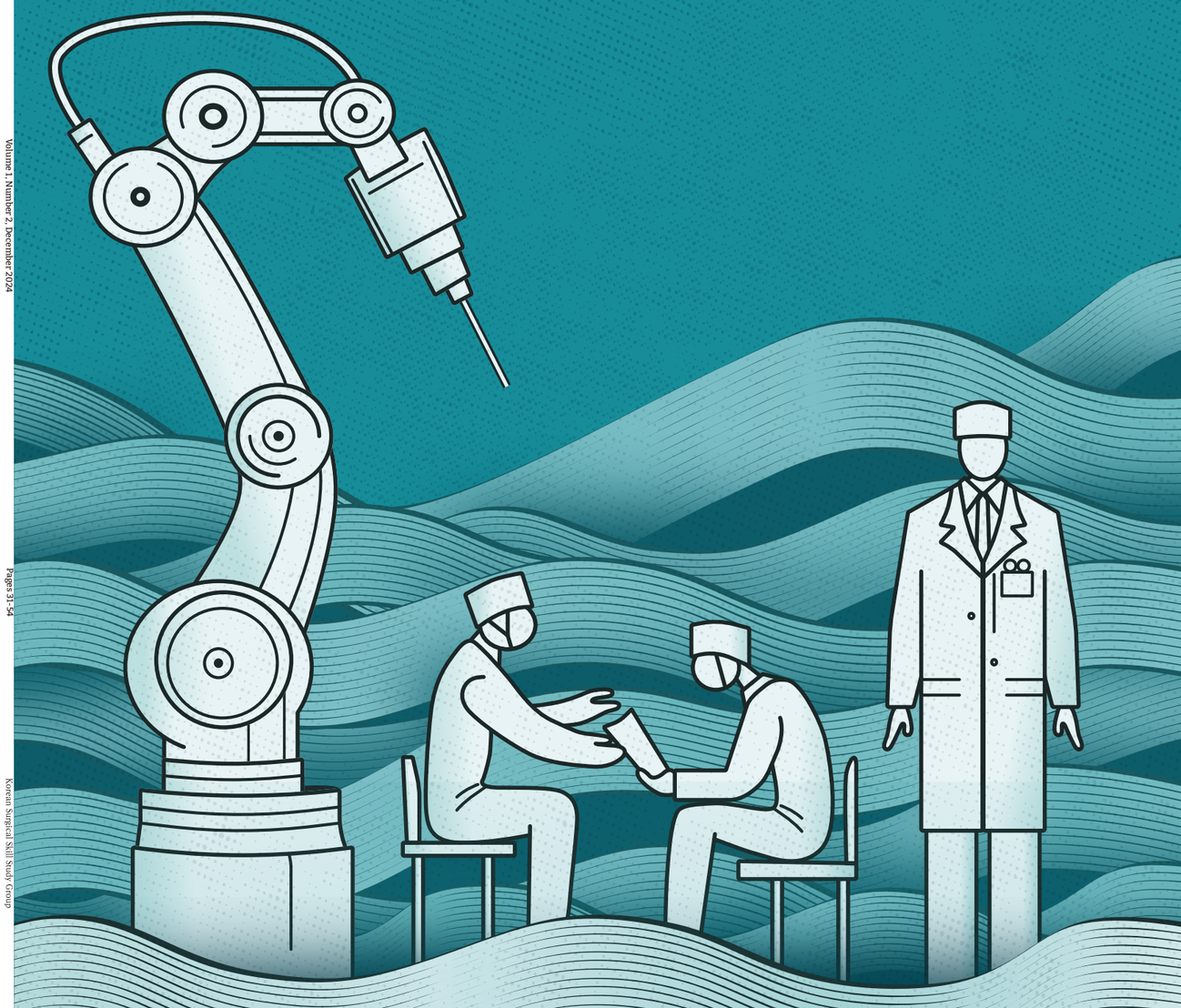

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Aims and scope

Journal of Surgical Innovation and Education (JSIE) is an official and peer-reviewed journal of the Korean Surgical Skill Study Group. As an open-access scientific journal, JSIE is committed to promoting the transfer of cutting-edge and novel surgical techniques, as well as advancing surgical education. The journal is designed to serve as an indispensable resource for surgeons, trainees, and healthcare professionals seeking to refine their surgical practice and embrace innovation in all areas of surgery.

JSIE aims to:
• Provide the development of innovative surgical procedure and technology
• Ensure a more effective transfer of surgery-related detail and knowledge
• Provide an immersive learning experience through high-definition surgical video demonstrations.
• Bridge the gap between traditional surgical education and the evolving demands of modern surgical practices.

Our scope encompasses:
• Newly emerging surgical technologies and techniques
• Tutorials on essential surgical skills, catering to a range of expertise from novice to expert
• Practice and research in minimally invasive or open surgery
• Surgical endoscopy
• Other techniques in the fields of general/thoracic/traumatic/pediatric/neuro/orthopedic surgery, obstetrics, gynecology, and urology.

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Tips for Laparoscopic Feeding Jejunostomy Using a Barbed Suture

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Feeding jejunostomy is crucial for patients with compromised oral intake, particularly after gastrointestinal surgery or esophagectomy. Traditional methods involve interrupted sutures to secure the feeding tube to the abdominal wall, but this can be cumbersome due to the need for knot tying. This paper presents the case of a 75-year-old male patient who underwent minimally invasive esophagectomy with feeding jejunostomy for esophageal cancer, and introduces the use of a knotless barbed suture, which is commonly employed in gastrointestinal operations. The laparoscopic procedure utilized four trocars for jejunostomy, employing a 3-0 silk purse string suture and a 14-Fr Foley catheter. The barbed suture was used to secure the catheter in place without knots, covering 360° around the catheter. This method aims to simplify laparoscopic feeding jejunostomy and improve clinical practice.

Keywords: Laparoscopy; Jejunostomy; Suture technique

Introduction

Nutrition is supplemented with parenteral or enteral nutrition If oral feeding is impossible or insufficient [1]. Enteral nutrition methods include nasogastric, nasojejunal tube, gastrostomy, and jejunostomy. Among them, feeding jejunostomy has the advantage of reducing nausea and vomiting and lowering the risk of aspiration [2,3]. In particular, jejunostomy is widely used to improve the nutritional status of patients with expected complicated postoperative recovery after gastrointestinal surgery or esophagectomy, and severe dysphagia due to esophageal or pharyngeal malignancies [4,5].

Laparoscopic feeding jejunostomy is a generally accepted procedure with higher rate of success and lower rate of complications [6,7]. To prevent dislocation of the tube, interrupted sutures are performed to anchor the tube with an abdominal wall. The authors used a knotless barbed suture, which has been widely used in gastrointestinal surgeries, to more easily anchor the tube to the abdominal wall. We would like to briefly introduce our method of laparoscopic feeding jejunostomy using the barbed suture material, which is performed after esophagectomy.

Case Presentation

Patient

A 75-year-old male patient who had suffered dysphagia was diagnosed with an ulcero-infiltrative mass at be-

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tween 28 and 34 cm from an upper incisor, occupying about half of the lumen. Chest computed tomography showed reactive lymph nodes in the subaortic area, subcarina, both hilar and interlobar areas, and both axillae. He was diagnosed as cT4N1M0 and underwent neoadjuvant concomitant chemotherapy (5-fluorouracil, cisplatin) and radiation therapy (45 GY, 5 weeks) three times. Afterwards, transthoracic esophagectomy and reconstruction were planned. In the selective patients, we are performing placement of feeding jejunostomy concomitantly. This study was approved by the Institutional Review Board (approval number: PC24ZASI0151). Informed consent from the patient was waived due to retrospective study design and anonymized data.

Surgical procedure

Surgical procedure video is edited and presented. After esophageal transection using a transthoracic approach, a gastric tube was created laparoscopically, and esophago-gastric anastomosis was made at the cervical level. Afterwards, jejunostomy was performed using the four trocars inserted during laparoscopic surgery (Fig. 1); a 5 mm port in the right upper quadrant and a 12 mm port between the umbilicus and the 5 mm port as the operator's working ports, a 10 mm port at the umbilicus for the camera, and a 5 mm port at upper portion of left lower quadrant port for the assistant. When only feeding jejunostomy was performed, the port for the jejunostomy tube was inserted into the upper portion of left lower quadrant located between the mid-clavicular line and the anterior axillary line, and usually on the lateral side of rectus muscle, where the jejunal target insertion point is easily retractable to peritoneum. To fix jejunostomy catheter, intra-corporeal purse-string suture was performed using silk 3-0 thread on the proximal jejunum, approximately 20 cm away from a Treitz ligament. A small enterotomy was made using electrocautery inside the purse string suture. A 14-Fr foley catheter was inserted into the enterotomy via the left lower quadrant port site. The foley balloon was inflated with 3 mL of distilled water. The purse string suture was tied to secure the catheter so that it would not retract. To prevent torsion, alignment maintained so that the proximal jejunum was located at 2 o'clock and the distal was located at 8 o'clock, consistent with the anatomical location of the jejunum. One 3-0 absorbable knotless barbed continuous suture (Monofix) initiated at the peritoneum of the abdominal wall and seromuscular layer of the jejunum around the catheter. Importantly, initial suturing should begin at the jejunum and peritoneum where the view is obscured by the tube. In the same way, the purse string suture covering eight directions, and 360 degrees was performed. Afterward, the patency of the tube was checked, and fixed to the skin.

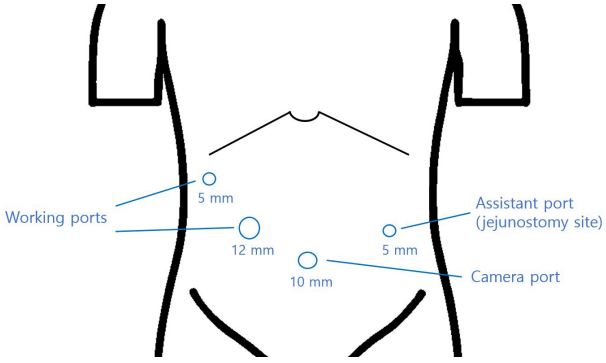

Fig. 1. Placement of trocars for laparoscopic feeding jejunostomy. One 10-mm camera port was inserted at the umbilical level, as well as two working ports for the operator at the right upper quadrant (5 mm) and right lower quadrant (12 mm), respectively. Another 5-mm assistant port was placed at the upper portion of the left lower quadrant and was used for the jejunostomy site.

Discussion

Enteral nutrition is generally preferred to parenteral nutrition, as it is associated with fewer complications rates and enhanced recovery. Feeding jejunostomy is indicated in cases of gastric outlet obstruction and severe gastroparesis and can reduce nausea and vomiting after enteral feeding [1,8].

Due to recent advances in equipment and techniques of minimally invasive surgery, feeding jejunostomy is widely performed by laparoscopic method [7,9]. Anchoring the feeding jejunostomy to the abdominal wall is important; previously, it was necessary to suture between the abdominal wall and the jejunum using two or more interrupted sutures. However, interrupted suture through laparoscopy is somewhat troublesome because it requires tying knots. To improve this, we tried anchor-

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ing the feeding jejunostomy with one barbed suture, which is extensively used in gastrointestinal surgery. There is no significant difference compared to the existing interrupted suture during the feeding jejunostomy procedure, but the major advantage is that it can be easily fixed in eight directions without making knots.

In addition, our method has several features. In general, jejunostomy tube is preferred for feeding jejunostomy because it is not clogged and not easily damaged compared to silicone tubes [1]. However, the authors use the foley catheter because of being easily available, durable, and not subject to retraction due to the balloon. Witzel procedure of feeding jejunostomy is a surgical technique, placing a feeding tube into the jejunum and securing it with a seromuscular tunnel to minimize complications like spillage [10]. At our institution, laparoscopic feeding jejunostomies using barbed sutures were performed in 20 cases, and there were no complications such as spillage, dislocation, or kinking even without tunneling. Even after removal of the tube, tract was spontaneously closed without enteric fistula. It might be dependent on minimal skin incision, purse-string suture and tight enteric seromuscular to peritoneal approximation with barbed suture material. Additionally, while the mean operation time of Witzel method was 45 minutes [10], that of our method was less than 10 minutes. Therefore, our method is safe and efficient for laparoscopic feeding jejunostomy.

Fixation using barbed suture material is a technically simple and safe method when forming the feeding jejunostomy, and it is hoped that it will be used in actual clinical practice as well.

Disclosure

No potential conflict of interest relevant to this article was reported.

Author contributions

Conceptualization, Data curation, Formal analysis, Investigation: SHP, DJK; Methodology, Project administration: DJK; Resources: SHP, DJK; Supervision, Validation: DJK; Visualization: SHP; Writing–original draft: DJK; Writing–review & editing: SHP, DJK.

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Laparoscopic Paraaortic Lymph Node Sampling in Gastric Cancer Patients with Suspected Paraaortic Lymph Node Metastasis

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D2 lymphadenectomy is the standard approach for lymph node dissection in curable gastric cancer. However, paraaortic lymph node (PALN) dissection in addition to D2 lymphadenectomy has not been shown to improve survival rates and is therefore not routinely performed. Nevertheless, PALN sampling may be indicated for diagnostic purposes because it can provide critical information for accurate staging and treatment planning. Laparoscopic PALN sampling, however, poses significant challenges due to limited accessibility and visibility in the paraaortic region. Moreover, the proximity of major blood vessels, such as the abdominal aorta and renal vein, is another difficult aspect of the procedure. In this context, we present two cases to demonstrate practical strategies for facilitating laparoscopic PALN sampling. The procedure can be effectively performed by first identifying the ligament of Treitz and then, when necessary, fixing the small bowel mesentery to the abdominal wall using a tagging suture so that there is adequate vision and enough working space. This enables careful and precise dissection of the target tissue without compromising the feasibility and safety of the operation.

Keywords: Stomach neoplasms; Laparoscopy; Lymph nodes

Introduction

D2 lymphadenectomy is the standard approach in locally advanced gastric cancer [1,2]. Paraaortic lymph node (PALN), which are not included in the D2 lymphadenectomy, are anatomically categorized as 16a1, 16a2, 16b1, and 16b2 based on their intraperitoneal location [3,4]. The presence of PALN metastasis represents stage IV disease [3].

During the preoperative evaluation, cases suggestive of potential PALN metastasis occasionally arise. For patients not suspected of stage IV, the most reliable method to confirm PALN metastasis is through surgical sampling followed by histopathological evaluation. The results of such biopsies are crucial for accurate staging and determining the optimal treatment. However, PALN sampling is technically challenging due to the anatomical complexity and the difficulty in locating these nodes.

In this report, we share our experiences with laparoscopic PALN sampling in gastric cancer patients sus-

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pected of PALN metastasis, providing insights to facilitate this procedure in similar clinical scenarios.

Case Presentation

Case 1

A 23-year-old male presented with dysphagia and underwent esophagogastroduodenoscopy (EGD) and computed tomography (CT) 1 year prior to evaluation. He was diagnosed with gastroesophageal junction cancer exhibiting clinical serosal invasion and extensive lymph node metastasis, including suspected PALN involvement (Fig. 1A). The patient received neoadjuvant chemotherapy, and subsequent CT imaging revealed a slight reduction in tumor extent but persistent left PALN enlargement (Fig. 1B).

Given these findings, total gastrectomy with colon interposition and laparoscopic left PALN sampling were performed. The PALN was accessed by first identifying the ligament of Treitz, and then fixating the small bowel mesentery to the abdominal wall using a tagging suture for enhanced visualization of the target lymph node (Fig. 2A). This maneuver allowed easier identification of the left renal vein (Fig. 2B) and abdominal aorta (Fig. 2C), which enabled safe dissection and successful sampling of the PALN (Fig. 2D). Pathological evaluation confirmed the absence of metastasis, and a follow-up CT performed 4 months postoperatively showed complete resolution of the previously enlarged PALN (Fig. 1C).

Case 2

A 66-year-old male underwent EGD as part of a routine health screening, which revealed early gastric cancer located in the lower body and greater curvature of the stomach (Fig. 3A). Endoscopic submucosal dissection was performed, and pathological analysis indicated a 3.1×2.5 cm submucosal invasion (SM2; 640 μm from the muscularis mucosae). CT showed an indeterminate enlargement of the left PALN (Fig. 3B). No additional diagnostic studies, such as positron emission tomography-CT or multidisciplinary consultation, were undertaken. Although the likelihood of distant lymph node metastasis in early gastric cancer is extremely low, a benign nature of the enlarged PALN could not be definitively excluded without histological confirmation. Consequently, a totally laparoscopic distal gastrectomy with gastrojejunostomy and left PALN sampling were performed.

Preoperative CT localized the left PALN adjacent to the celiac trunk and inferior to the splenic vein. Initial dissection beneath the pancreas, following its elevation, failed to locate the lymph node (Fig. 4A). Subsequently, using the approach described above in Case 1, left PALN was successfully sampled and sent to the pathologist for confirmation (Fig. 4B). Pathological examination confirmed the tissue as ganglion, and the final diagnosis was stage I gastric cancer.

With regard to the case reports described above, an exemption from review was granted by the Institutional

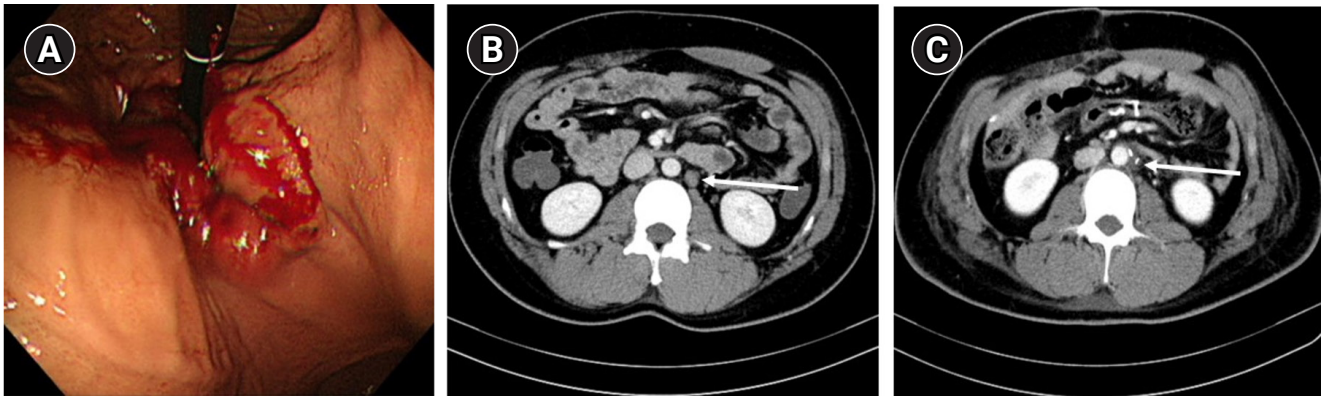

Fig. 1. (A) Esophagogastroduodenoscopy diagnosed with gastroesophageal junction cancer. (B) Computed tomography performed 4 months after the start of neoadjuvant chemotherapy. Left paraaortic lymph node enlargement still remained (arrow). (C) Follow up computed tomography examined 4 months after the operation. The enlarged left paraaortic lymph node before the operation was resected and disappeared (arrow).

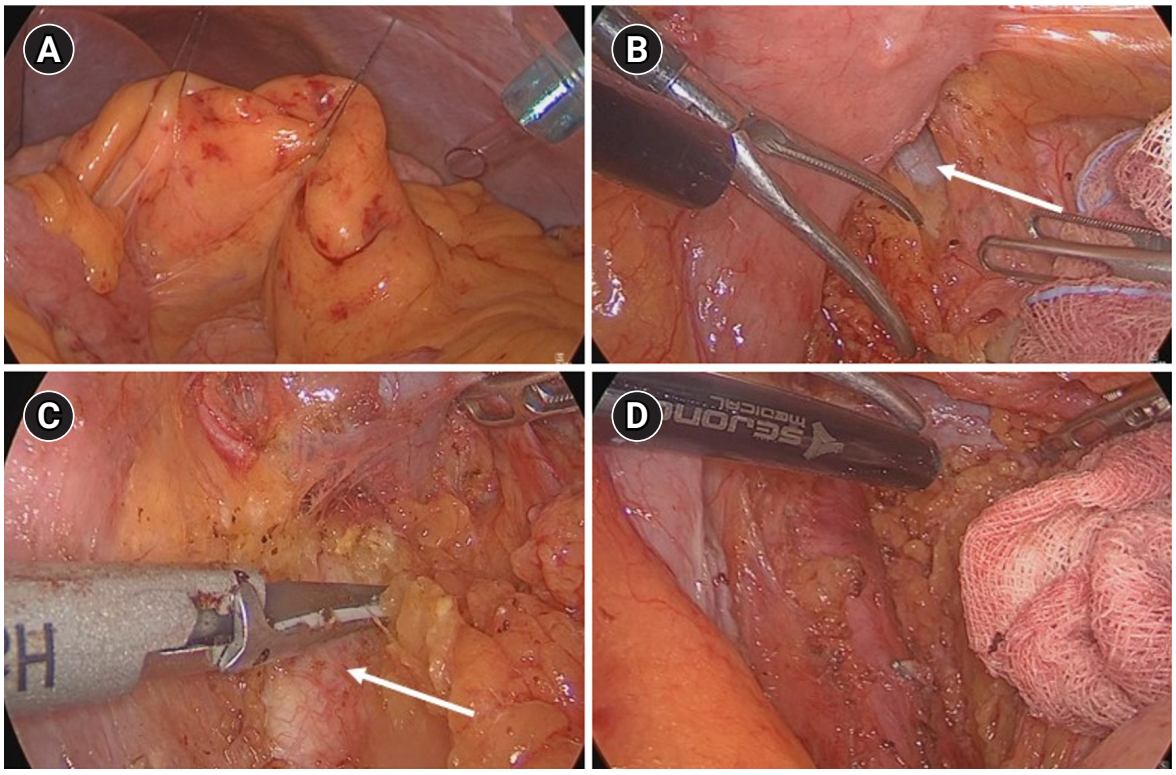

Fig. 2. (A) Small bowel mesentery tagging suture to ensure a stable view. (B) Left renal vein (arrow) checked in the left area of the ligament of Treitz. (C) Abdominal aorta (arrow) checked in the lower area of left renal vein. (D) After careful dissection in the left side of abdominal aorta and below the left renal vein, left paraaortic lymph node sampling was successful.

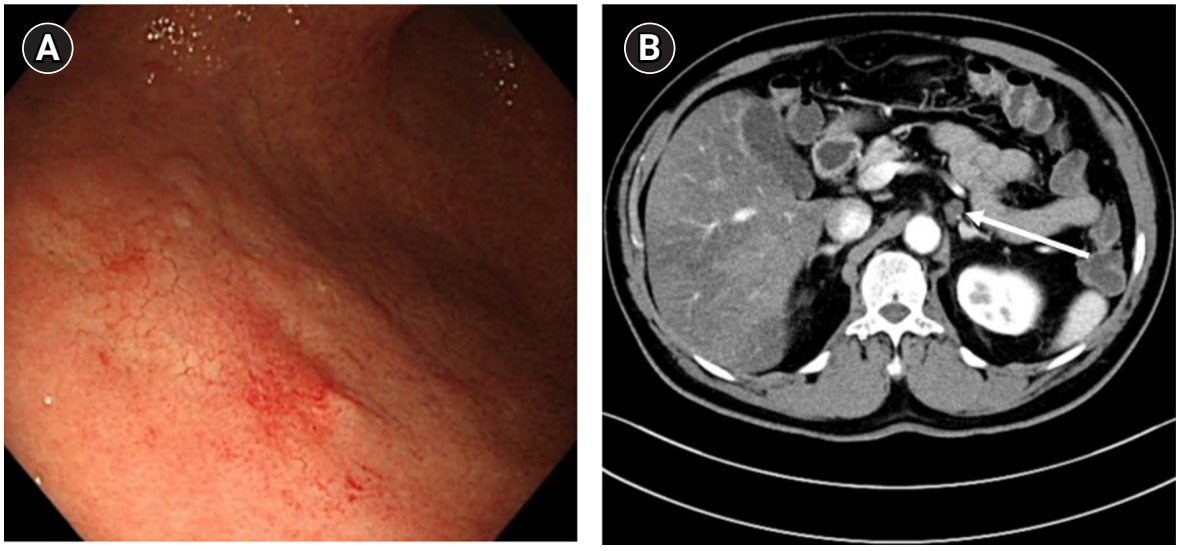

Fig. 3. (A) Esophagogastroduodenoscopy diagnosed with early gastric cancer on lower body and greater curvature. (B) During preoperative evaluation, left paraaortic lymph node enlargement was found just below splenic vein on computed tomography (arrow).

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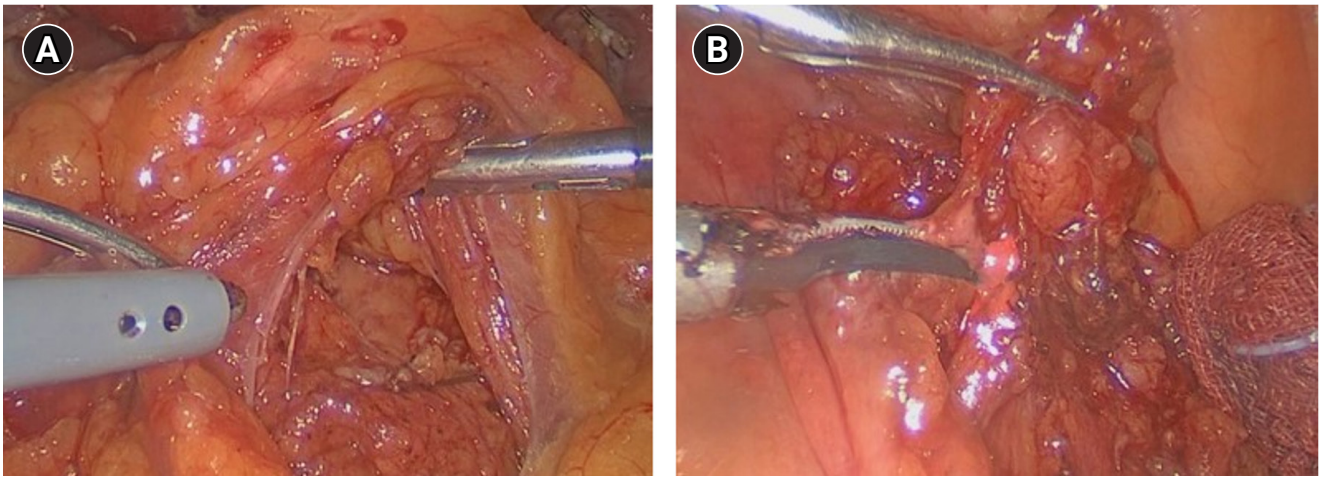

Fig. 4. (A) Initially pancreas was lifted and then dissection was attempted, but enlarged paraaortic lymph node was not found. (B) Subsequently after approaching the ligament of Treitz, laparoscopic paraaortic lymph node sampling was successful.

Review Board of Asan Medical Center.

Discussion

Lymph node metastasis is a critical prognostic factor in gastric cancer, necessitating adequate lymph node dissection during gastrectomy [5,6]. The standard approach for locally advanced gastric cancer is D2 lymphadenectomy [1].

The efficacy of paraaortic lymph node dissection (PALND) has been explored extensively. A landmark study conducted by the Japan Clinical Oncology Group and published in The New England Journal of Medicine in 2008 demonstrated that prophylactic PALND does not improve survival outcomes in patients with resectable gastric cancer [7]. However, subsequent studies have suggested that in cases of locally advanced gastric cancer with extensive lymph node metastasis, PALND combined with D2 lymphadenectomy after neoadjuvant chemotherapy may confer survival benefits in selected patient populations [8,9]. While prophylactic PALND is generally not advantageous, the procedure remains a valuable diagnostic tool in certain cases.

When deemed necessary, performing PALN sampling for diagnostic purposes can provide essential information for accurate staging and personalized treatment planning. This is particularly important in cases of early gastric cancer where PALN enlargement is detected, as the treatment strategy differs significantly depending on whether the enlargement represents metastatic disease. Although distant lymph node metastasis is very rare in early gastric cancer, failure to confirm the benign of an enlarged PALN through biopsy may lead to challenges in clinical decision-making, including the potential overuse of adjuvant chemotherapy. PALN sampling enables definitive diagnosis and facilitates an evidence-based approach to subsequent treatment.

Laparoscopic PALN sampling is technically challenging due to limited accessibility and the proximity of major vascular structures such as the abdominal aorta and renal vein. Based on our clinical experience, several strategies can enhance the feasibility of this procedure. First, because most PALN enlargements are located near the ligament of Treitz, the laparoscopic port configuration mirrors the standard five-port setup used for laparoscopic gastrectomy. Second, considering the design and precision of the tip among various laparoscopic energy devices, the harmonic scalpel, with its capability for refined dissection, may offer advantages in achieving successful PALN sampling. Third, in our cases, all PALN enlargements were located on the left, obviating the need for alternative approaches such as the Kocher maneuver. Instead, sampling was successfully performed through the ligament of Treitz in all cases. And to achieve optimal visualization, the first assistant can elevate the small bowel using atraumatic graspers to stabilize the ligament of Treitz view. In patients with significant visceral adiposity, securing the small bowel

mesentery to the abdominal wall with a tagging suture (e.g., black silk 3-0 or vicryl 3-0) in a vertical orientation greatly enhances visibility. This technique facilitates precise dissection in a stable operative field.

In conclusion, laparoscopic PALN sampling provides crucial diagnostic information for patients with enlarged PALN and should be performed only after good visualization and enough working space have been secured around the ligament of Treitz.

Disclosure

In-Seob Lee is an editor-in-chief and Sa-Hong Min is an associate editor of the journal, but they were not involved in the evaluation or decision-making process for this article and adhered to the decision made by independent reviewers. No other potential conflicts of interest relevant to this article were reported.

Author contributions

Conceptualization: BOS, BSK; Supervision: SHM, ISL, MWY, JHY; Writing–original draft: BOS, JNY, BSK; Writing–review & editing: CSK, CSG, ISL, MWY, JHY, BSK.

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Colorectal Endoscopic Submucosal Dissection Using the Double-Clips Traction Method

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Endoscopic submucosal dissection (ESD) is an advanced endoscopic technique used to remove large adenomas or early colorectal cancers. This paper presents a step-by-step introduction of the methodology for performing colorectal ESD using the double-clips traction method. The technique is designed to enhance visualization, shorten the procedure time, and improve the safety and efficacy of colorectal ESD, especially in challenging cases involving large or fibrotic lesions. By providing reliable traction, this method helps to maintain a stable and clear field of view throughout the procedure, which is critical for the success of the dissection.

Keywords: Colorectal neoplasm; Colonoscopy; Endoscopic submucosal dissection

Introduction

Endoscopic submucosal dissection (ESD) is an advanced and highly effective technique for the treatment of large and complex colorectal lesions [1,2]. This method has become increasingly important in the field of gastrointestinal oncology due to its minimally invasive nature and ability to achieve en bloc resection of tumors [1,3]. However, the procedure presents considerable technical challenges, such as maintaining a stable and clear field of view, accurately dissecting the submucosal layer, and minimizing the risk of perforation [4].

One of the most significant challenges in colorectal ESD is the difficulty in achieving adequate exposure of the submucosal layer, especially in cases where the lesion is located in a difficult-to-reach area or when fibrosis is present. Fibrosis, in particular, can make the dissection process more complex, increasing the risk of perforation [3,4]. The double clip traction method addresses these challenges by providing reliable tissue retraction, thereby enhancing visualization and enabling precise dissection [5,6]. In this paper, I'd like to introduce the step-by-step methodology for performing colorectal ESD using the double clips traction method.

Case Presentation

The patient underwent colonoscopy at a local clinic due to rectal bleeding and then visited our hospital due to a rectal tumor detected by the colonoscopy. A colonoscopy performed again at our hospital revealed a laterally spreading tumor measuring 5 cm in diameter, granular, nodular-mixed type, located 10–14 cm superior to the anal verge. A tissue biopsy confirmed it to be a tubulovillous adenoma, and it was decided to perform ESD. The ESD procedure was performed as follows (video).

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This report was approved for exemption from review by the institutional review board (No. NCC2024-0139).

Initial setup and marking

The initial setup of the colorectal ESD procedure is crucial for its success. The lesion is identified, and its boundaries are meticulously marked using the endoscopic knife. These marks serve as a guide for the endoscopist, helping to maintain orientation throughout the procedure. During this phase, the endoscopist also assesses the lesion's characteristics, including its size, shape, and location within the colon. This assessment is critical as it informs the subsequent steps of the procedure, particularly the placement of traction devices.

Injection and creation of the mucosal flap

A solution (often a mix of saline, epinephrine, and a dye) is injected into the submucosal layer to lift the lesion away from the muscularis propria, creating a safety cushion. For colorectal ESD, hyaluronic acid solution is commonly used because it provides the longest-lasting lifting effect. Initially, an appropriate amount was injected into the submucosal layer to elevate the lesion, and the solution was repeatedly injected as needed during the procedure.

After marking and injection, an initial mucosal incision was made around the lesion to create a flap. This flap was gently lifted to expose the underlying submucosal layer and confirm the exact dissection plane. To use the traction method, it was necessary to maintain the mucosal flap at an appropriate thickness and sufficient distance from the lesion so that it would not tear.

Application of endoscopic clips

An endoscopic hemoclip is applied to the edges of the mucosal flap to serve as anchor points for traction. To ensure stable placement of the clip, the mucosal incision should be made at a safe distance from the lesion to allow room for the clip to be fixed. Sutures, threads, or dental elastic bands are attached to the clip for traction of the mucosal flap. The free end of the thread attached to the first clip is pulled and secured to the second clip, which is then strategically placed in another part of the mucosa or on the opposite colonic wall. In this case, a self-made traction band was used by twisting two dental elastic bands. The dental bands provide effective traction and appropriate tension to elevate the mucosal flap by their elasticity. This allows for proper exposure of the submucosal layer, allowing for accurate and safe submucosal dissection.

Submucosal dissection

During a colorectal ESD procedure, the submucosal dissection is performed using a DualKnife (model KD-650L; Olympus), when a blood vessel was encountered, hemostasis was achieved using a Coagrasper (model FD-410LR; Olympus). Once hemostasis was secured, the dissection continued until the lesion was fully resected.

Tissue retrieval, fixation, and pathologic report

After completing the submucosal dissection, the resected specimen was retrieved using an endoscopic net. To retrieve the lesion, the second clip may be removed from the mucosa using forceps, or in some cases, the thread is cut using endoscopic scissors, leaving the second clip in place. The tissue is then oriented on a flat surface, pinned to maintain its shape, and submerged in formalin for fixation. Once the specimen is fixed, it is sent to the pathology lab.

In this case, the ESD procedure was completed without complications, and the total procedure time was 130 minutes. The final pathology results confirmed the lesion as a tubulovillous adenoma with focal high-grade dysplasia.

Discussion

The double clip traction method enhances visualization of the submucosal layer during colorectal ESD, which is crucial for a safe and effective procedure. It maintains consistent tension on the mucosal flap, reducing the risk of perforation and allowing precise targeting of the dissection plane. The technique is simple, effective, and adaptable, requiring minimal setup and no additional equipment, making it accessible to less experienced endoscopists in ESD [5,6]. Its versatility is particularly beneficial for both straightforward and complex resections, including those involving large or fibrotic lesions.

The double clip traction method presents exciting op-

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portunities for further innovation and research. The integration of robotic assistance and AI-driven tools could also significantly improve the precision and safety of the procedure, providing real-time guidance and support to endoscopists. Continued research is essential to evaluate the long-term outcomes including recurrence rates and complication incidences and to compare these outcomes with those of other ESD techniques [6]. There is also considerable potential for the application of double-clip traction to other gastrointestinal procedures, which should be investigated to expand its impact and utility in clinical practice.

Disclosure

Dae Kyung Sohn is a member of the editorial board of the journal, but he was not involved in the peer reviewer selection, evaluation, or decision process of this article. No other potential conflicts of interest relevant to this article were reported.

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Indocyanine Green-Guided Precision in a Left Lateral Sectionectomy for Hepatocellular Carcinoma

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Parenchyma-sparing anatomical resection is recommended in patients with hepatocellular carcinoma due to the presence of underlying liver disease. More precise hepatectomy has been enabled by recent technical advancements, including negative staining with indocyanine green following ligation of the corresponding Glissonean pedicle, which offers intraoperative guidance by delineating the resection plane in real-time. Herein, we present a case of laparoscopic left lateral sectionectomy that used this staining technique.

Keywords: Hepatocellular carcinoma; Hepatectomy; Indocyanine green; Fluorescence

Introduction

Liver resection remains the cornerstone of the curative interventions used for hepatocellular carcinoma (HCC). However, a significant proportion of HCC cases present with underlying liver dysfunction, necessitating careful preoperative assessment of future remnant liver volume and function, as well as overall patient condition [1]. In such instances, a parenchymal-sparing anatomical resection is recommended. This approach includes precise techniques such as selective Glissonean pedicle ligation and corresponding parenchymal dissection. Recent advancements in surgical technology have introduced the use of real-time indocyanine green (ICG)-based fluorescence imaging for hepatectomy [2]. In this procedure, resection margins are determined post-ligation of the Glissonean pedicle via venous ICG injection. ICG fluorescence imaging thereby enables a precise delineation of the intersegmental plane during surgery [3]. We here present a case of a hepatic resection performed using this technique.

Case Presentation

A 54-year-old male patient diagnosed with HCC during a follow-up for hepatitis B virus-induced liver cirrhosis underwent two transarterial chemoembolization procedures and radiofrequency ablation (RFA). He was transferred to our hospital due to a marginal recurrence after RFA. Subsequent preoperative imaging revealed a tumor in segment II (Fig. 1A). The patient's alpha-fetoprotein level was 2.5 ng/mL, and he was classified as Child-Pugh A with an Eastern Cooperative Oncology Group performance status of 0.

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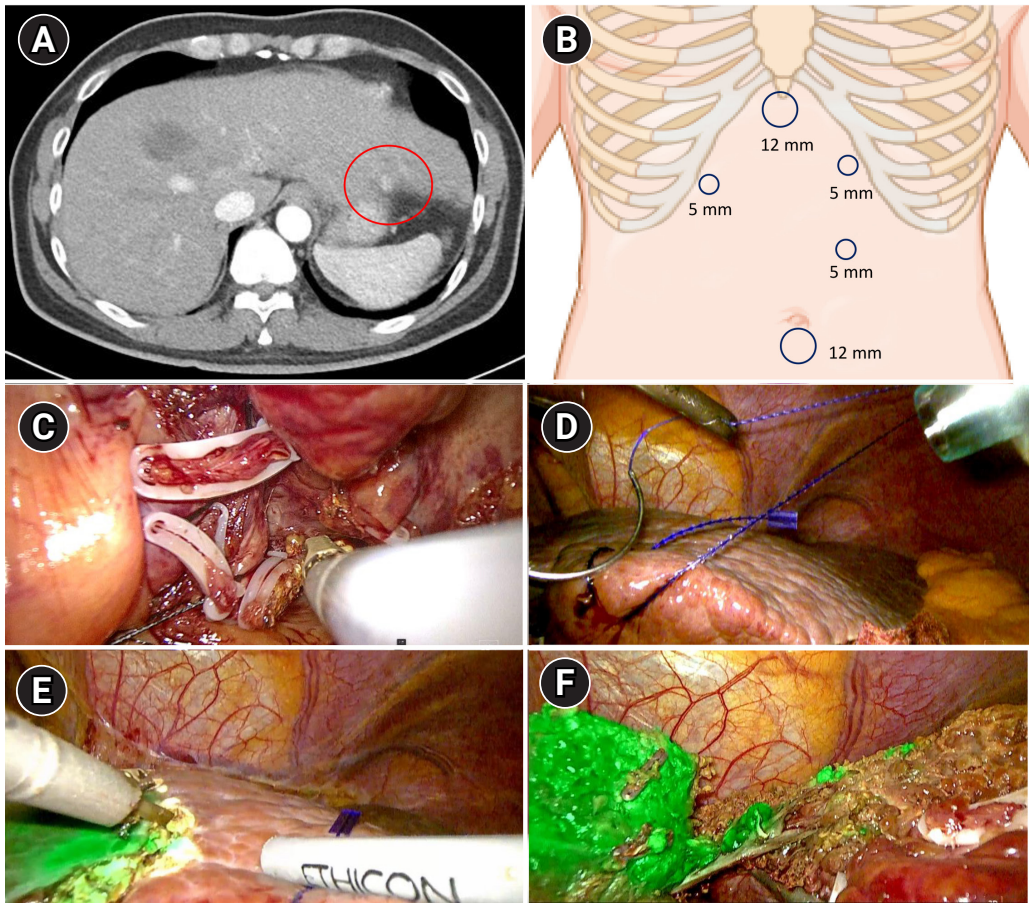

Fig. 1. (A) A liver nodule with marginal recurrence in segment II following radiofrequency ablation (red circle). (B) Port placement for laparoscopic left lateral sectionectomy. (C) The Glissonean pedicles for segments II and III were ligated and transected. (D) The left liver was retracted to the left using a barbed suture. (E) The resection plane was marked along the demarcation line after the administration of indocyanine green. (F) The left hepatic vein was exposed after parenchymal dissection along the fluorescent plane.

Surgery was performed in which the patient was placed in the supine position and, under general anesthesia, a 12 mm umbilical port was inserted for a laparoscopic camera. The pneumoperitoneum was established at 12–14 mmHg. Four additional ports were placed as follows: a 12 mm epigastric port for the Cavitron ultrasonic surgical aspirator, a 5 mm right subcostal port for the surgeon's left hand, a 5 mm left subcostal port for the assistant, and a periumbilical port for the external Pringle maneuver (Fig. 1B).

A plastic tape was placed around the hepatoduodenal ligament, with the ends pulled out through a tube and secured with a Kelly clamp to prepare for the Pringle maneuver. The falciform ligament was dissected, the common trunk of the left and middle hepatic veins was identified, and the left coronary ligament was dissected. The left liver was elevated, and the Glissonean pedicles for segments II and III were isolated, and transected (Fig. 1C). The demarcation line was checked, and 2.5 mg of ICG was administered intravenously for real-time fluorescence imaging to delineate the resection margin. Prior to parenchymal dissection, the round ligament was ligated using an endoloop and retracted to the right side. The left liver was sutured with barbed thread, and the peritoneum was sutured and fixed (Fig. 1D) [4]. This suturing further secured the resection field as the procedure progressed (as depicted in the video).

Liver resection was performed using an advanced bipolar system for the left hand and a Cavitron ultrasonic surgical aspirator after application of the Pringle maneuver (Fig. 1E). Parenchymal dissection was carried out along the border between the non-fluorescent and

fluorescent areas. The left hepatic vein was transected using an endoscopic stapler (Fig. 1F). The total surgical time was 1 hour and 21 minutes, with an estimated blood loss of 10 mL. The patient was discharged without complications at 7 days postoperatively and was under close monitoring for tumor recurrence at the time of writing. The patient has been under follow-up for 22 months without evidence of recurrence. This study was approved by the Institutional Review Board (IRB) of the Asan Medical Center (IRB No: 2024-1178). Informed consent from the patient was waived due to anonymized data.

Discussion

Anatomical resection is considered the optimal surgical approach for HCC, particularly for ensuring the complete removal of tumors within the corresponding portal vein territory [1]. Notably, however, its reproducibility has been challenged in the past by difficulties in consistently identifying reliable intrahepatic landmarks while preserving the resection plane [5]. The advent of ICG-guided parenchymal transection has introduced a highly reproducible and more precise method for liver resection [6]. Following inflow control, ICG fluorescence delineates the liver tissue designated for resection, thereby improving surgical accuracy.

Meta-analyses of ICG-guided liver resections have since demonstrated significant benefits, including reduced blood transfusion rates, shorter postoperative hospital stays, and improved R0 resection rates, without an increase in postoperative complications [7]. Despite these advantages, however, proper inflow control is essential with this protocol, as incomplete control may lead to inaccurate staining of the resection margin, potentially compromising surgical outcomes. In cases requiring intervention at the third-order branch Glisson's pedicles for subsegmentectomy, a parenchymal-first approach prior to ICG injection is recommended [8].

This technique thus ensures more precise delineation of the resection margin and facilitates a safer, more effective liver resection. The presented case further underscores the feasibility of utilizing ICG fluorescence imaging in hepatic resections, demonstrating that this method allows for real-time, precise identification of resection margins, potentially enhancing surgical outcomes.

Disclosure

No potential conflict of interest relevant to this article was reported.

Author contributions

Conceptualization: WL, KPH, ML, MS; Data curation: YP, KBS, JHL, DWH, SCK; Formal analysis: WL, KPH; Investigation: KPH, DWH; Methodology: MS, KBS, JHL; Supervision: KBS, JHL, DWH, SCK; Writing–original draft: WL, KPH, ML, MS, YP; Writing–review & editing: KPH, MS, YP, KBS, JHL, DWH, SCK.

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LuminoMark: An Alternative for Localization

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Breast cancer is the most common cancer among women in Korea. Given the increased preference for breast-conserving surgery (BCS), preoperative localization is crucial, especially for non-palpable lesions, to ensure clear resection margins. Traditional methods such as wire-guided localization have limitations, including patient discomfort and wire migration. Recently, LuminoMark, an indocyanine green–macroaggregated albumin–hyaluronic acid mixture, has emerged as a promising alternative with potential benefits over existing techniques. We present a case of a 67-year-old female with a non-palpable Breast Imaging-Reporting and Data System 5 breast lesion. Preoperative localization was performed using LuminoMark, with accurate placement verified by a Lumino-imager. The lesion was successfully excised, and the absence of residual fluorescence confirmed complete resection. LuminoMark provided effective lesion localization without skin pigmentation, reducing the risk of misdiagnosis during follow-up. The procedure demonstrated a short learning curve, similar to that of charcoal localization. However, the need for a costly near-infrared fluorescence detector and the lack of long-term follow-up data are current limitations. Despite minor drawbacks, LuminoMark offers advantages over traditional localization methods, including improved aesthetics and reduced complications. This case demonstrates its feasibility as a next-generation localization technique for BCS, emphasizing the importance of an accurate injection technique to ensure adequate dispersion and complete tumor resection. Further studies are warranted to validate its long-term efficacy.

Keywords: Localization; Breast; Indocyanine green

Introduction

In Korea, breast cancer is the leading cancer in women, with a total of 28,851 new cases, accounting for 22.4% of all female cancer patients [1]. With the improvement in the 5-year relative survival rate (93.6%), an increasing number of patients and surgeons prefer breast-conserving surgery (BCS) to total mastectomy (68.6%) [2]. Since the resection margin (RM) is important for preventing local recurrences in BCS, preoperative localization serves as a safeguard for ensuring a clear RM, especially in the case of non-palpable breast lesions [3]. The concept of localizing breast lesions was first described by Dodd et al. [2] in 1966, using fluoroscopic guided wire localization. In 1976, Frank et al. [4] modified this technique adding a hook tip. Today, wire-guided localization remains the most widely used method for localization of breast lesions. Localization wires vary in length from 3 to 15 cm and are preloaded in a 16 to 21 G needle introducer. The wire may include a hook, barb or

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pigtail to anchor it in place [5]. In recent years, however, many wire-free localization techniques have been introduced, utilizing radioactive methods or non-radioactive methods, such as carbon localization, SAVI SCOUT, MagSeed, and LOCalizer.

In Korea, possible choice among the options, carbon (Charcoal suspension) localization, first reported by Svane [6] in 1983, is often used as a cost-effective alternative. Charcoal suspension stains the tissue black, does not diffuse into the surrounding tissue, and allows the surgeon to localize the lesion even days or weeks later [6]. However, there have also been reports that carbon suspension can cause foreign-body giant-cell reactions, which may mimic malignancy on mammography and potentially lead to misdiagnosis during the follow-up period [7]. In addition, Rose et al. [8] reported a higher rate of close or involved margins when using carbon localization compared to wire-guided localization.

In addition, wire-guided localization, require percutaneous placement of a wire within the breast, with distal portion of the wire remaining outside the breast. Therefore, this procedure must be performed on the day of surgery or, at the latest, the day prior. In addition to this inconvenience, the procedure can cause pain for patients, and in some cases, the wire may become misplaced into the muscle, particularly in patients with scant breast tissue. This displacement can lead to bleeding and significant pain.

Similar concept with carbon localization, LuminoMark was approved by the Drug Apporval System in Korea in May 2023. LuminoMark is an indocyanine green–macroaggregated albumin–hyaluronic acid mixture developed by Hanlim Pharm. Co., Ltd., Seoul, Republic of Korea. A parallel phase 2 and 3 multicenter clinical trial showed that LuminoMark was superior to charcoal regarding skin pigmentation and improving resection accuracy [9]. This paper aims to demonstrate the feasibility of LuminoMark as a new alternative for localization, as subsequently presented through the video.

Case Presentation

A 67-year-old female patient was referred to our institution for surgical management following the detection of a Breast Imaging-Reporting and Data System category 5 breast lesion during a routine mammogram (MMG) and ultrasound at a local clinic. A core needle biopsy confirmed invasive ductal carcinoma. The patient had been undergoing hormone replacement therapy for menopausal symptoms for the past 10 years and had a family history of breast cancer in her older sister. Her body mass index was 32.62 kg/m^2. On physical examination, the mass was non-palpable, and there was no axillary lymphadenopathy. MMG at our institution revealed a 2.7 cm irregular isodense mass in the right upper inner quadrant. Ultrasound identified an irregular hypoechoic lesion measuring 2.2×1.9×1.3 cm at the 1 o'clock position, 8 cm from the nipple, with no additional remarkable findings. This study was approved by the Institutional Review Board (IRB) of Asan Medical Center (IRB No: 2018-0079).

Surgical procedures

Following anesthesia in the usual manner, the lesion location was identified using ultrasound. As shown in the imaging, 0.2 mL of the prepared LuminoMark solution was injected at the tumor surface for localization. Accurate localization of the lesion was verified using the Lumino-imager, before and after the incision was made. Following the incision, marking the tumor boundaries with a needle at each end for convenience. Upon completing the resection, the Lumino-imager was used to confirm that both the excised lesion and the tumor bed were free of residual fluorescence, indicating complete removal.

Discussion

There were several options for localization, and it's important to carefully weigh the pros and cons. The current gold standard is wire-guided localization, but it has weaknesses regarding patient's pain, wire migration, time limitation [10]. Rose et al. [8] demonstrated that the learning curve for carbon localization is relatively short, taking less than 2 weeks. Similarly, as LuminoMark utilizes the same principle as charcoal it also has a relatively short learning curve. Furthermore, it offers more advantages than carbon localization in terms of aesthetics, being free from skin pigmentation and reducing the

risk of misdiagnosis during follow-up mammography, as mentioned earlier regarding foreign-body giant-cell reactions [7].

However, some limitations remain. Although indocyanine green is safe and widely used in various clinical fields, LuminoMark lacks long-term follow-up data, necessitating further research. Additionally, the use of LuminoMark requires a specialized and costly detector for near-infrared fluorescence imaging, which utilizes indocyanine green to emit fluorescence for visualization. Despite these minor drawbacks, the benefits of LuminoMark could outweigh these challenges, making it a feasible option for next-generation localization.

Upon these advantages, we aimed to achieve a more precise and accurate localization using LuminoMark. Since achieving a clear margin is a critical part in BCS, a precise technique is required when injecting LuminoMark. Because many tumors are too solid to inject the solution, pulling the needle back slightly can help. Nevertheless, the fluorescence may still be clearly visible on the skin surface. It is also essential to inject very slowly to allow sufficient time for the solution to disperse.

Disclosure

No potential conflict of interest relevant to this article was reported.

Author contributions

Conceptualization: SBL; Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing–review & editing: EJK, TKY, JK, IYC, BSK, HJK, JWL, BHS, SBL; Writing–original draft: EJK.

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Techniques of Creating an Arteriovenous Fistula for Hemodialysis Access: A Comprehensive Guide

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Arteriovenous fistula (AVF) creation is crucial for patients with end-stage renal disease requiring long-term hemodialysis, due to its superior long-term patency and lower complication rates compared to arteriovenous grafts. This paper presents detailed techniques and a step-by-step tutorial for AVF creation—including radiocephalic, brachiocephalic, and brachiobasilic fistulas—offering valuable insights for both novice and experienced surgeons.

Keywords: Arteriovenous fistula; Renal dialysis; Vascular surgical procedures; Surgical procedures, operative; Education, medical

Introduction

Arteriovenous fistula (AVF) creation is the gold standard for hemodialysis access in patients with end-stage renal disease (ESRD) due to its superior long-term patency and lower complication rates compared to arteriovenous grafts [1]. A good surgical technique is essential to obtain optimal results and reduce the risk of primary failure [2].

A supplementary video (Video 1) is included to illustrate the step-by-step approach to a radiocephalic AVF, providing practical guidance for both novice and experienced surgeons.

Case Presentation

A 60-year-old male patient with ESRD was referred for vascular access creation. The patient had underlying hypertension and diabetes mellitus but no prior history of vascular surgeries or central venous catheter placements. Preoperative duplex ultrasound mapping revealed suitable vessels for AVF creation at the left wrist and upper arm.

This study was approved by the Institutional Review Board (IRB) of Eulji University Uijeongbu Hospital, Korea (IRB No. UEMC 2024-12-010) and written informed consent was obtained from the patient.

Preoperative assessment

- Vessel mapping: Duplex ultrasound was used to assess the diameter and quality of the radial artery and cephalic vein. A radial artery diameter ≥2 mm and a cephalic vein diameter ≥2.5 mm were considered suitable for AVF creation.
- Patient evaluation: Comprehensive medical history and physical examination were conducted to identify comorbid conditions that might affect surgery or fistula maturation.

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Surgical procedures

The surgical approach to AVF creation varies depending on patient-specific anatomy and surgeon preference. Key considerations include the size and quality of the vessels, the choice of suture material, and the type of skin incision. The following outlines commonly used techniques for AVF creation, acknowledging that variations exist and should be tailored to individual patient needs.

Radiocephalic arteriovenous fistula at the wrist

The patient was positioned supine with the left arm extended on an arm board under local anesthesia with sedation. A 5 cm longitudinal incision was made over the radial artery and cephalic vein at the wrist (Fig. 1A). The cephalic vein was identified and carefully dissected proximally to allow for a tension-free anastomosis, while the radial artery was exposed with care to preserve surrounding nerves and structures. Both vessels were mobilized adequately to prevent tension at the anastomosis site, and venous branches were ligated to increase the vein's mobility. After irrigating the vessels with heparinized saline and trimming the vessel ends to healthy tissue, an end-to-side anastomosis was performed using continuous 7-0 polypropylene sutures under loupe magnification. The choice of suture material for the anastomosis can vary; commonly used sutures include 6-0 or 7-0 polypropylene or other monofilament sutures. In this procedure, continuous 7-0 polypropylene sutures were used under loupe magnification for an end-to-side anastomosis. Key technical considerations included gentle handling of the vessels to prevent spasm, precise suture placement to ensure lumen patency, and minimizing manipulation to reduce the risk of intimal hyperplasia. Upon completion, clamps were released, and a palpable thrill and audible bruit confirmed the success of the anastomosis. Hemostasis was achieved with careful inspection of the anastomosis site, and the incision was closed in layers using absorbable sutures for subcutaneous tissue and non-absorbable sutures for the skin.

Brachiocephalic arteriovenous fistula

In cases where distal vessels are inadequate, a brachiocephalic AVF can be created. A transverse incision was made over the antecubital fossa (Fig. 1B), and the cephalic vein and brachial artery were exposed and mobilized. The cephalic vein was dissected proximally, and the brachial artery was carefully isolated. An end-to-side anastomosis was performed, and the choice of suture material may include 5-0 or 6-0 polypropylene or other suitable sutures. In this case, 6-0 polypropylene sutures were used. The cephalic vein was spatulated to match the diameter of the brachial artery, ensuring optimal hemodynamics and reducing turbulence at the anastomosis site. After completing the anastomosis, flow was established, and hemostasis was confirmed before closing the incision appropriately.

Brachiobasilic arteriovenous fistula with transposition

For patients lacking suitable superficial veins, a brachiobasilic AVF with vein transposition is an effective

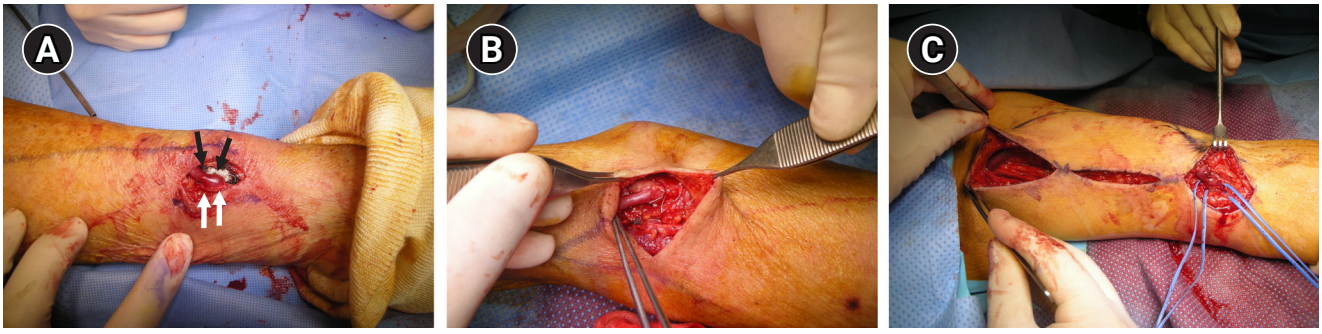

Fig. 1. (A) Intraoperative view of a radiocephalic arteriovenous fistula at the wrist. The radial artery (white arrows) and cephalic vein (black arrows) are carefully dissected for tension-free anastomosis. (B) Brachiocephalic arteriovenous fistula in the antecubital fossa. The cephalic vein is mobilized and anastomosed end-to-side to the brachial artery. (C) Brachiobasilic arteriovenous fistula with transposition. The basilic vein is first anastomosed to the brachial artery and subsequently transposed superficially.

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alternative. A two-stage procedure was performed (Fig. 1C). In the first stage, a longitudinal incision along the medial aspect of the upper arm was made to mobilize the basilic vein, which was then prepared for an end-to-side anastomosis with the brachial artery using 6-0 polypropylene sutures, though suture size may vary between 5-0 and 7-0 based on surgeon preference and vessel size. After allowing time for maturation, the second stage involved transposing the matured basilic vein superficially through a subcutaneous tunnel to facilitate easy cannulation. Care was taken to prevent kinking or torsion of the vein during transposition, which could compromise flow. Alternative techniques include performing the transposition in a single stage or utilizing different incision approaches, such as creating a superficialized straight-line basilic vein transposition. The choice between one-stage and two-stage procedures depends on factors such as vein size, patient comorbidities, and surgeon experience. Successful flow and hemostasis were confirmed, and the incision was closed in layers.

Postoperative care

Patients were monitored for immediate postoperative complications such as bleeding, thrombosis, or infection. Physical examinations and duplex ultrasounds were conducted regularly to assess fistula maturation. Successful maturation was defined by adequate flow rates and vein diameter suitable for dialysis needle cannulation. The patients began hemodialysis using the new AVF within 4 to 6 weeks postoperatively without any significant complications.

Discussion

Selecting the appropriate type of AVF and surgical technique is crucial and depends on patient-specific factors such as vessel size, quality, and previous access sites [3]. The radiocephalic AVF is preferred due to its distal location, preserving proximal sites for future access. However, when distal vessels are unsuitable, proximal options like brachiocephalic or brachiobasilic AVFs are considered.

Technical considerations

- Vessel handling: Gentle manipulation reduces the risk of vasospasm and intimal injury.
- Anastomosis technique: Precise suture placement ensures patency and reduces turbulence.
- Tension-free connection: Adequate mobilization prevents anastomotic stress and promotes maturation.
- Use of magnification: Enhances visualization and accuracy during the procedure.

Training and education

Competency in AVF creation is essential for vascular surgery trainees. A structured, step-by-step tutorial ensures systematic skill acquisition, emphasizing patient safety and surgical proficiency. Progression through training phases with mentor approval guarantees preparedness at each stage.

Conclusion

Arteriovenous fistula creation is a fundamental procedure in vascular surgery, essential for providing reliable hemodialysis access to patients with ESRD. Mastery of various surgical techniques and individualized patient care are paramount to optimizing outcomes and extending the lifespan of vascular access sites. The standardized methods and training protocols presented can serve as a guideline for trainees and practicing surgeons alike.

Disclosure

No potential conflict of interest relevant to this article was reported.

Author contributions

Data curation, Formal analysis: JIK; Investigation: CSS; Methodology: CSS, JIK; Project administration: CSS; Resources: JIK; Supervision: CSS; Validation: JIK; Visualization: JIK; Writing–original draft, Writing–review & editing: CSS, JIK.

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Dynamic Educational Manuscript

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Hepaticojejunostomy in Minimally Invasive Surgery: A Step-by-Step Guide

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With rapid advances in minimally invasive surgery (MIS) techniques, such as laparoscopy and robotics, their application has expanded across various surgical fields, including pancreatobiliary surgery. Numerous studies have demonstrated the feasibility and potential benefits of MIS. Hepaticojejunostomy, a procedure creating a connection between the hepatic duct and the jejunum, is primarily used to bypass biliary obstructions or during operations that involve bile duct resection, such as pancreatoduodenectomy or choledochal cyst excision. Proficiency in minimally invasive hepaticojejunostomy techniques is essential for surgeons in this evolving field. This video presents a detailed, step-by-step guide to the principles and techniques of performing hepaticojejunostomy using both laparoscopic and robotic platforms.

Chapter Summary

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JSIE Journal of Surgical Innovation and Education

Instructions for authors

Enacted June 30, 2024

GENERAL INFORMATION

Journal of Surgical Innovation and Education (J Surg Innov Educ, JSIE; pISSN 3022-9065/eISSN 3022-9073) is the official journal of the Korean Surgical Skill Study Group. Launched on June 30, 2024, with its inaugural issue as volume 1, number 1, JSIE is published biannually in English on the last day of June and December. JSIE is a peer-reviewed scientific journal dedicated to the advancement of surgical education and the dissemination of innovative surgical techniques. The journal's goal is to serve as an indispensable resource for surgeons, trainees, and healthcare professionals seeking to embrace innovation and refine their surgical practice in all surgical disciplines.

- Promote the development of innovative surgical procedures and technology.
- Ensure more effective transfer of surgery-related details and knowledge.
- Provide an immersive learning experience through high-definition surgical video demonstrations.
- Bridge the gap between traditional surgical education and the evolving demands of modern surgical practices.

JSIE publishes Original Articles, Review Articles, Short Communications, Letters to the Editor, and Editorials. This journal follows the Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals (https://www.icmje.org/) in cases not described otherwise below.

MANUSCRIPT PREPARATION

1. Reporting Guidelines for Specific Study Designs

Research reports frequently omit important information. Therefore, reporting guidelines have been developed for several study designs that some journals may ask authors to follow. JSIE encourages authors to consult the reporting guidelines relevant to their specific research design. A good source of reporting guidelines is the EQUATOR Network (https://www.equator-network.org/home/) and the United States National Institutes of Health/National Library of Medicine (https://www.nlm.nih.gov/services/research_report_guide.html).

2. Article Types

The journal welcomes high-quality papers, and the following article types are considered for publication:

A. Original Articles
- Clinical Trials
- Observational Studies (cohort, case-control)
- Innovative Technology/Procedure (including video)
  - Papers in this category describe new technologies/procedures and their evaluation. Any such manuscript must report data on the benefits, efficacy, and/or safety of the technology, regardless of whether it is experimental or clinical.
- How I Do It (include video)
- Dynamic Educational Manuscripts (video tutorial)
- Reviews (including systematic reviews and meta-analyses)

B. Short Communications

C. Letters to the Editor

D. Editorials

All manuscripts submitted to JSIE must be original, not published elsewhere, except in abstract form, and should not be under consideration for publication elsewhere.

JSIE will consider manuscripts prepared according to the instructions below. Other types are also negotiable with the Editorial Board.

3. Organization of the Manuscript

A. General Requirements and Manuscript Structure

Manuscripts should be composed in clear and concise English. Authors are encouraged to strive for clarity, brevity, and precision in both information and language.

The main body and tables should be formatted as an MS Word file (.doc, .docx). Figures must be in .jpg, .gif, .tiff, or .pdf files. Use 12-point Calibri, Arial, or Times New Roman, double-spaced, with 3.0 cm margins on all four sides. Avoid using bold, italic, or underlining within the text, except for exceptional circumstances when this is necessary for clarity. Abbreviations should be generally avoided (except for units of measurement). When used, they should be defined the first time that they appear in the manuscript. Units of measurement must conform to the International System (SI) of Units, with the following abbreviations: year(s), yr; month(s), mo; day(s), day; hours, hr; minutes, min; second(s), sec; grams, g; liters, L; meters, m; sample size, n; degrees of freedom, df; standard error of the mean, SEM; standard deviation, SD; probability, p.

All original article manuscripts except for "How I Do It", "Dynamic Educational Manuscripts", and "Reviews" should be prepared as follows:

a. Title Page
- Article type
- Full title of the manuscript. The title should be as brief as possible. A running title should also be included, not exceeding 40 characters.
- List of authors: The first and last names of each author should be given, along with their highest academic degree. Authors should fulfill the International Committee of Medical Journal Editors (ICMJE) authorship criteria (https://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html). All authors are recommended to provide an ORCID (Open Researcher and Contributor ID; to obtain an ORCID, authors can register at the ORCID web site: https://orcid.org).
- Authors' affiliations: The department and institutional affiliation for each author should be given.
- The name, address, telephone, and email of the author to whom correspondence being addressed should be provided.
- Funding information specific to this paper. For each source of funding, both the research funder and the grant number (if available) should be given.

b. Abstract
- The abstract should be structured (Background, Methods, Results, and Conclusions) and should not exceed 300 words.
- Up to six keywords from the MeSH (Medical Subject Heading) of Index Medicus should be given, separated by a semicolon.
- Abstracts for "How I Do It" and "Dynamic Educational Manuscripts" do not need to follow this structure; a free-form format is acceptable.

c. Main Text

The main text should be organized in the following order: Introduction, Materials and Methods, Results, Discussion, Disclosure, Acknowledgments, References, and Figure legends. The position of figures and tables should be indicated in the text. Tables and Figures should be prepared separately. The text should not exceed 3,500 words (excluding abstract, references, tables, figures, and legends to figures and illustrations), and there should be no more than seven tables and figures in total, if possible.
- Introduction: Briefly describe the purpose(s) of the investigation, including relevant background information.
- Materials and Methods: Describe the research plan, materials or subjects, and methods used. Explain in detail how the disease was confirmed and how subjectivity in observations was controlled. When experimental methodology is the main issue of the paper, describe the process in detail to enable a reader to recreate the experiment as precisely as possible. When quoting specific materials, equipment, or proprietary drugs, the name of the manufacturer must be given in parentheses. Generic names should be used instead of commercial names. Clearly describe the selection of observational or experimental participants (healthy individuals or patients, including controls), including eligibility and exclusion criteria and a description of the source population. Because the relevance of such variables as age, sex, or ethnicity is not always known at the time

of study design, researchers should aim for the inclusion of representative populations into all study types and at a minimum provide descriptive data for these and other relevant demographic variables.

Ensure correct use of the terms sex (when reporting biological factors) and gender (identity, psychosocial or cultural factors), and, unless inappropriate, report the sex and/or gender of study participants, the sex of animals or cells, and describe the methods used to determine sex and gender. If the study was done involving an exclusive population, for example in only one sex, authors should justify why, except in obvious cases (e.g., prostate cancer). Authors should define how they determined race or ethnicity and justify their relevance.

- Results: Results should be presented in logical sequence in the text, tables, and illustrations, and repetitive presentation of the same data in different forms should be avoided. Any data mentioned in the Methods must be presented in the Results section.
- Discussion: The results should be interpreted for readers. Emphasize new and important observations. Do not merely repeat the contents of the Results. Explain the meaning of the observations, along with relevant limitations. The answer to the purpose of the research should be connected to the results.
- Disclosures: Disclosures are required for each author, and every conflict of interest must be clearly disclosed.
- Acknowledgments: Individuals who contributed to the research but not significantly enough to be credited as authors can be acknowledged in this section.
- Author Contribution: Enter all author contributions in the submission system during submission.

  To qualify for authorship, all contributors must meet at least one of the seven core contributions by CRediT (conceptualization, methodology, software, validation, formal analysis, investigation, data curation), as well as at least one of the writing contributions (original draft preparation, review, and editing). Authors may also satisfy the other remaining contributions; however, these alone will not qualify them for authorship.

  Contributions will be published with the final article, and they should accurately reflect contributions to the work. The submitting author is responsible for completing this information at submission, and it is expected that all authors will have reviewed, discussed, and agreed to their individual contributions prior to manuscript submission.
- References: In the text, references should be cited with Arabic numerals in brackets, numbered in the order cited. In the References section, the references should be numbered and listed in order of appearance in the text. All references should be presented in English, including the author, title, and the name of the journal. In the References section, journals should be abbreviated according to the style used in the list of journals indexed in the NLM Journal Catalog (https://www.ncbi.nlm.nih.gov/nlmcatalog/journals). Journal titles that are not listed in the Catalog should follow the ISO abbreviation as described in Access to the LTWA (List of Title Word Abbreviations; https://www.issn.org/services/online-services/access-to-the-ltwa). If there are six or fewer authors, all the authors should be recorded, and if there are seven or more authors, “et al.” should be placed after the first six authors. Please see the following recommended citation style:

  The References follow the NLM Style Guide for Authors, Editors, and Publishers (https://www.ncbi.nlm.nih.gov/books/NBK7256/) if not specified below.

  In principle, the number of references is limited to 50 for original articles. Exceptions can be made only with the agreement of the Editor.

  • Journal articles

  1. Jung S, Lee HS. Robotic transabdominal preperitoneal repair for bilateral obturator hernia: a video vignette. J Minim Invasive Surg. 2024;27:40-43.

2. Yang HJ, Lee H, Kim TJ, Jung DH, Choi KD, Ahn JY, et al. A modified eCura system to stratify the risk of lymph node metastasis in undifferentiated-type early gastric cancer after endoscopic resection. J Gastric Cancer. 2024 Jan 10 [Epub]. DOI: 10.5230/jgc.2024.24.e13

• Books and book chapters

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• Online sources

5. World Health Organization (WHO). World health statistics 2021: a visual summary [Internet]. WHO; 2021 [cited 2021 Feb 1]. Available from: https://www.who.int/data/stories/world-health-statistics-2021-a-visual-summary

- Tables: Present tables in consecutive order of their appearance in the main body, followed by table captions. Avoid explaining content in the tables that is already visible in figures. Ensure that the contents are presented clearly and concisely in English, allowing readers to understand the table without needing to refer to the main body. Include footnotes below the tables and define all abbreviations that are not standard in this field in footnotes. Indicate footnotes in tables in superscripts as a), b), c). Statistical values, such as standard error of the mean (SEM), should be presented. Omit vertical and horizontal lines in the tables.
- Figures: Figures include graphs or images. Authors are required to provide save each image in a separate file with either uncompressed TIFF, GIF, JPEG, or EPS format. When citing separate figures, supply captions such as “Figure 1A” and “Figure 1B.” JSIE encourages authors to use color to increase the clarity of figures. Provide brief and easy-to-read footnotes. The minimum resolution required is 300 dpi (dots per inch) or 3 million pixels, as per the Guidelines for Digital Art (http://art.cadmus.com/da/guidelines.jsp). To cite figures that have been previously published, a written consent is required, and a copy of the permission letter(s) must be attached. Figure legends should be typed double-spaced on a separate sheet at the end of the manuscript. Symbols, arrows, and letters should be used to indicate parts of illustrations. Each figure should be referred to in the text consecutively and should be numbered according in order of citation. All images must be correctly exposed, sharply focused, and prepared in files of 300 dpi or more.
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Manuscripts for “How I Do It” should be organized in the following order: Title page, Abstract, Introduction, Case Presentation, Discussion, Disclosure, Acknowledgements, References, and Figure legends. The title page and abstract should meet the general requirements outlined in the section above. The position of figures and tables should be indicated in the text. Tables and Figures should be prepared separately. These should be presented as briefly as possible. Succinct articles are more likely to be accepted for publication. Manuscript should be no more than 1,000 words, with a maximum of 10 references and 5 tables/figures in total (i.e., the total number of tables and figures and tables

should not exceed 5). The title page should be the first page. The Case Presentation section should not include any detailed information that can be used to identify the patient. Only a brief clinical information should be included that is relevant to the technique or procedure described in the paper. When using specific patient information and photos the Release Form for Photographs of Identifiable Patients or consent from the patient(s) and IRB approval might be required. All information that may reveal the patient identification or the hospital, including the date, must be omitted from images. Video clips that are presented in manuscripts should not exceed 15 minutes and must meet the requirements of video materials in the “Dynamic Educational Manuscripts” category, except for audio narration.

C. Dynamic Educational Manuscripts (video tutorials)

Dynamic manuscripts are submitted as video articles accompanied by regular text abstracts, which will play when the hyperlink is selected. A dynamic manuscript is recommended as a way for authors to demonstrate the details of surgical skill or technology with a video and explanation.

- Examples of this category could include: live demonstration or an intraoperative segment of the details of a surgical procedure/technology, a narrated educational lecture in any field of surgery, a surgical endoscopic procedure, a bed-side procedure, or a physical examination.
- References: Include no more than ten references below the chapter summary. Ensure all references follow the guideline stated in the Reference section above.
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- Video clips should not exceed 15 minutes in total.
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- Please submit a detailed chapter summary with time stamps and titles for key points in your video content.

  Ex) 00:00:01 Introduction
  00:00:10 Case summary
  00:00:26 History of present illness

- Do not use any soundtrack.
- Annotation of anatomic structurestructures or a brief explanation is encouraged.

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Review articles provide concise reviews of subjects important to medical researchers and can be written by an invited medical expert. Both solicited and unsolicited review articles will undergo peer review prior to acceptance.

These have the same format as original articles, but the details may be more flexible depending on the content. The length of the manuscript should not exceed 5,000 words, 100 references, and no more than seven tables and figures in total, if possible. The abstract should not exceed 300 words and must be written as one unstructured paragraph.

E. Short Communications

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An abstract is required in an unstructured format. The word count of the main text should not exceed 1,000, and the total number of references is recommended to be equal to or less than 10. A submission in this category may be edited for clarity or length and may be subject to peer review at the editors' discretion.

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Any opinion or inquiry on a published paper can be addressed to the Editorial Board. An abstract is not required. A title page, main text, and references are required. The total number of references is recommended to be equal to or less than 5. The word count of the main text should be equal to or less than 1,500.

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An Editorial is usually invited by the Editorial Board. An abstract is not necessary. Title page, main text, and references are required. The total number of references is recommended to be equal to or less than 10. The word count of the main text should be equal to or less than 1,500.

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1. Online Submission

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2. Peer Review Process

Each manuscript is reviewed by at least two independent reviewers. The reviewers of the journal are recruited from various specialties related to the topic. To ensure fair reviews, the process is double-blinded. Authors are required to complete revisions requested by the editors within 4 weeks. If the revised version is not submitted within 4 weeks, the submission will be considered as withdrawn by the author.

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The cover letter should inform the editor that neither the submitted material nor portions have been published previously or are under consideration for publication elsewhere. The authors should also explain why the submitted manuscript should be reviewed and considered for publication for JSIE.

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- ☐ A running title should be no more than 40 characters including spaces.
- ☐ For original articles, the abstract should be within 300 words in the structure of Background, Methods, Results, and Conclusions. For reviews articles, short communications, how I do it, and dynamic educational manuscript include an unstructured abstract of no more than 300 words.
- ☐ The abstract should be included in the manuscript, regardless of whether it is included in the submission system.
- ☐ Up to six keywords should be included (those recommended in MeSH; http://www.ncbi.nlm.nih.gov/mesh).
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- ☐ The number of references is limited to 50 (for original articles), 100 (for reviews), or 10 (for short communication, How I Do It, and Editorials).
- ☐ Each figure should be uploaded as a separate file and should not be included in the main text. The file name of each figure should be the figure number.
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