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Mini-invasive Surgery

Content

Mini-invasive Surgery

Endoscopy surgery

1. Review

ESD for duodenal carcinoma

HTML **PDF**

Cite this article: Kato M, Sasaki M, Maehata T, Yahagi N. ESD for duodenal carcinoma. *Mini-invasive Surg* 2022;6:10. http://dx.doi.org/10.20517/2574-1225.2021.124

Abstract

Superficial non-ampullary duodenal epithelial tumors (SNADETs) are rare, but their incidence is increasing recently. Considering the invasiveness of pancreatoduodenectomy, endoscopic treatment is widely accepted as an option for maintaining patients' quality of life. SNADETs larger than 20 mm are an indication for duodenal ESD, and intramucosal cancer can be cured by ESD. Duodenal ESD is extremely difficult with a high risk of adverse events. However, some modified treatment techniques such as the water pressure method or the pocket creation method have been proposed to improve outcomes. Furthermore, evidence is accumulating that protection of the mucosal defect reduces delayed adverse events after duodenal endoscopic treatments. Moreover, endoscopic drainage of the bile and pancreatic juice is effective as conservative management even in cases with delayed perforation.

2. Review

Navigation, mixed reality, and robotics in endoscopic spine surgery

HTML **PDF**

Cite this article: Derman PB, Satin AM. Navigation, mixed reality, and robotics in endoscopic spine surgery. *Mini-invasive Surg* 2022;6:8. http://dx.doi.org/10.20517/2574-1225.2021.111

Abstract

Endoscopic spine surgery (ESS) is an ultra-minimally invasive technique through which spinal pathology can be addressed via sub-centimeter incisions with negligible soft tissue disruption. However, concerns exist regarding the steep learning curve, operative time, and radiation exposure to the surgical team. The use of intraoperative navigation, mixed reality, and robotics in the setting of ESS is currently being explored, and the early evidence suggests that such technologies may help mitigate these issues. The application of these technologies in ESS as well as the associated literature is reviewed herein.

3. Technical Note

The pocket-creation method of endoscopic submucosal dissection

HTML PDF

Cite this article: Hayashi Y, Miura Y, Lefor AK, Yamamoto H. The pocket-creation method of endoscopic submucosal dissection. *Mini-invasive Surg* 2022;6:7. http://dx.doi.org/10.20517/2574-1225.2021.125

Abstract

Endoscopic submucosal dissection (ESD) is rapidly becoming the standard treatment for superficial gastrointestinal tumors because ESD can achieve complete local resection facilitating thorough pathological examination of the resected specimen. The pocket-creation method (PCM) has been established to perform safe and reliable ESD obtaining a high-quality pathological specimen. A minimal mucosal incision using PCM minimizes leakage of submucosally injected solution, which results in prolonged mucosal elevation. A limited-space submucosal pocket created using PCM makes the endoscope tip stable. A conical cap, small-caliber-tip transparent (ST) hood is used when performing PCM. The submucosa can be cut along the ideal dissection line just above the muscularis with minimal thermal damage because the tip of the ST

hood produces both traction and countertraction to stretch the submucosal tissue in the pocket. PCM is recommended as the standard strategy not only for colorectal ESD but also for upper-gastrointestinal ESD. It is expected that the use of traction techniques will make PCM easier to perform.

4. Review

Indications of esophageal cancer for endoscopic submucosal dissection, curability, and future perspectives

HTML **PDF**

Cite this article: Ishihara R. Indications of esophageal cancer for endoscopic submucosal dissection, curability, and future perspectives. *Mini-invasive Surg* 2021;5:36. http://dx.doi.org/10.20517/2574-1225.2021.72

Abstract

This review considers the preferred preoperative examinations, indications for endoscopic submucosal dissection (ESD), and curative ability of ESD in patients with esophageal squamous cell carcinoma (SCC). Endoscopic evaluation by non-magnifying endoscopy followed by magnifying endoscopy is a common procedure for diagnosing invasion depth of superficial esophageal SCCs in Japan. However, endoscopic ultrasonography may increase overdiagnosis of the depth of cancer invasion, and therefore should not be performed routinely. Image-enhanced magnifying endoscopy or iodine staining is recommended for diagnosing the lateral extent of esophageal SCC. The indications for ESD include clinical T1a-epithelial/lamina propria (EP/LPM) N0M0 non-circumferential lesions, clinical T1a EP/LPM N0M0 circumferential lesions ≤ 50 mm, and clinical T1a-muscularis mucosae/T1b-submucosa 1 cancer (invading submucosa by ≤ 200 μm) N0M0 non-circumferential lesions. Pathological T1a EP/LPM without vascular invasion is defined as curative resection, while pathological T1a MM without vascular invasion is considered as non-curative resection, with undetermined recommendations for

additional treatment. Pathological T1b cancer invading the submucosa or pathological vascular invasion-positivity is considered as non-curative resection, and additional treatment is recommended. An accurate preoperative diagnosis, appropriate indication, and adequate curability assessment based on the pathological diagnosis of resected specimens are important for effective ESD.

5. Editorial

Forward: A new kind of endoscopists for advanced therapeutic endoscopy

HTML **PDF**

Cite this article: Rey JF. Forward: A new kind of endoscopists for advanced therapeutic endoscopy. *Mini-invasive Surg* 2021;5:21. http://dx.doi.org/10.20517/2574-1225.2021.14

6. Review

Therapeutic EUS

HTML **PDF**

Cite this article: Cho SH, Oh D, Seo DW. Therapeutic EUS. *Mini-invasive Surg* 2021;5:20. http://dx.doi.org/10.20517/2574-1225.2021.11

Abstract

Currently, the standard treatment for pancreatic neoplasms is surgical resection. However, pancreatic surgical resection is associated with high morbidity and mortality. Patients unfit for surgery are undergoing regular cross-sectional imaging surveillance. Controversy surrounds the optimal surveillance of patients with pancreatic neoplasms, underlying the need for minimally invasive treatment modalities as an alternative to surgical treatment. To date, endoscopic ultrasound-guided radiofrequency ablation (EUS-RFA) is an emerging minimally invasive therapeutic alternative to surgical resection for various pancreatic neoplasms. We review evaluations of EUS-RFA for various pancreatic neoplasms to better

understand its effectiveness and safety.

7. Review

Endoscopic endonasal surgery for anterior skull base meningiomas

HTML **PDF**

Cite this article: Avery MB, Barkhoudarian G, Kelly DF. Endoscopic endonasal surgery for anterior skull base meningiomas. *Mini-invasive Surg* 2021;5:17. http://dx.doi.org/10.20517/2574-1225.2021.05

Abstract

Meningiomas of the tuberculum sellae, planum sphenoidale and olfactory groove region are relatively common. Traditionally these meningiomas have been approached through several transcranial approaches. More recently, keyhole approaches have been utilized with success even for large tumors. Endoscopic approaches are an extension of this philosophy, which, in carefully selected patients, may be an excellent alternative, offering a direct line of site from an endonasal approach without brain retraction. Furthermore, bilateral optic canal decompression can be safely and effectively accomplished. We propose that a majority of tuberculum sellae and posterior planum meningiomas may be removed via an endonasal approach, particularly those that are 3 cm or smaller in maximal diameter with minimal lateral extension beyond the supraclinoid carotid arteries and with medial optic canal invasion. A deepened sella is also a favorable factor for endonasal removal. In contrast, we propose that a minority of olfactory groove meningiomas are ideal candidates for endoscopic trans-cribriform removal given the higher risk of anosmia and cerebrospinal fluid leak via the nasal corridor. Instead, a majority of these tumors can be safely and effectively removed via a transcranial keyhole approach, such as the supraorbital “eyebrow” craniotomy or traditional pterional craniotomy with a higher rate of olfaction preservation.

8. Review

The endoscope and instruments for minimally invasive neurosurgery

HTML PDF

Cite this article: Shaikh S, Deopujari C. The endoscope and instruments for minimally invasive neurosurgery. *Mini-invasive Surg* 2020;4:89. http://dx.doi.org/10.20517/2574-1225.2020.97

Abstract

The advent of neuroendoscopy catalyzed the ongoing development of minimally invasive neurosurgery in the 1990s. This millennium has seen rapid developments in the design of scopes, improved high-definition visualization systems, and a plethora of dedicated instruments. Many minimally invasive and endoscopic procedures have become the new “standard of care” today. Endoscopic third ventriculostomy and endonasal pituitary surgeries have replaced alternative techniques in most major institutes in the world and the indications are rapidly increasing to tackle many midline skullbase, intraventricular, and some parenchymal lesions as well. The scope of minimally invasive neurosurgery has extended to spine surgery, peripheral nerve surgery, and unique indications, viz. craniosynostosis repair. This review describes many of these developments over the years, evaluates current scenario, and tries to give a glimpse of the “not so distant” future.

9. Review

Endoscope-assisted transcranial surgery for anterior skull base meningiomas

HTML PDF

Cite this article: Azab WA, Elmaghraby MA, Zaidan SN, Mostafa KH. Endoscope-assisted transcranial surgery for anterior skull base meningiomas. *Mini-invasive Surg* 2020;4:88. http://dx.doi.org/10.20517/2574-1225.2020.75

Abstract

Anterior skull base meningiomas are benign, dural-based tumors that originate from the tuberculum sellae, planum sphenoidale or olfactory groove. A multitude of traditional transcranial approaches have been effectively used for resection of these tumors. However, in the era of minimally invasive neurosurgery, the endoscopic endonasal and the endoscope-assisted or endoscope-controlled supraorbital keyhole eyebrow approaches stand out as the two main options utilized to resect these tumors. The supraorbital keyhole approach minimizes brain retraction, tissue dissection and length of the skin incision. Consequently, this approach is associated with a lower complication profile and much better cosmetic results in comparison to classic approaches. With endoscopic assistance or control, the approach provides an excellent view of anterior skull base meningiomas and enables optic nerve decompression when angled scopes are used. In our opinion, endoscopes will ultimately replace the surgical microscopes as the viewing tools in this type of surgery. A limited number of studies have directly compared the endoscopic endonasal approach versus the supraorbital keyhole one for resection of anterior cranial base meningiomas. In these studies, scores and algorithms have been suggested to help select the suitable approach. The practical value of these algorithms still needs to be validated by further research. Although the endoscope-assisted or -controlled supraorbital keyhole approach offers a minimally invasive and highly effective approach for excision of anterior cranial base meningiomas, the ideal approach should be tailored to the individual patient according to the tumor size, lateral extension, optic canal involvement, extent of vascular encasement and surgeon's experience.

10. Review

Meningiomas: criteria for modern surgical indications

HTML PDF

Cite this article: Cappabianca P, d' Avella E, Cavallo LM, Solari D. Meningiomas: criteria for modern surgical indications. *Mini-invasive Surg* 2020;4:83. http://dx.doi.org/10.20517/2574-1225.2020.67

Abstract

The contemporary management of meningiomas is the result of the continuous evolution of neurosurgical techniques, along with the refinement of dedicated instrumentations. Above all, it is the magnification of the surgical view, thanks to the microscope and the endoscope, and their advancements, which allowed the improvement of surgical outcomes, in terms of both extent of resection and morbidity rates. Because of the benign nature of the vast majority of meningiomas, complete tumor resection is curative, and it is the gold-standard treatment. However, in the case of high risk of surgical morbidity, a less aggressive surgical treatment may be justified, also upon tailored analysis of the meningiomas' biological behavior and the improvements in postoperative strategies. The endoscopic technique plays a role, as a unique visualization tool or in combination with the microscope, in granting so-called maximum allowed resection. Considering the above, the most challenging task confronting modern meningioma surgery remains the selection of the most appropriate surgical approach, the latter greatly depending on location, anatomic tumor features, and relationships with critical neurovascular structures. Herein, we present a cogent analysis of the modern multifaceted indications for the endoscopic treatment of meningiomas, with a glimpse into the adjacent fields.

11. Review

The role of endoscopy and radiosurgery in the management of cavernous sinus meningiomas

HTML **PDF**

Cite this article: Cossu G, Abarca J, Levivier M, Starnoni D, Daniel RT, Berhouma M, Messerer M. The role of endoscopy and radiosurgery in the management of cavernous sinus meningiomas. *Mini-invasive Surg* 2020;4:60. http://dx.doi.org/10.20517/2574-1225.2020.52

Abstract

Cavernous sinus (CS) meningiomas represent a formidable neurosurgical pathology. The desired treatment depends on tumor size and extensions apart from the presenting clinical symptoms of the patient. The last few decades have shown a paradigm shift in the management towards a multimodal treatment. For patients with tumors presenting with a medial extension or when the meningioma occupies the antero-inferior portion of the CS, an endoscopic biopsy can be safely performed through the endonasal route. The boundaries of endoscopic endonasal approaches have been pushed during the last decade, and a direct access to the CS may now be performed. At the same time, an extensive bony decompression to decompress the optic canal and the pituitary gland may be performed. Autologous fat may be interposed between the residual tumor and radiosensitive structures to safely perform adjuvant radiation therapy. The aim of this manuscript is to describe the role of endoscopic surgery in the management of cavernous sinus meningiomas along with the complementary role of radiotherapy. We describe the endoscopic anatomy and the surgical technique to safely perform the procedure and we review the surgical series reported in the literature dealing with the endoscopic approach for CS meningiomas with or without complementary radiation therapy. Endoscopic endonasal approaches have shown promising results in terms of improvement or stabilization of cranial neuropathy and hypopituitarism. Furthermore, the endoscopic approach may enhance the efficacy and safety of stereotactic radiosurgery through the performance of an hypophysopexy and/or chiasmopexy.

12. Review

Bariatric endoscopy: current primary therapies and endoscopic management of complications and other related conditions

HTML **PDF**

Cite this article: Castro M, Guerron AD. Bariatric endoscopy: current primary therapies and endoscopic management of complications and other related conditions.

Mini-invasive Surg 2020;4:47. http://dx.doi.org/10.20517/2574-1225.2020.14

Abstract

The steady increase in bariatric surgery has led to room for innovation. Endoscopy has become an important tool for evaluation, diagnosis, management of complications, and even for primary bariatric interventions. Leaks are the most feared complication and new endoscopic therapies have been developed such as septotomy, double-pigtail stents, and endoscopic vacuum therapy. Additionally, primary bariatric endoscopic procedures are gaining popularity and the new procedures include intragastric balloons, stoma reduction, aspiration therapy, among others. The altered anatomy and reoperation increase the risk of complications after bariatric surgery, especially when managing conditions like achalasia, gastroparesis, and cholelithiasis. Per-oral endoscopic myotomy, per-oral pyloromyotomy, and endoscopic ultrasound-guided transgastric endoscopic retrograde cholangiopancreatography provide a less invasive approach to address these conditions. This narrative review article intends to expose current endoscopic therapies for the management of primary bariatric procedures, complications and related conditions.

13. Review

Early lessons on assembling a center for bariatric endoscopy

HTML **PDF**

Cite this article: Mlabasati J, Bilal M, Cohen J. Early lessons on assembling a center for bariatric endoscopy. *Mini-invasive Surg* 2020;4:42. http://dx.doi.org/10.20517/2574-1225.2020.32

Abstract

As the obesity epidemic continues to grow, the need for effective management strategies is more important than ever. There are several medical, endoscopic, and surgical management options available. The last decade has seen a rise in endoscopic bariatric interventions. These minimally invasive therapies can be used for patients

who do not qualify or are unwilling to undergo bariatric surgery. Currently, there is limited formal training in bariatric endoscopy. In this commentary, we discuss our experience in establishing a center for bariatric endoscopy at a large academic medical center.

14. Technical Note

Endoscopic-assisted ICG (EASI) technique for sentinel lymph node biopsy in breast cancer

HTML PDF

Cite this article: Mok CW, Hing JXJ, Shetty SS, Tan SM. Endoscopic-assisted ICG (EASI) technique for sentinel lymph node biopsy in breast cancer. *Mini-invasive Surg* 2020;4:26. http://dx.doi.org/10.20517/2574-1225.2020.04

Abstract

Sentinel lymph node biopsy is currently the standard of care for axillary staging in early breast cancer patients with no clinical or radiological evidence of axillary lymph node involvement. Novel techniques studied in recent years include the use indocyanine green (ICG) fluorescence imaging, which was reported in a recent network meta-analysis to be comparable to standard dual modality in terms of false negative as well as detection rate. However, there have been no standardized operative methods leading to the underutilization of this modality in clinical practice. In addition, technical limitations such as the difficulty in tracing ICG flow in obese patients further restrict the use of ICG fluorescence in sentinel lymph node biopsy. In this article, we describe in detail the use of the endoscopic-assisted ICG technique in performing sentinel lymph node biopsy, which addresses limitations associated with conventional use of ICG fluorescence imaging. The technical novelty of this technique lies in the fact that it has not been previously described in the literature and it allows for the identification of sentinel lymph nodes with minimal incision and tissue disruption as well.

15. Review

Endoscopic approach for the treatment of bariatric surgery complications

HTML PDF

Cite this article: Ardila-Gatas J, Pryor A. Endoscopic approach for the treatment of bariatric surgery complications. *Mini-invasive Surg* 2020;4:16. http://dx.doi.org/10.20517/2574-1225.2019.69

Abstract

The incidence of bariatric surgery is increasing exponentially. The number of bariatric surgeries performed in the United States has significantly increased in the past decades. Complications of bariatric surgery can present days to years postoperatively. Advances in endoscopic procedures and technology has made it possible to address many complications endoscopically. We describe the most common complications after bariatric surgery and the endoscopic treatment options available to date.

16. Technical Note

Single-port three-dimensional endoscopic subcutaneous mastectomy for gynaecomastia: an aesthetically superior and novel approach

HTML PDF

Cite this article: Mok CW, Hing JXJ, Tan SM. Single-port three-dimensional endoscopic subcutaneous mastectomy for gynaecomastia: an aesthetically superior and novel approach. *Mini-invasive Surg* 2019;3:40. http://dx.doi.org/10.20517/2574-1225.2019.39

Abstract

Gynaecomastia is a benign clinical condition that can occur in men of all ages, attributed by the proliferation of glandular tissue. Most patients are asymptomatic while symptoms ranging from mild discomfort to severe pain can present in patients

with gynaecomastia. In addition to these, this condition may affect the psychological well-being of patients leading to a need for further treatment. Medical treatment of primary gynaecomastia in the form of anti-oestrogen therapy has not been proven to be effective and there is no consensus regarding the drug of choice or optimal duration of treatment. Surgical treatment is usually the standard treatment in primary gynaecomastia. There have been various techniques described in the literature with the aim of restoring a pleasant chest shape with limited scar on incision. Most of the techniques however involve the use of a peri-areolar or a Wise pattern incision, which can be obvious, especially in patients with a tendency to scar badly. The authors describe a novel approach, whereby a single-port endoscopic subcutaneous mastectomy using the three-dimensional endoscopic system with incision placed along the anterior axillary line was performed for a patient with gynaecomastia and thereby conferring excellent aesthetic outcomes.

17. Editorial

Transanal minimally invasive surgery: from transanal minimally invasive surgery to pure natural orifice transluminal endoscopic surgery

HTML PDF

Cite this article: Jeong WJ, Choi BJ, Lee SC. Transanal minimally invasive surgery: from transanal minimally invasive surgery to pure natural orifice transluminal endoscopic surgery. *Mini-invasive Surg* 2019;3:38. http://dx.doi.org/10.20517/2574-1225.2019.42

18. Original Article

Management of the main postoperative surgical complications after transanal endoscopic microsurgery: an observational study

HTML PDF

Cite this article: Serra-Aracil X, Mora-López L, Pallisera-Lloveras A, Serra-Pla S, Garcia-Nalda A, Gil-Barrionuevo E, Navarro-Soto S. Management of the main

postoperative surgical complications after transanal endoscopic microsurgery: an observational study. *Mini-invasive Surg* 2019;3:37. http://dx.doi.org/10.20517/2574-1225.2019.36

Abstract

Aim: Rates of clinically relevant postoperative morbidity after transanal endoscopic microsurgery (TEM) are low. For this reason, there are few descriptions in the literature on the management of these complications. Because of this lack of information, their importance may be either underestimated or overestimated (in the latter case, leading to overtreatment). The present article reports the frequency of the occurrence of postoperative surgical complications after TEM and describes various approaches to their management.

Methods: An observational study was carried out with prospective data collection and retrospective analysis from June 2004 to June 2019, including all patients undergoing TEM for rectal tumors. All postoperative complications were recorded using the Clavien-Dindo classification (Cl-D), as well as preoperative, surgical, postoperative, and pathological variables.

Results: During the study period, 778 patients underwent TEM, of whom 716 met the inclusion criteria. Postoperative morbidity was 22.1% (158/716). Clinically relevant morbidity (Cl-D > II) was 5% (36/716). The most frequent complication was rectal bleeding, occurring in 115/716 (16.1%) patients; 85 of these 115 (73.9%) patients were grade I Cl-D. Urinary complications were rare (30/716, 4.2%). Similarly, infectious complications of perianal and pelvic abscesses appeared in 7/716 (1%) patients, two of whom required colostomy.

Conclusion: Clinically relevant complications after TEM are rare. For this reason, experience of these complications is limited. Here, we propose a management

protocol to ensure that these complications are neither underestimated nor subjected to excessively aggressive or unnecessary treatment.