



Multidisciplinary Approaches to Cancer Symposium

The Importance of Endoscopic Oncology and Gastrointestinal Cancer Care

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Chief of Medicine and Director of Gastroenterology

City of Hope Phoenix

Chair of Endoscopic Oncology

American Society of Gastroenterology Special Interest Group



Dramatization

Disclosures

- Consultant for Medtronic, Olympus, Pentax, and Steris Endoscopy and Microtech.
- Receives Royalties from Microtech Endoscopy
- Other Financial Relationship (Occasional Educational Support) with Boston Scientific.

This presentation and/or comments will be free of any bias toward or promotion of the above referenced companies or their product(s) and/or other business interests.

This presentation and/or comments will provide a balanced, non-promotional, and evidence-based approach to all diagnostic, therapeutic and/or research related content.

This presentation has been peer-reviewed and no conflicts were noted.

Cultural Linguistic Competency (CLC) & Implicit Bias (IB)

STATE LAW:

The California legislature has passed Assembly Bill (AB) 1195, which states that as of July 1, 2006, all Category 1 CME activities that relate to patient care must include a cultural diversity/linguistics component. It has also passed AB 241, which states that as of January 1, 2022, all continuing education courses for a physician and surgeon **must** contain curriculum that includes specified instruction in the understanding of implicit bias in medical treatment.

The cultural and linguistic competency (CLC) and implicit bias (IB) definitions reiterate how patients' diverse backgrounds may impact their access to care.

EXEMPTION:

Business and Professions Code 2190.1 exempts activities which are dedicated solely to research or other issues that do not contain a direct patient care component.

The following CLC & IB components will be addressed in this presentation:

- *Discussion of the importance of cultural sensitivity in obtaining procedural consent.*
- *Discussion of how endoscopy overcomes some of the implicit bias we have towards obese patients.*

 **TOUFIC**

Tell me a joke about how it is a bad idea to give a talk before happy hour

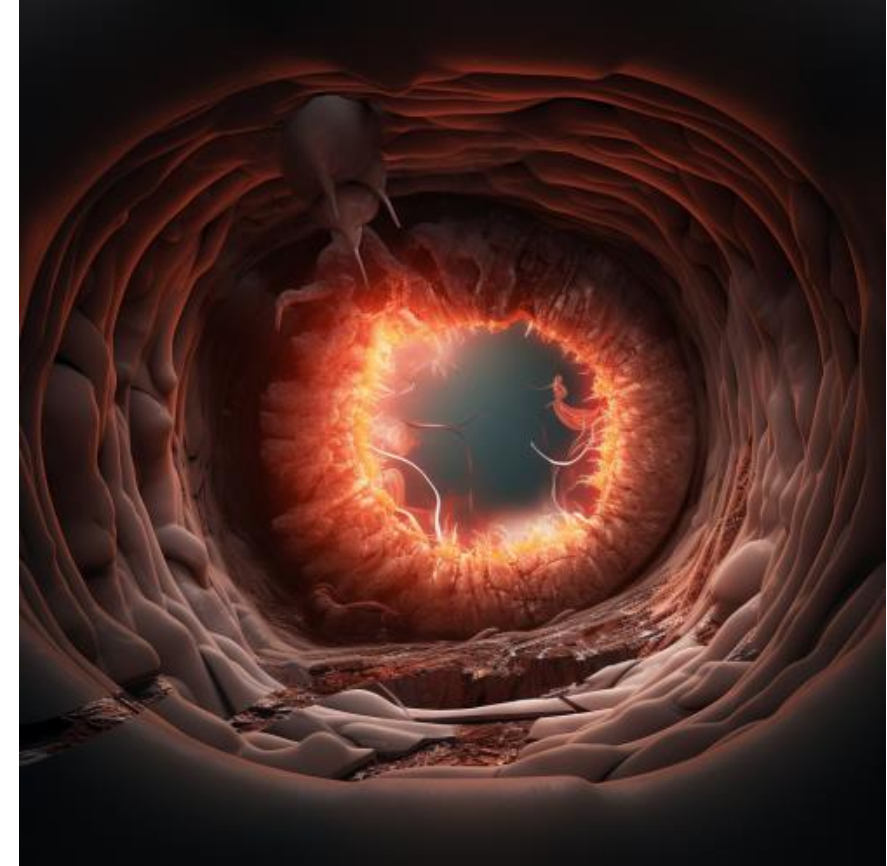
 **CHATGPT**

Why is it a bad idea to give a talk right before happy hour?

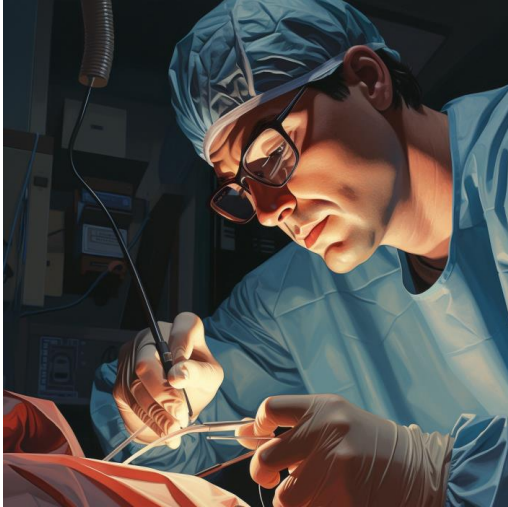
Because half the audience is already thinking about their first round, while the other half can't remember the last round of your presentation!

Endoscopic Oncology

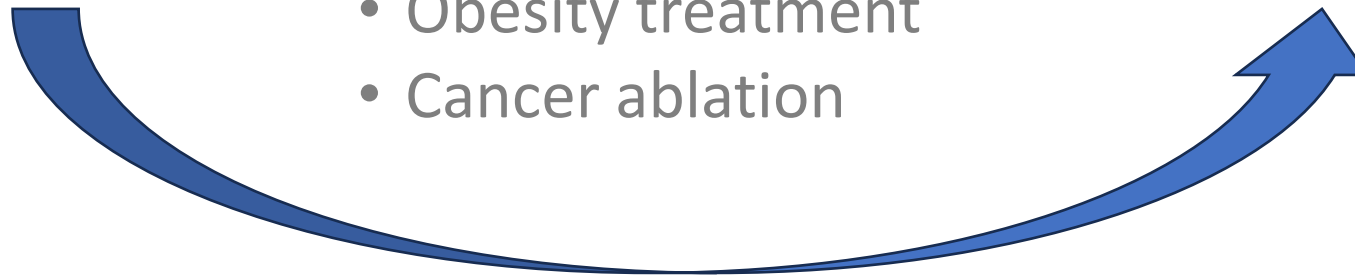
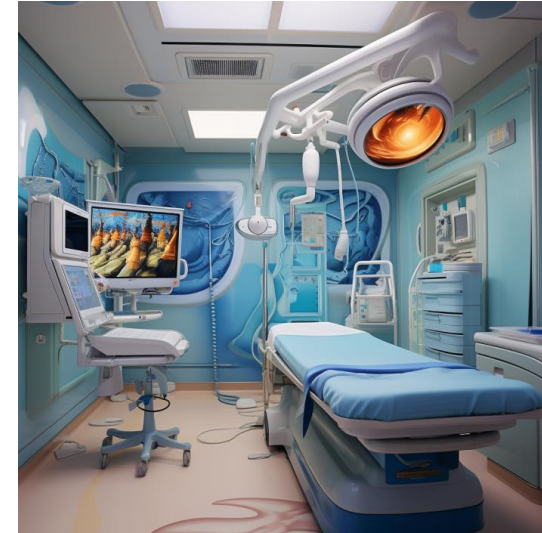
- The area of endoscopy that focuses on cancer evaluation and management.
- It spans the entire spectrum of cancer diagnosis, staging, resection, palliation, ablation, management of treatment-related adverse effects, and the assessment of treatment response.



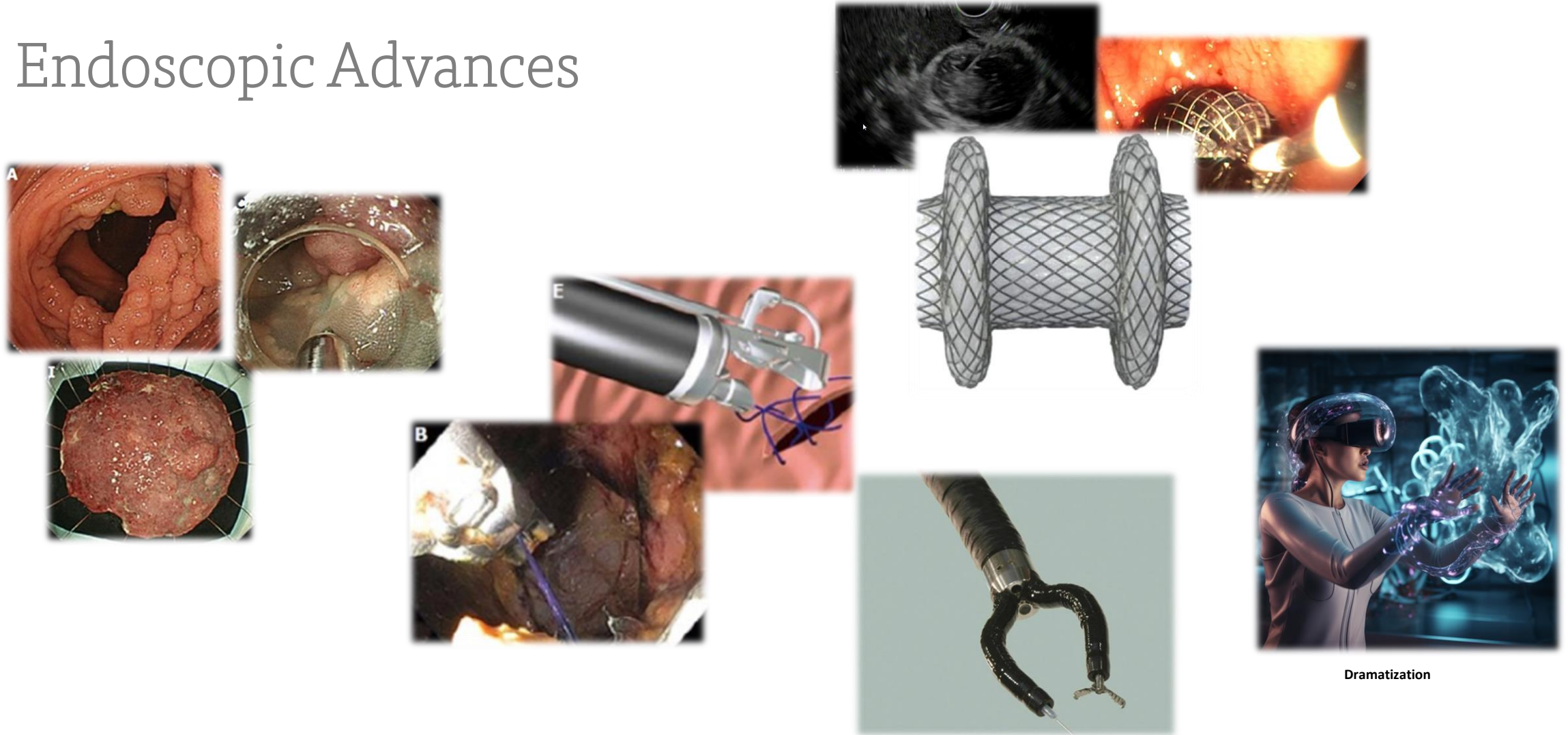
Trends in Endoscopy



- Ulcers and bleeding
- Polyp removal
- Bile duct stones
- Barrett's treatment
- Early cancer resection
- Bowel obstruction
- Obesity treatment
- Cancer ablation



Endoscopic Advances



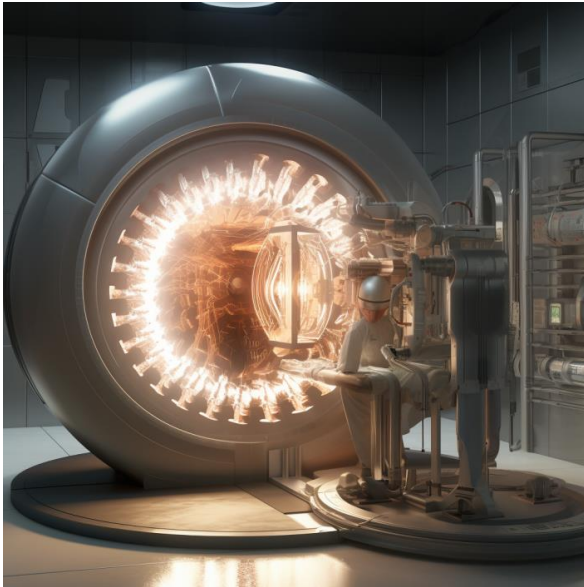
Dramatization

Visconti TAC, Otoch JP, Artifon ELA. Robotic endoscopy. A review of the literature. *Acta Cir Bras.* 2020;35(2)

Stavropoulos SN, Modayil R, Friedel D. Current applications of endoscopic suturing. *World J Gastrointest Endosc.* 2015 Jul

Sakamoto T, Mori G, Yamada M, Kinjo Y, So E, Abe S, Otake Y, Nakajima T, Matsuda T, Saito Y. Endoscopic submucosal dissection for colorectal neoplasms: a review. *World J Gastroenterol.* 2014 Nov 21;20(43):16153-8. 10;7(8):777-89.

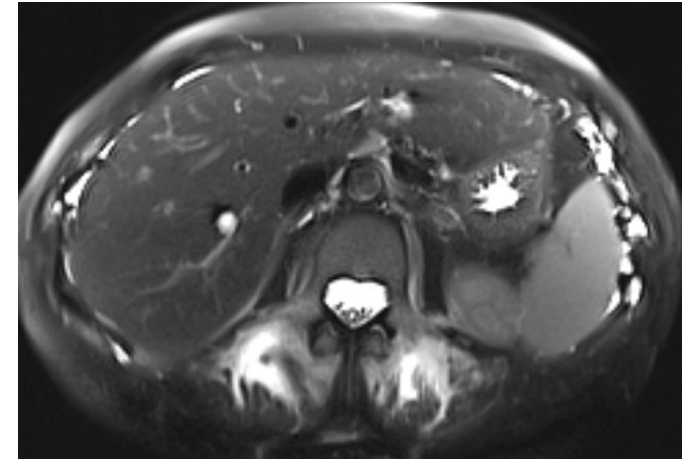
Technological Innovation often precedes Clinical Innovation



NMR
discovered in
1938

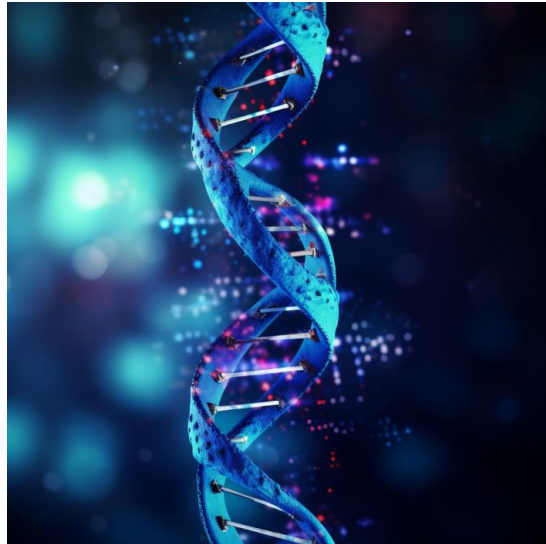


Isidor Rabi
Nobel prize
1948

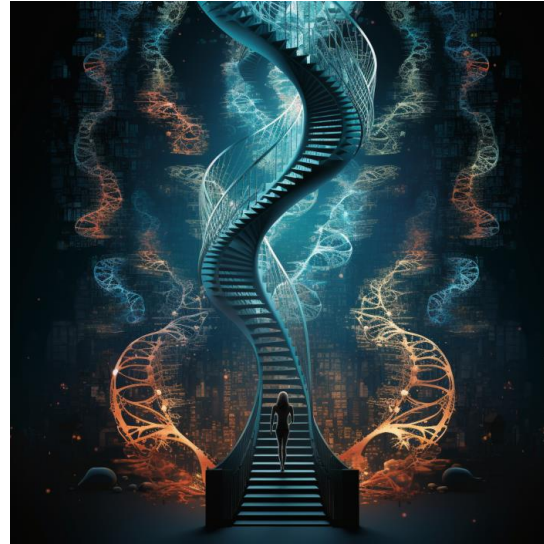


MRI in
clinical care
1980

Technological Innovation often precedes Clinical Innovation



DNA
sequencing
1977



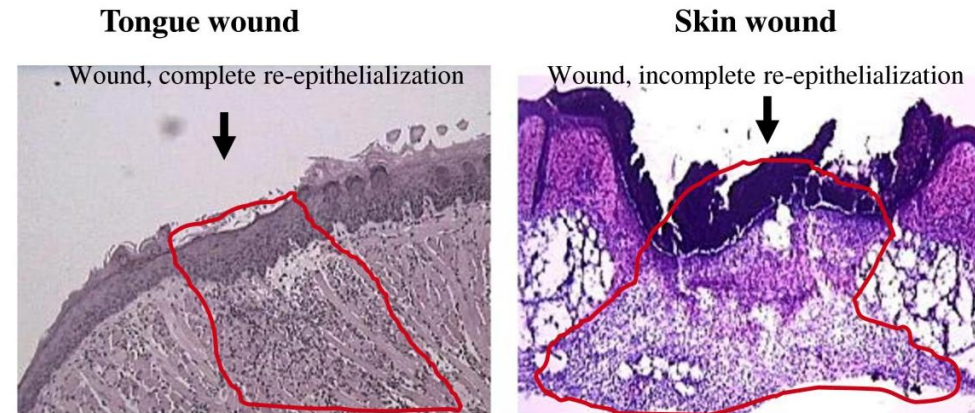
NextGen
sequencing
1980s



Genomics
and precision
medicine
today

Mucosal Healing vs Skin Healing

- Faster healing
- Less scarring



Wound closure is more rapid in oral wounds. Pictures shown are representatives of H&E stained 1 mm skin and tongue wounds 24 hours after wounding. Wounded areas are circled.

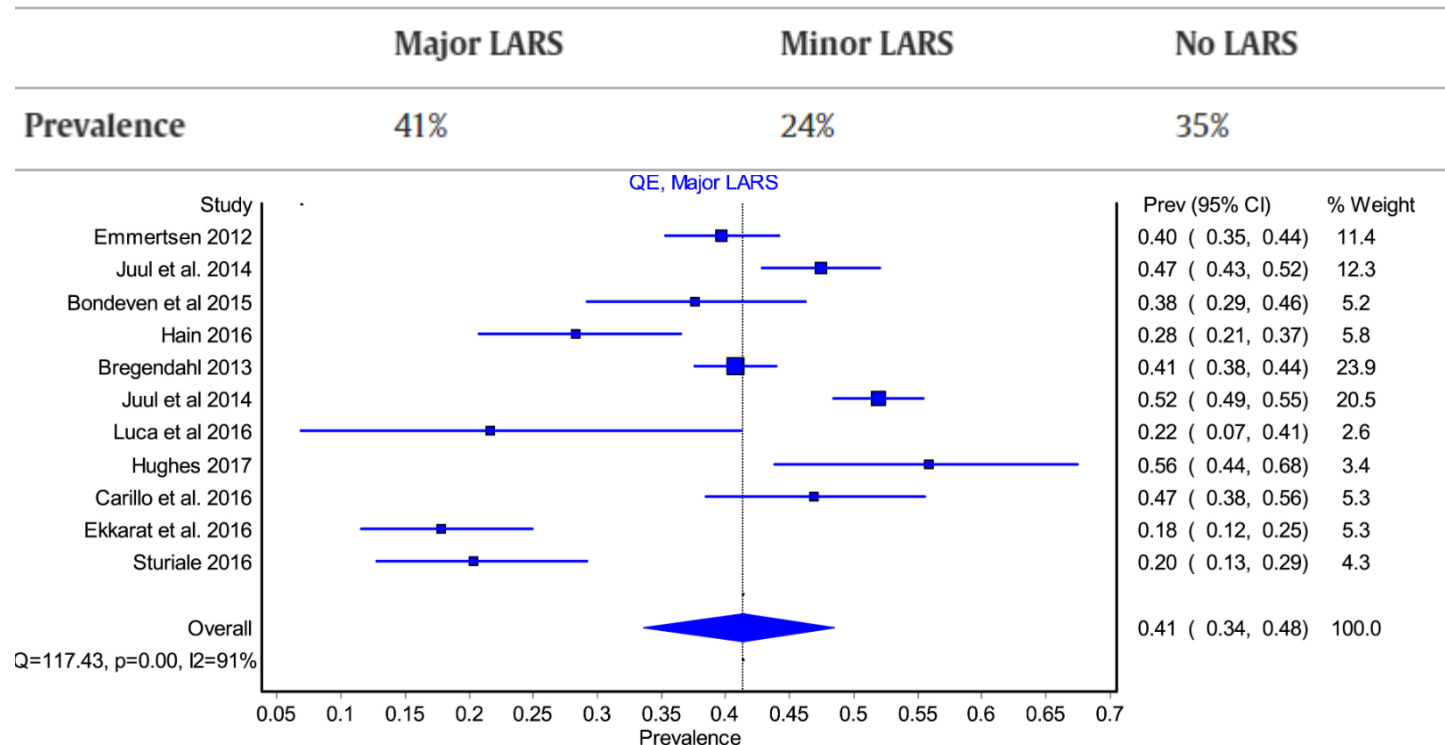




GI tract is a masterpiece of art

GI Cancer surgery morbidity

Table 4. Meta-analysis results of LARS score prevalence.



LARS: 46% of patients even after 14 years

Croese AD, Lonie JM, Trollope AF, Vangaveti VN, Ho YH. A meta-analysis of the prevalence of Low Anterior Resection Syndrome and systematic review of risk factors. Int J Surg. 2018 Aug;56:234-241

Chen TY et al. Bowel function 14 years after preoperative short-course radiotherapy and total mesorectal excision for rectal cancer: report of a multicenter randomized trial. Clin Colorectal Cancer. 2015 Jun;14(2):106-14. doi: 10.1016/j.clcc.2014.12.007. Epub 2014 Dec 31. PMID: 25677122.

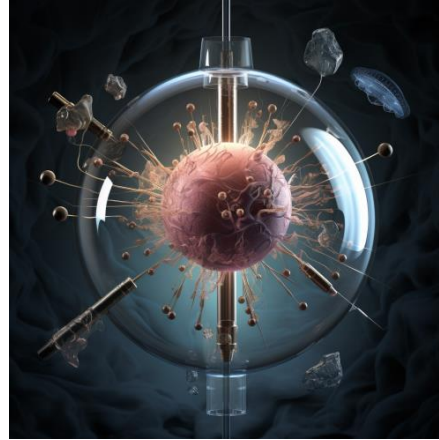
Quality of life 15 years after esophageal cancer surgery

HRQL aspects	Background population	15-year cancer survivors	HRQL differences
	Mean scores with 95%CI	Mean scores with 95%CI	Adjusted MSDs with 95% CI
EORTC QLQ – OES18			
<i>Disease – specific symptom scales</i>			
Dysphagia	0.7 (0.5–0.8)	18.4 (10.6–26.1)	17.7 (10.0 to 25.4) ^b
Reflux	6.5 (5.6–7.1)	32.7 (24.8–40.6)	26.4 (18.3 to 39.4) ^a
Eating difficulties	2.1 (1.8–2.3)	18.4 (13.4–23.4)	16.4 (11.3 to 21.4) ^b
Oesophageal pain	3.7 (3.1–4.3)	16.9 (10.6–23.2)	13.1 (6.7 to 19.6) ^b
<i>Disease-specific items</i>			
Trouble swallowing saliva	1.3 (0.9–1.7)	15.4 (7.7–23.1)	14.1 (6.5 to 21.7) ^b
Choking	4.4 (3.7–5.1)	12.1 (6.4–18.0)	7.8 (1.9 to 13.6)
Dry mouth	12.5 (10.9–14.2)	30.8 (22.4–39.2)	18.2 (9.8 to 26.6) ^b

Surgical Oncology in a Century



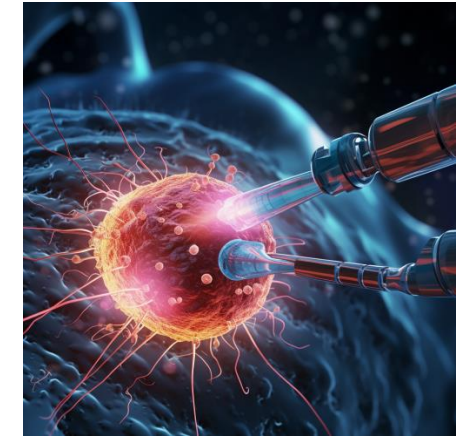
**Radical
surgery**



**Multimodality
therapy with less
extensive
surgery**



**Minimally
invasive surgery**



**Organ
preservation**

Non-surgical “Watchful Wait” in rectal cancer



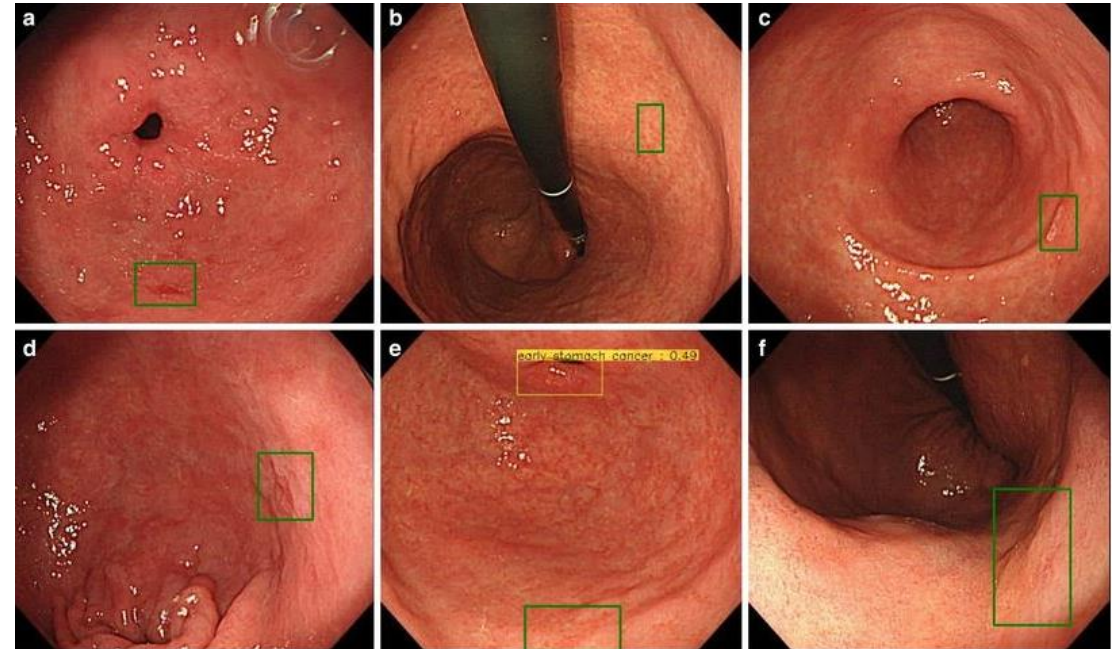
National
Comprehensive
Cancer
Network®

NCCN Guidelines Version 5.2023 pMMR/MSS Rectal Cancer

^x In those patients who achieve a complete clinical response with no evidence of residual disease on digital rectal examination (DRE), rectal MRI, and direct endoscopic evaluation, a “watch and wait,” nonoperative (chemotherapy and/or RT) management approach may be considered in centers with experienced multidisciplinary teams. The degree to which risk of local and/or distant failure may be increased relative to standard surgical resection has not yet been adequately characterized. Decisions for nonoperative management should involve a careful discussion with the patient of their risk tolerance. [Principles of Nonoperative Management \(REC-H\)](#).

AI in UGI cancer detection

- UGI cancers are among the most common worldwide
- Detecting early lesions can significantly improve prognosis and help in organ preservation
- Early lesions are difficult to identify
- Meta-analysis (10 studies, 3,529 patients and 34,773 training images)
 - Sensitivity was 93%
 - Specificity was 95%

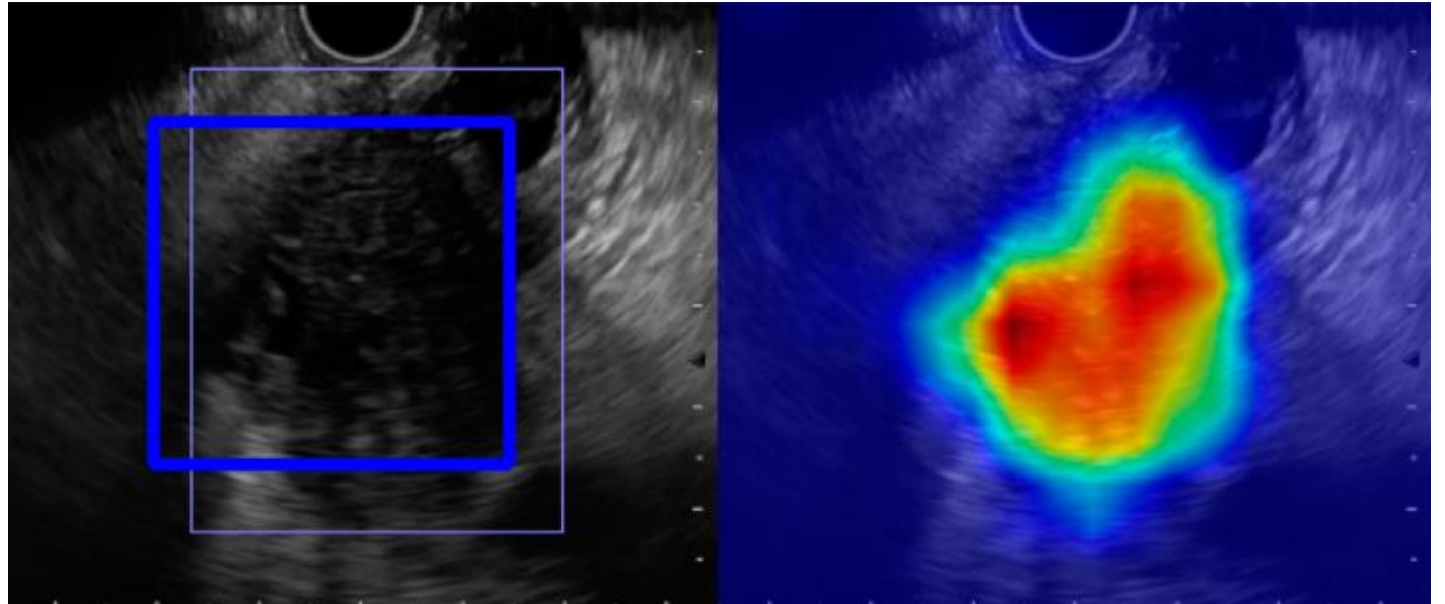


Hirasawa, T., Aoyama, K., Tanimoto, T. et al. Application of artificial intelligence using a convolutional neural network for detecting gastric cancer in endoscopic images. *Gastric Cancer* 21, 653–660 (2018)

Lv B, Wang K, Wei N, Yu F, Tao T, Shi Y. Diagnostic value of deep learning-assisted endoscopic ultrasound for pancreatic tumors: a systematic review and meta-analysis. *Front Oncol.* 2023 Jul 27;13:1191008

AI in pancreatic cancer detection

- EUS is one of the most difficult skills for endoscopist to master
- Pancreatic lesions can be easily missed
 - Delay in diagnosis
 - Repeat procedures
- Metaanalysis (10 studies, 3,529 patients and 34,773 training images)
 - Sensitivity was 93%
 - Sensitivity was 93%



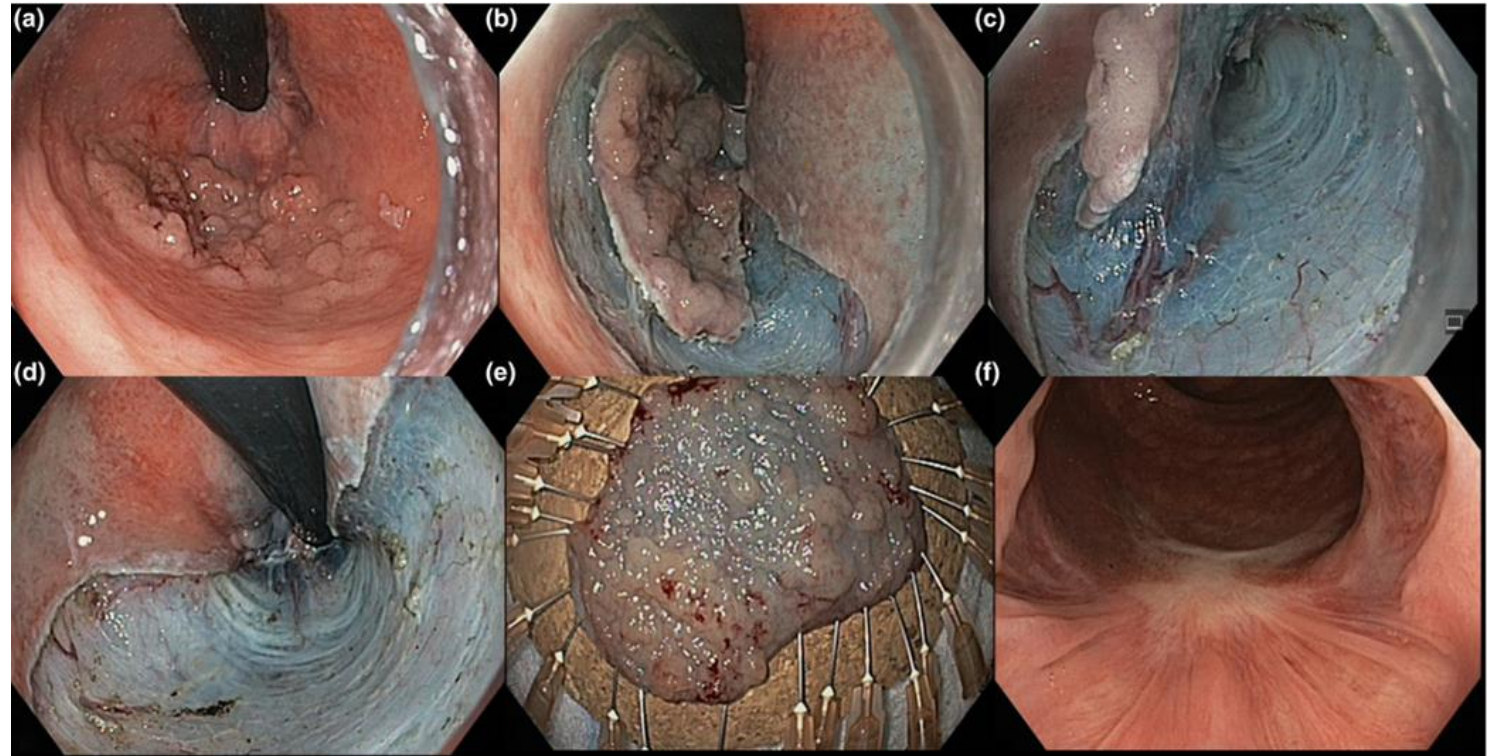
Tonozuka, R.; Mukai, S.; Itoi, T. The Role of Artificial Intelligence in Endoscopic Ultrasound for Pancreatic Disorders. *Diagnostics* 2021, 11, 18.

Lv B, Wang K, Wei N, Yu F, Tao T, Shi Y. Diagnostic value of deep learning-assisted endoscopic ultrasound for pancreatic tumors: a systematic review and meta-analysis. *Front Oncol.* 2023 Jul 27;13:1191008.

Endoscopic Submucosal dissection

Allows endoscopic resection of large superficial GI lesions en block

1. ESD steps
2. Marking
3. Injection
4. Incision
5. Submucosal dissection
6. Haemostasis



Endoscopic Submucosal dissection

ESD recommended in general for superficial lesions with low risk of LN mets:

- Esophageal squamous dysplasia or early, well-differentiated, nonulcerated squamous cell carcinoma greater than 15mm
- Early well differentiated, nonulcerated EAC (suspected T1) or nodular Barrett's dysplasia
- Well differentiated, intestinal type, early GAC.
- Colorectal lesions if there is a high suspicion of limited submucosal invasion

Harlow C, Sivananthan A, Ayaru L, Patel K, Darzi A, Patel N. Endoscopic submucosal dissection: an update on tools and accessories. *Ther Adv Gastrointest Endosc.* 2020 Sep 28;13:2631774520957220.

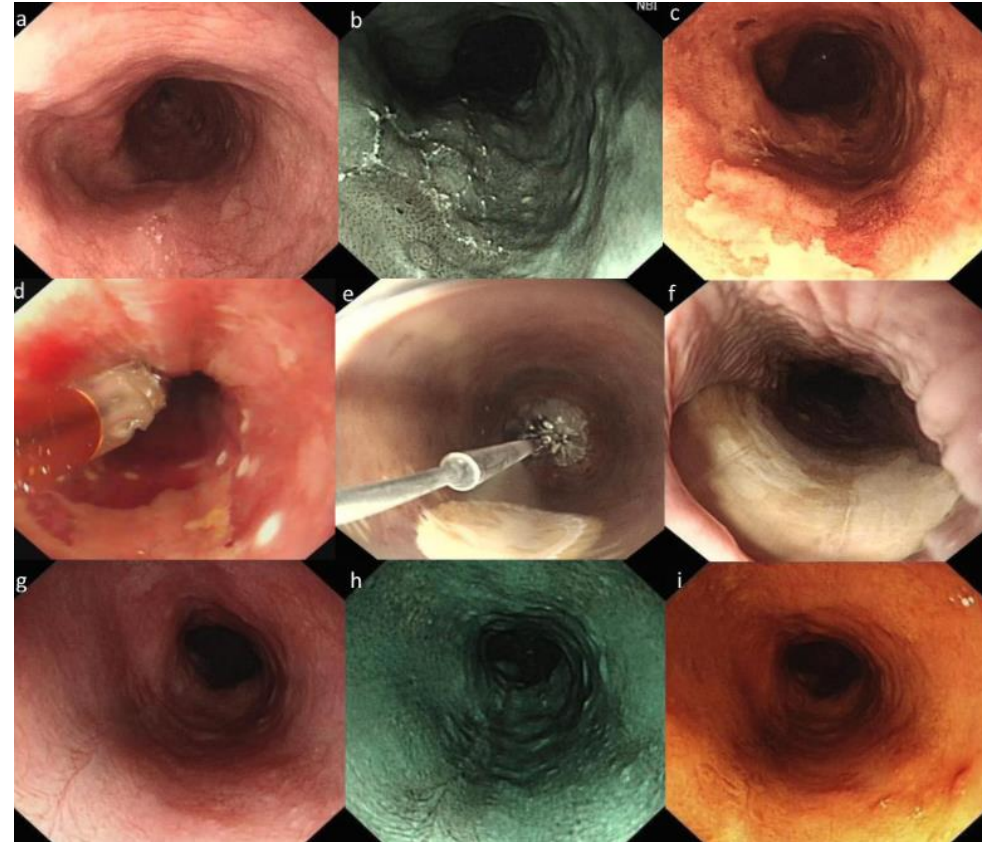
Forbes N et al. American Society for Gastrointestinal Endoscopy guideline on endoscopic submucosal dissection for the management of early esophageal and gastric cancers: summary and recommendations. *Gastrointest Endosc.* 2023 Sep;98(3):271-284.

Endoscopic Submucosal dissection

- Technically demanding (requires special training)
- Higher complication rate (most managed endoscopically)
- Time consuming
- Innovation will make it safer, faster and more widely available

Cancer ablation for early neoplasia

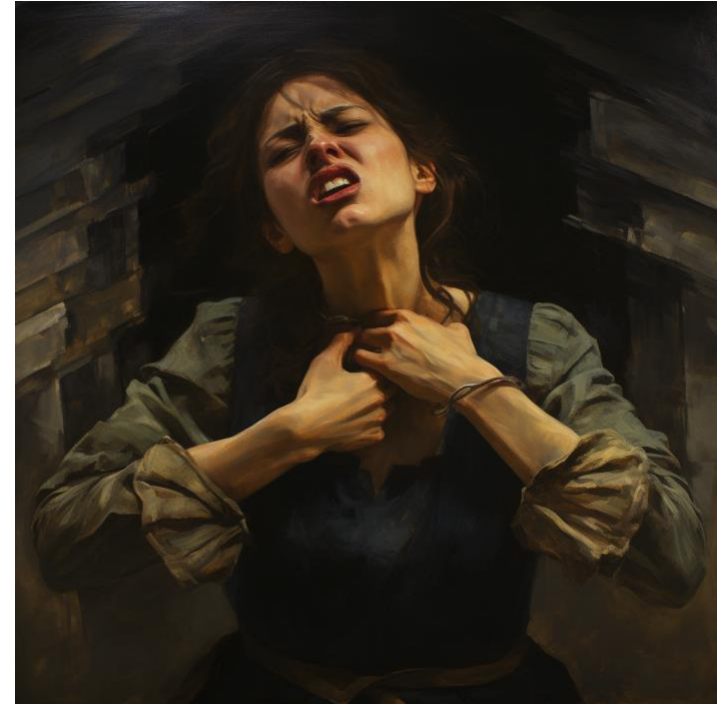
- 80 Chinese patients with esophageal squamous cell neoplasia (precursor of ESC)
- 70/78 patients (90%) had a complete endoscopic resolution at 3 months
- The complete response rate at 12 months was 76/80 (95%) by intention-to-treat (ITT) analysis and 76/78 (97%) by per protocol (PP) analysis



Ke Y, et al. Prospective study of endoscopic focal cryoballoon ablation for esophageal squamous cell neoplasia in China. *Gastrointest Endosc.* 2019 Aug;90(2):204-212.

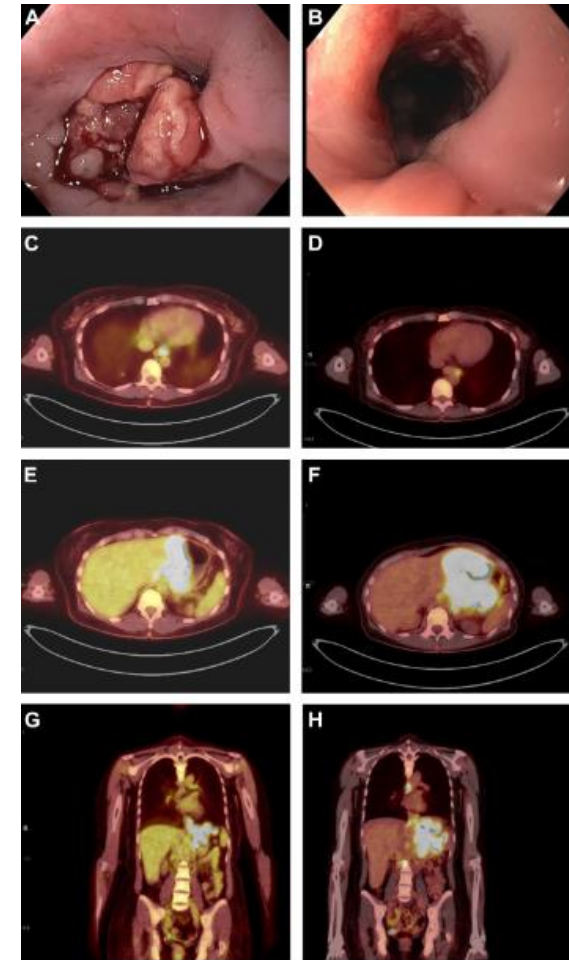
Cancer Ablation for palliation

- Esophageal adeno 1/3 present at a stage where palliation is the focus
- Optimal dysphagia palliation is center and expertise dependent
- NCCN recommends action for severe symptoms and weighting risk and benefit in mild to moderate symptoms
- Stents have been the mainstay of endoscopic treatment
- Stents over 90% effective with immediate relief
- Stent adverse events as high as 40% with mixed impact on quality of life



Cancer Ablation for palliation

- Prospective multicenter single arm palliation for esophageal cancer patients receiving systemic Rx
- 55 patients received 175 cryotherapy procedures
- After a mean of 3.3 Rx: mean dysphagia improved from 1.9 to 1.3 (P = 0.004)
- After a mean of 3.2 cryotherapy sessions, mean QoL improved from 34.9 at baseline to 29.0 (P < 0.001)
- Patients receiving more intensive cryotherapy (≥ 2 treatments within 3 weeks) showed a significantly greater improvement in dysphagia compared with those not receiving intensive therapy (1.2 vs. 0.2 points; P = 0.003)
- Median overall survival was 16.4 months.



Kachaamy Tet al. A prospective multicenter study to evaluate the impact of cryotherapy on dysphagia and quality of life in patients with inoperable esophageal cancer. *Endoscopy*. 2023 Jul 25.

Youssef Y. Soliman MD , Madappa Kundranda MD, PhD , Toufic Kachaamy MD. Endoscopic Palliative Therapies for Esophageal Cancer.. *Gastrointestinal Endoscopy Clinics of North America*. 7 September 2023

EUS guided ablation for pancreatic NETs

- Metaanalysis of 183 patients with 196 lesions (101 F-PanNETs and 95 NF-PanNETs)
 - 4.5 mm and 30 mm in size
 - Efficacy* was 93 to 95%
 - The most common AEs were mild pancreatitis and abdominal pain.
 - Mild AEs were observed in 21/142 (14.7%)
 - Moderate and severe AEs were observed in one patient each (0.007%).
- *(disappearance on cross-sectional imaging during follow-up) for NF-PanNETs and as disappearance of clinical symptoms for F-PanNETs)**

Armellini E, Facciorusso A, Crinò SF. Efficacy and Safety of Endoscopic Ultrasound-Guided Radiofrequency Ablation for Pancreatic Neuroendocrine Tumors: A Systematic Review and Metanalysis. *Medicina (Kaunas)*. 2023 Feb 14;59(2):359.

EUS guided ablation for pancreatic NETs

EUS-RFA Versus Surgery for Pancreatic Insulinoma (ERASIN-RCT) (ERASIN-RCT)

The safety and scientific validity of this study is the responsibility of the study sponsor and investigators. Listing a study does not mean it has been evaluated by the U.S. Federal Government. **⚠** [Know the risks and potential benefits](#) of clinical studies and talk to your health care provider before participating. Read our [disclaimer](#) for details.

ClinicalTrials.gov Identifier: NCT05735912

[Recruitment Status](#) ⓘ : Recruiting

[First Posted](#) ⓘ : February 21, 2023

[Last Update Posted](#) ⓘ : March 20, 2023

See [Contacts and Locations](#)

[View this study on the modernized ClinicalTrials.gov](#)

Sponsor:

Azienda Ospedaliera Universitaria Integrata Verona

Information provided by (Responsible Party):

Stefano Francesco Crinò, MD, Azienda Ospedaliera Universitaria Integrata Verona

EUS guided ablation for pancreatic adenoCa

- Pancreatic ductal adenocarcinoma (PDAC) continues to have bad prognosis
- Majority are not resectable at diagnosis and less than 1/3 of locally advanced receiving neoadjuvant Rx undergo successful R0 resection
- Pilot study of EUS RFA in 10 patients with unresectable PDAC (7 LA and 3 stage 4)
- 1 to 4 sessions per patient
- No major adverse events



Thosani N, Cen P, Rowe J, Guha S, Bailey-Lundberg JM, Bhakta D, Patil P, Wray CJ. Endoscopic ultrasound-guided radiofrequency ablation (EUS-RFA) for advanced pancreatic and periampullary adenocarcinoma. *Sci Rep.* 2022 Oct 3;12(1):16516.

Chatzizacharias NA, Tsai S, Griffin M, Tolat P, Ritch P, George B, Barnes C, Aldakkak M, Khan AH, Hall W, Erickson B, Evans DB, Christians KK. Locally advanced pancreas cancer: Staging and goals of therapy. *Surgery.* 2018 May;163(5):1053-1062.

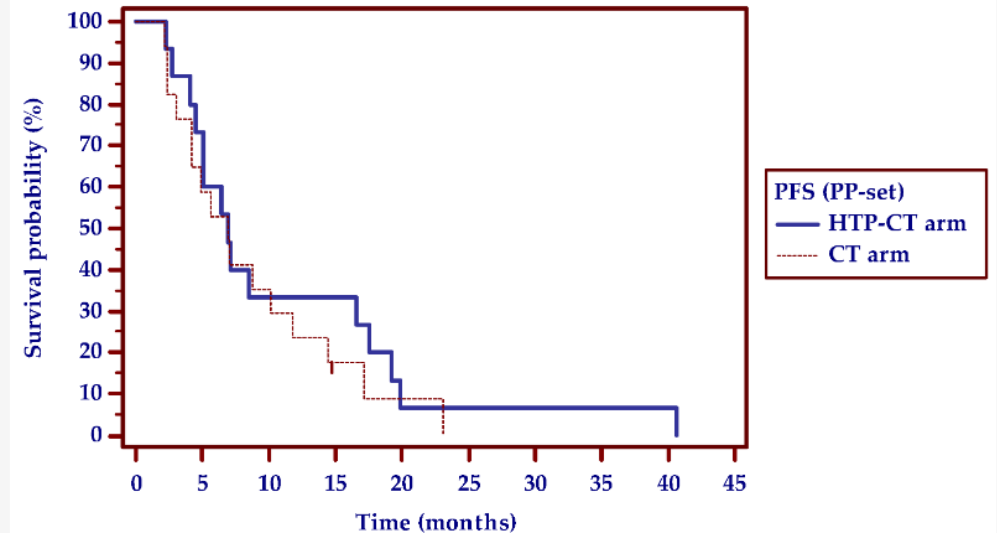
EUS guided ablation for pancreatic adenoCa

Characteristics of pancreatic lesions, number of RFA sessions and overall survival in patients undergoing EUS-RFA (include survival from 1st RFA).

Patient	Size of Mass at diagnosis (mm)	Location	Number of RFA sessions	Deceased	Survival (months)
1	40 × 33	Head	2	Yes	9
2	35 × 35	Neck	3	Yes	9
3	30 × 20	Head	1	Yes	10
4	44 × 40	Body	4	Yes	16
5	53 × 39	Tail	1	Yes	17
6	59 × 47	Neck	1	Yes	23
7	68 × 50	Body	1	Yes	27
8	28 × 25	Head	3	No	59
9	21 × 18	Tail	4	Yes	42
10	14 × 12	Head	2	No	79

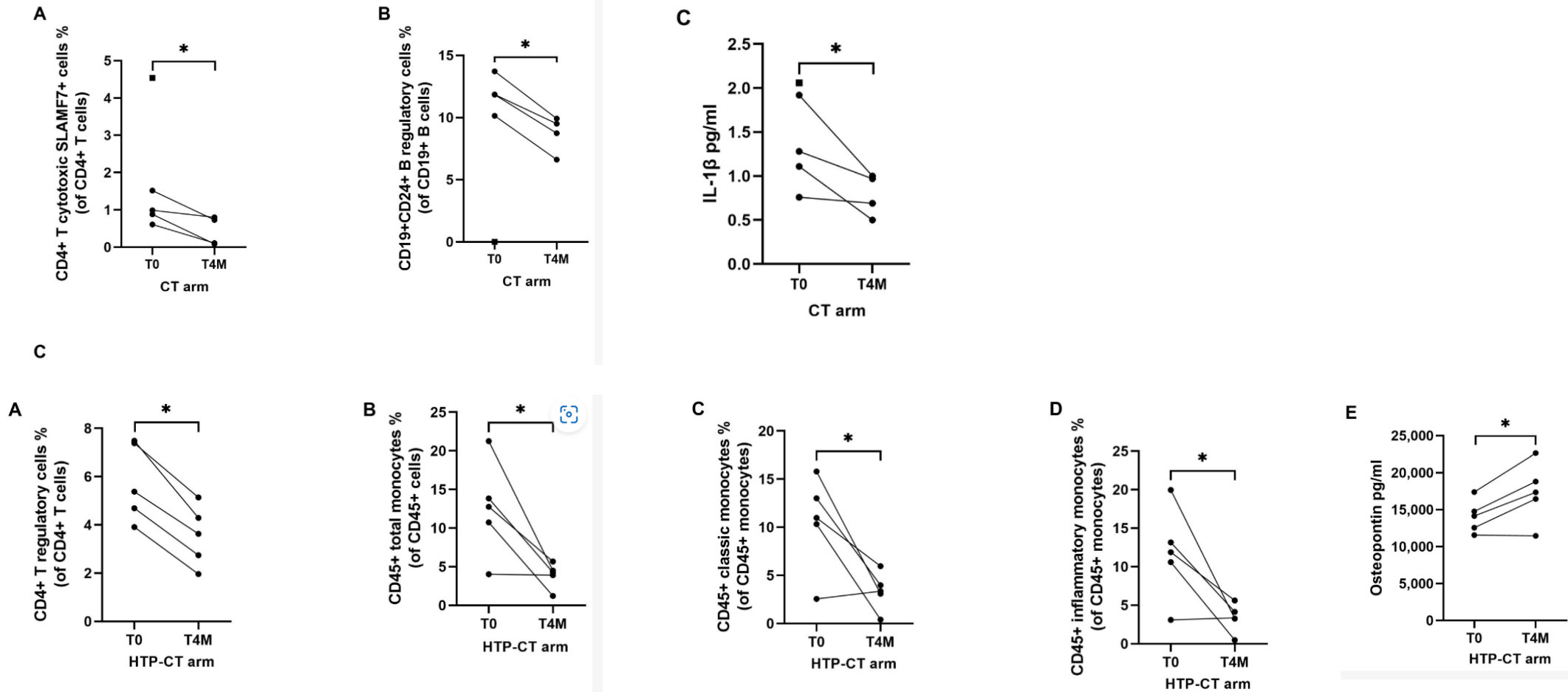
EUS guided ablation for pancreatic adenoCa

- PDAC cytological/histological diagnosis and radiological LA/BR
- Randomized to (1-3) upfront EUS-HTP plus Chemotherapy (HTP-CT arm) or CT alone (CT arm)
- Sample size needed 66 patients for 20% increase of the 6-PFS rate
- Study terminated early due to slow accrual after 37 patients
- 6-months, 6-PFS rate was 41.2% and 30% in HTP-CT and CT arms ($p = 0.48$)
- AEs:
 - Severe: None (20% in surgical literature)
 - Mild to Moderate 29%



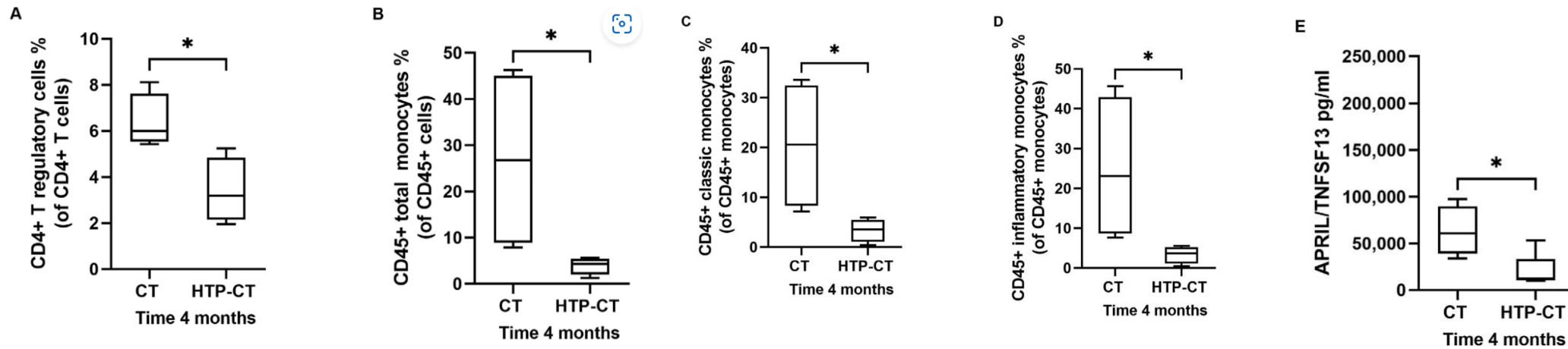
Testoni SGG et al. Efficacy of Endoscopic Ultrasound-Guided Ablation with the HybridTherm Probe in Locally Advanced or Borderline Resectable Pancreatic Cancer: A Phase II Randomized Controlled Trial. *Cancers (Basel)*. 2021 Sep 8;13(18):4512.

EUS guided ablation for pancreatic adenoCa



Testoni SGG et al. Immunomodulatory Effects of Endoscopic Ultrasound-Guided Thermal Ablation in Patients with Pancreatic Ductal Adenocarcinoma. *Cancers* (Basel). 2023 Jul 21;15(14):3704.

EUS guided ablation for pancreatic adenoCa



Testoni SGG et al. Immunomodulatory Effects of Endoscopic Ultrasound-Guided Thermal Ablation in Patients with Pancreatic Ductal Adenocarcinoma. *Cancers (Basel)*. 2023 Jul 21;15(14):3704.

Current clinical trial

ClinicalTrials.gov

ClinicalTrials.gov Identifier: NCT04990609

[Recruitment Status](#) ⓘ : Recruiting

[First Posted](#) ⓘ : August 4, 2021

[Last Update Posted](#) ⓘ : April 21, 2023

See [Contacts and Locations](#)

A Single-arm Phase II Study to Evaluate the Safety and Efficacy of Combination Systematic Chemotherapy and Multiple Rounds of Endoscopic Ultrasound-guided Radiofrequency Ablation in Pancreatic Cancer

Sponsor:

The University of Texas Health Science Center, Houston

Information provided by (Responsible Party):

Nirav C Thosani, The University of Texas Health Science Center, Houston

GI malignancy spectrum and trends

Early disease

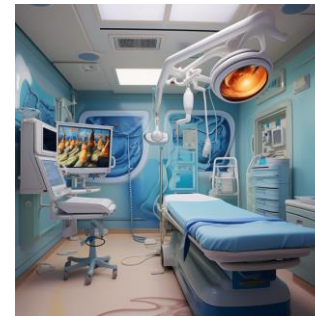
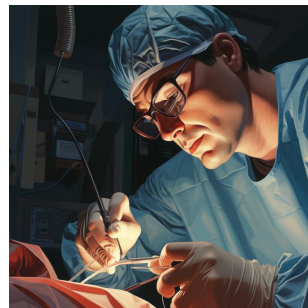
resection

- esophageal
- gastric
- Colorectal

Locally advanced

Ablation

Resection



Advanced disease

Palliation:

- Esophageal obstruction
- Gastric outlet obstruction
- Colonic obstruction
- Biliary obstruction

Endoscopic Oncology

- A discipline in its infancy with a lot of potential
- Drivers are:
 - Inherent advantages to mucosal healing and the use of natural orifices
 - Fast paced technological innovation
 - Cancer stage shifting (MCED, AI in cancer detection and screening) making minimally invasive modalities more effective
 - Desire for organ preservation and more focus on quality of life



Warmly Welcome haamy From City of Hope, USA



Endoscopic technology refers to performance of operation through natural cavities of human body. The modern minimally invasive surgeries without surgical operation will replace traditional surgery in more cases, to which the application of the endoscopic technology is of great significance.



Thank you

Questions?