Multidisciplinary Approaches to Cancer Symposium

Multimodal Management of Locally Advanced Pancreas Cancer (LAPC): (Surgery)

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City of Hope

Disclosures

- Editor in Chief Journal of Surgical Oncology
- Consultant Delcath Systems

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:

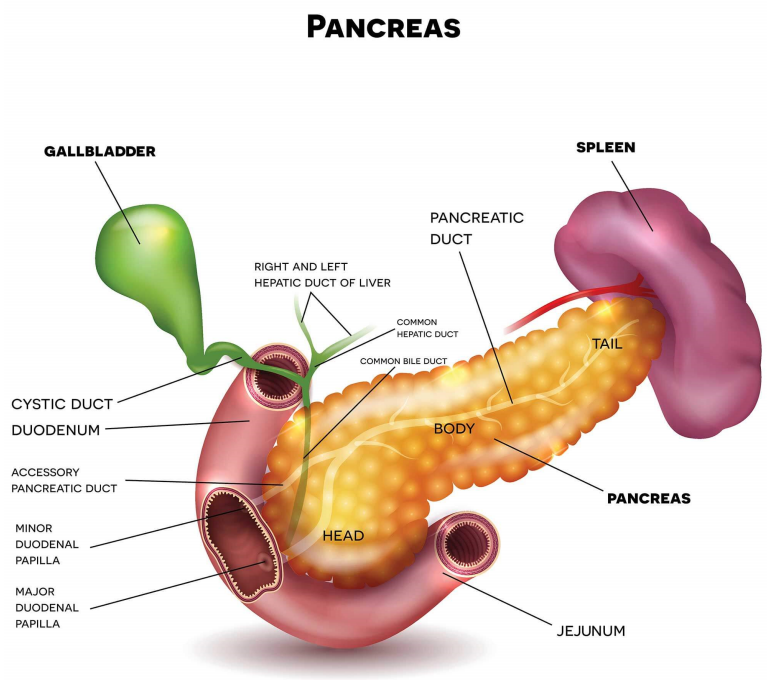
Business and Professions Code 2190.1 exempts activities which are dedicated solely to research or other issues that do not contain a direct patient care component.

This presentation is dedicated solely to research or other issues that do not contain a direct patient care component.

Pancreas Cancer

- 2nd cause cancer mortality by 2030
- ~60,000 cases annually
- 30-35% advanced disease presentation
- 50-55% present with metastatic disease
- 20% with resectable disease- 5 yr survival 15-25%
- 80% with recurrence after surgery

5 yr OS 11-13%



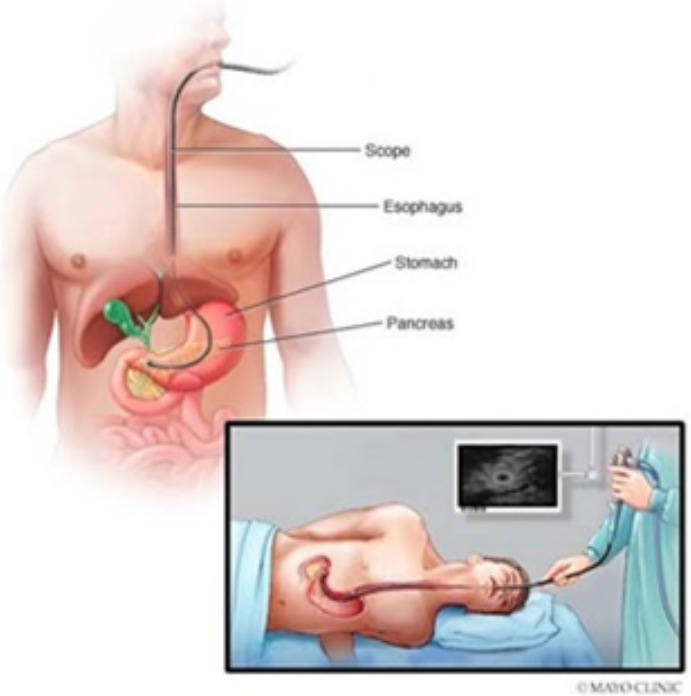
Pancreas Cancer

Signs and Symptoms

- Abdominal pain
- Jaundice
- Watery Stool
- Weight loss
- New onset diabetes

Work up

- CBC CMP CA19-9
- CT Chest/abdomen/Pelvis
- Endoscopic US
- +/- PET
- Staging laparoscopy



Pancreas Cancer Simplified Approach

Name it: EUS or biopsy of metastatic deposit

Stage it: CT +/-MR +/-PET

Resectable

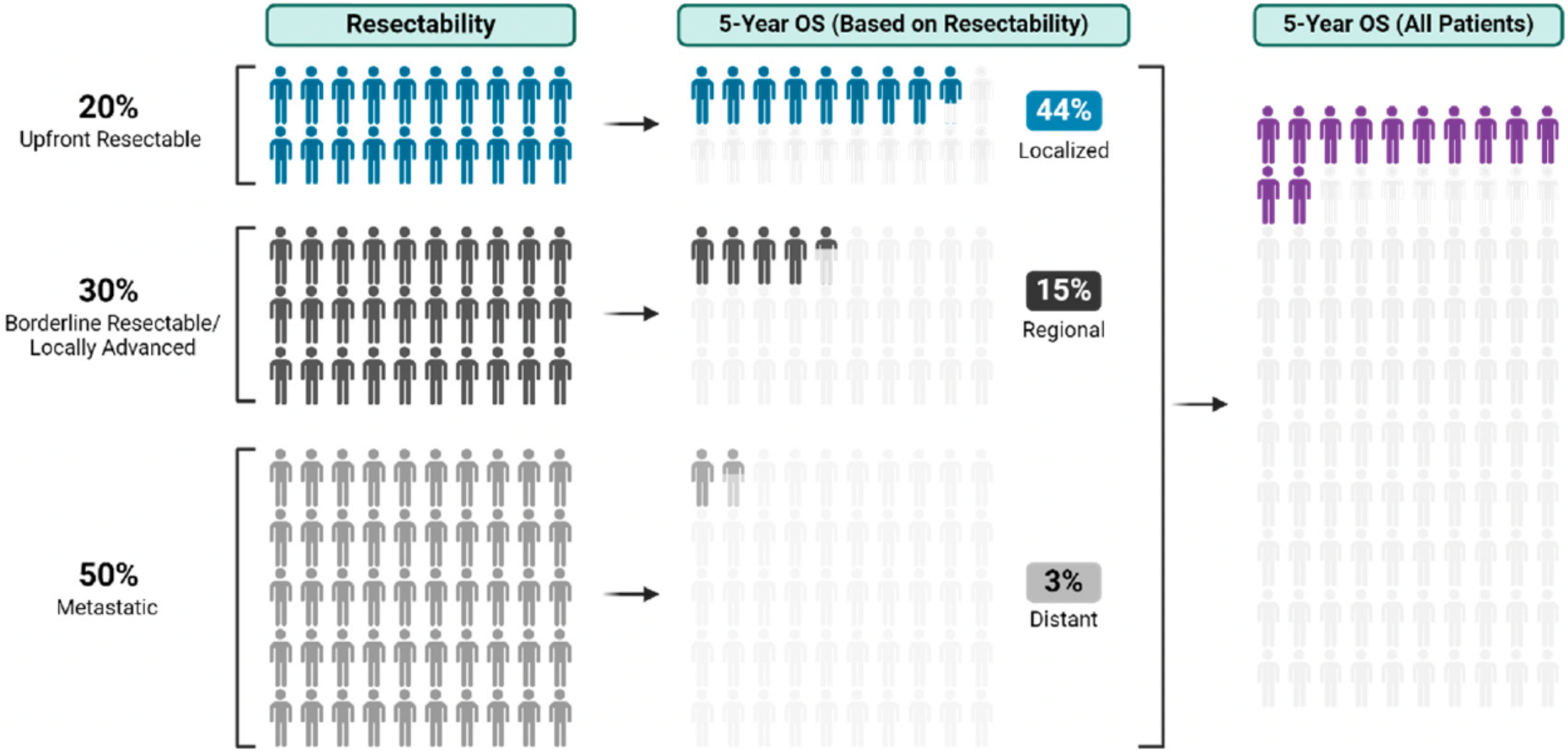
Borderline Resectable

Locally Advanced

Metastatic

Treat it: Surgery, Chemotherapy, Radiation, Other REGIONAL therapies

Surgical Perspective: How you show up matters



Muaddi H *Current Oncol* 2024

Criteria for Resectability : NCCN

Classification	Arterial	Venous	Other
Resectable	No involvement of the celiac artery, superior mesenteric artery, common hepatic artery	Up to 180 degrees of noncompressive/invasive contact with the superior mesenteric vein or portal vein, if reconstructable.	
Borderline resectable	Up to 180 degrees of abutment of the celiac artery, superior mesenteric artery	Encasement of the superior mesenteric vein or portal vein that still permits reconstruction; contact with the inferior vena cava	CA19-9 > 500 units/mL
Locally advanced	Encasement (>180 degrees) of the celiac artery, superior mesenteric artery. Involvement of the aorta	Venous structure involvement that is not amenable to reconstruction	

IF THERE IS NO METASTATIC DISEASE :
RESECTABILITY DEPENDS ON ***EXTENT OF VASCULAR INVOLVEMENT***

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Classification	Arterial
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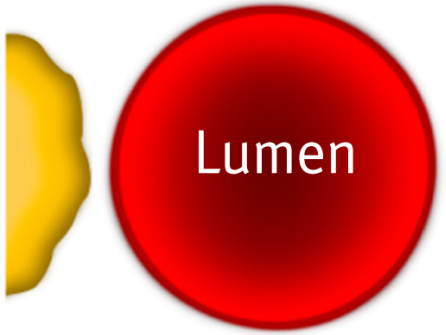
Locally advanced	Encasement (>180 degrees) of the celiac artery, superior mesenteric artery. Involvement of the aorta

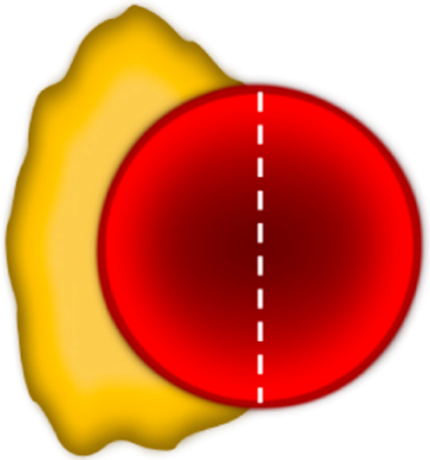
No tumor contact

"Resectable"



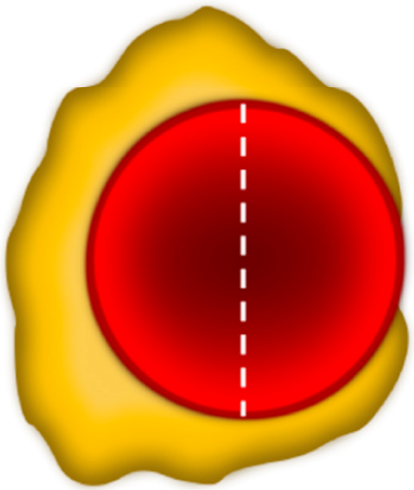
Abutment (≤ 180˚)

"Borderline Resectable"



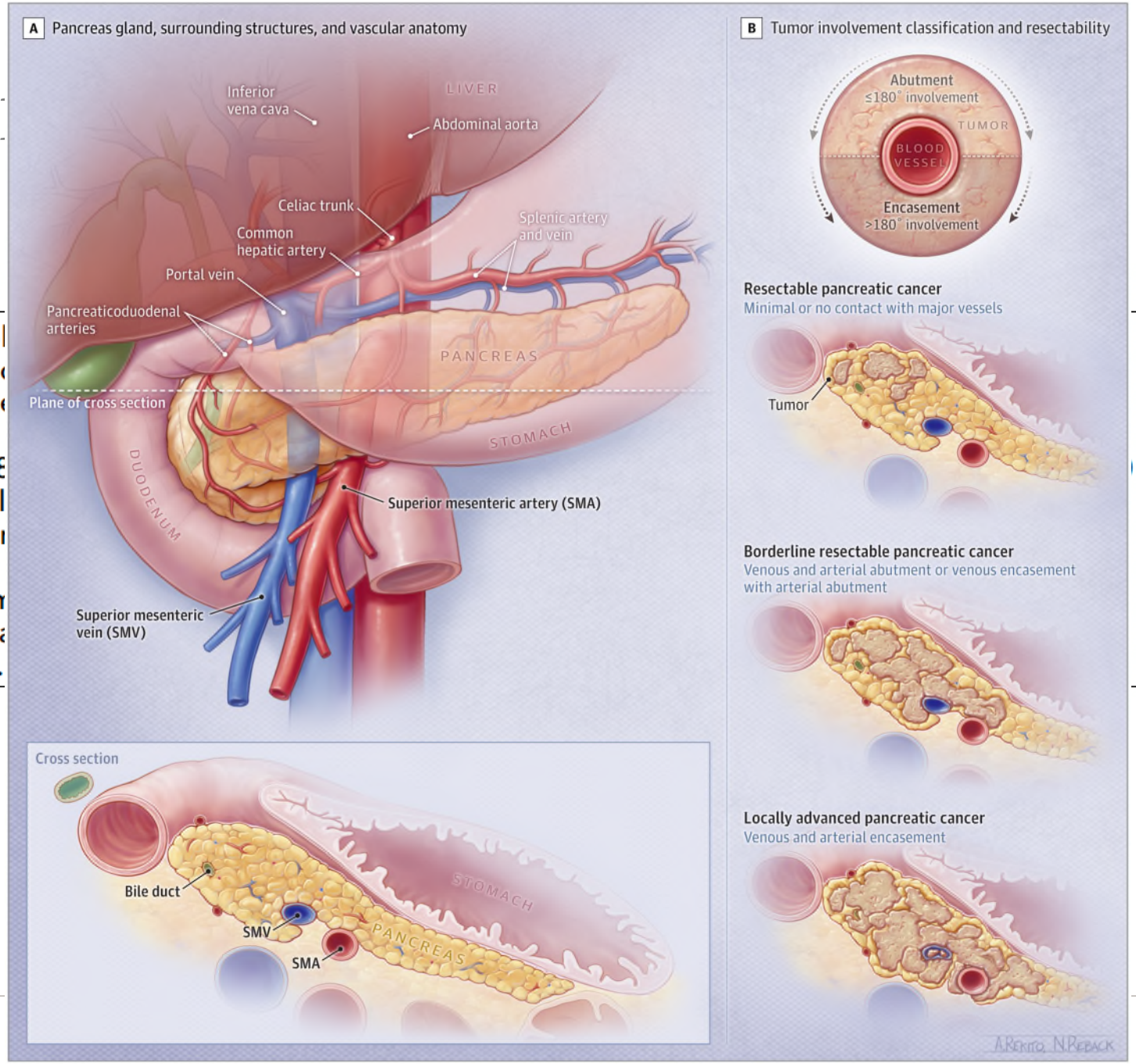
Encasement (> 180˚)

"Unresectable"



Criteria fo

Classification	Arterial	
Resectable	No invol superi mon h	
Borderline resectable	Up to 18 the cel teric ar	units/mL
Locally advanced	Encasem celiac a artery.	



Further Anatomical Classification of LAPC

Table 1. Comparison of Definitions Used for Borderline Resectable and Locally Advanced Pancreatic Adenocarcinomas and Proposed Classification (at time of diagnosis) of Locally Advanced Disease Into Types A and B Based on Potential for Resection After Induction Chemotherapy and Chemoradiotherapy

Vascular Structures Determining Disease Stage for Localized Pancreatic Cancer	Borderline Resectable	Locally Advanced	
		Type A 62%	Type B 24% LIKELIHOOD of SURGERY EVER
May be considered for resection after neoadjuvant therapy	Yes	Yes	No
Tumor–artery anatomy			
SMA (usually pertains to tumor of pancreatic head or uncinate)	≤ 180° (abutment)	> 180° encasement but ≤ 270°	> 270°
Celiac artery (usually pertains to tumor of pancreatic body)	≤ 180° (abutment)	> 180° but does not extend to aorta and amenable to celiac resection (± reconstruction)	> 180° and abutment/encasement of the aorta
HA (usually pertains to tumor of pancreatic neck or head)	Short-segment abutment or encasement without extension to celiac artery or HA bifurcation	> 180° encasement with extension to celiac artery and amenable to vascular reconstruction	> 180° encasement with extension beyond bifurcation of proper HA into right and left hepatic arteries
Tumor–vein anatomy			
SMV-PV	> 50% narrowing of SMV, PV, SMV/PV, or short-segment occlusion, with distal and proximal targets for reconstruction	Occlusion without option for reconstruction; it would be unusual to have situation where cavernous transformation of portal vein (which cannot be reconstructed; without a suitable distal [SMV] or proximal [PV] target for reconstruction) became operable	

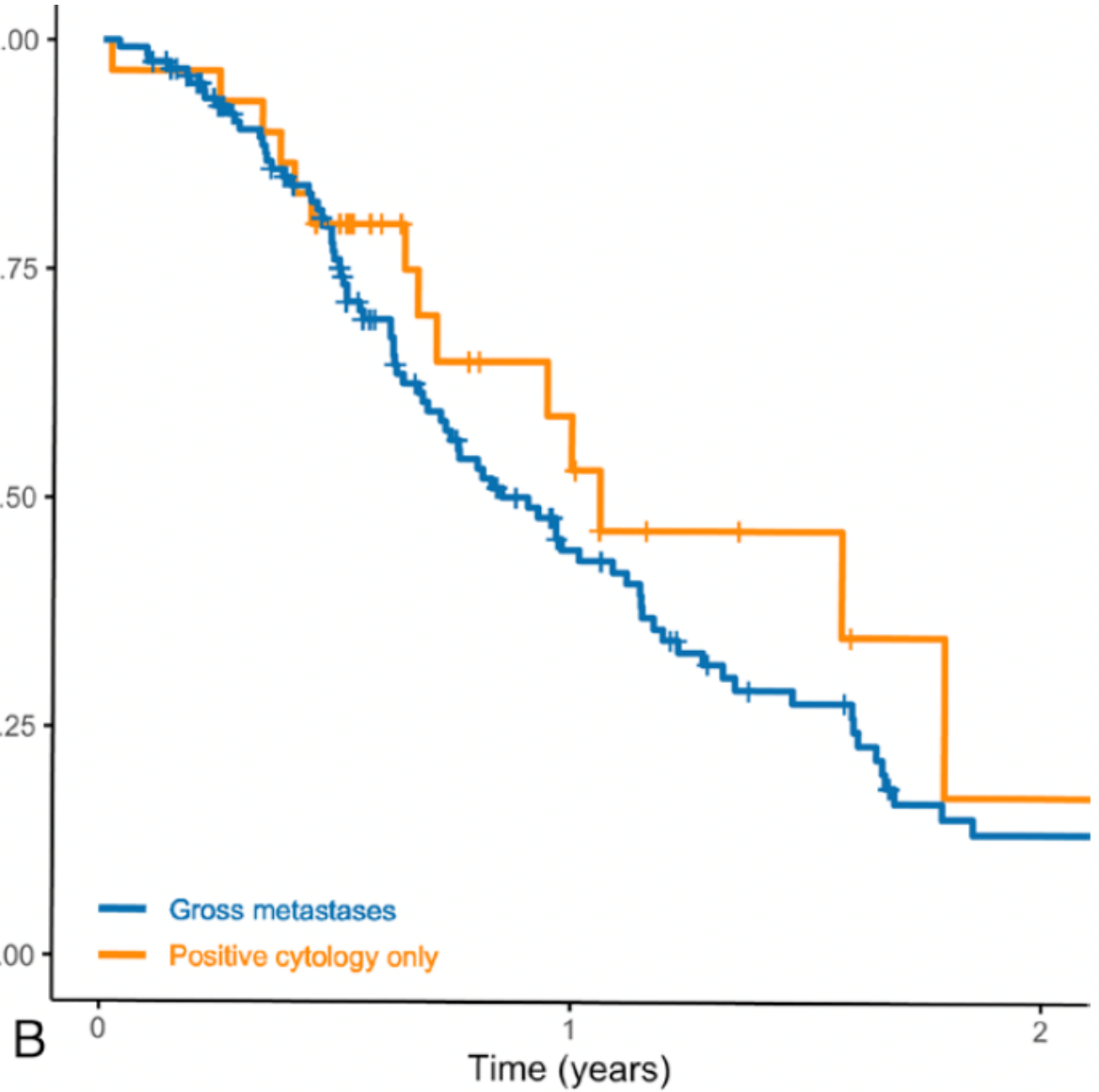
Abbreviations: HA, hepatic artery; PV, portal vein; SMA, superior mesenteric artery; SMV, superior mesenteric vein.

Tsai S J Onc Practice 2016

Deemed Border anced

Staging Laparoscopy?

- Mayo Clinic 1000 pts -diagnostic l visible disease or (+) peritoneal wa Gudmundsdottir H. *J Am C*
- Treatment naïve 23% (+), post che
- Argument for: determine M1 disea waste of full OR day if laparoscopy resection time
- Argument against: doesn't change systemic therapy, may delay initiat additional anesthetic risk



on Risk Factors

Rate of positive laparoscopy, %
1.6
2.5
11
21
42

ion, size >2 cm, and elevated serum

tors: Age<60
body/tail
>2 cm
elevated CA 19-9

Generalized algorithm

1. Systemic therapy: FOLFIRINOX or Gemcitabine/Abraxane
2. Re-asses with CT and CA19-9 after 2 months -4 cycles FOLFIRINOX or 2 cycles of Gem/Abraxane
3. Either imaging response, stable disease, CA19-9 response – determine if margin may still be an issue
4. Plan: 2 months of systemic therapy, reimage, chemoradiation or SBRT then surgery
5. After recovery-plan for 2 more months of systemic therapy to complete total 6 months

CA19-9 Response to First-Line Neoadjuvant FOLFIRINOX and Second-Line Gemcitabine/Nab-Paclitaxel for Patients with Operable Pancreatic Cancer

Ann Surgical Oncology 2023

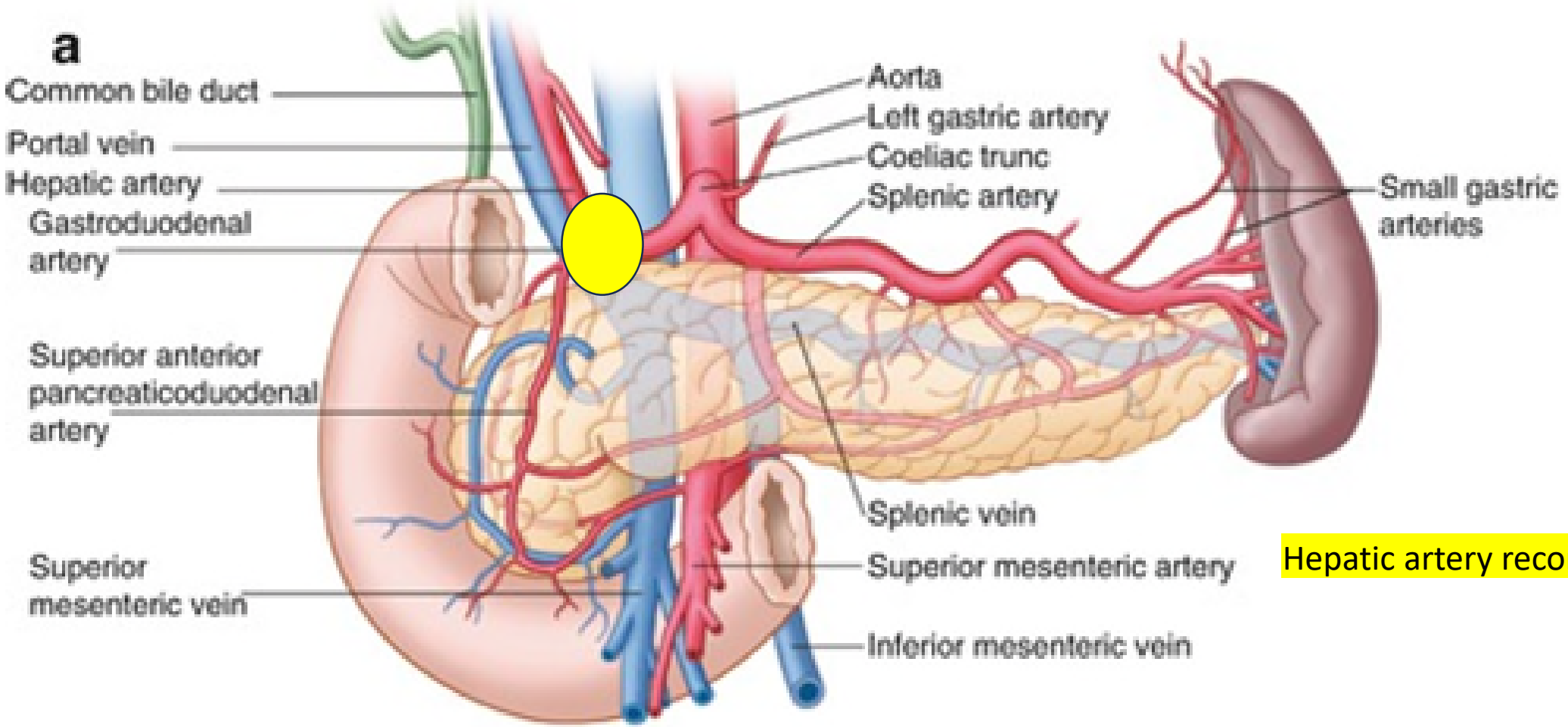
Sam Z. Thalji, MD[1], Mandana Kamgar, MD, MPH[2], Ben George, MD[2], Mohammed Aldakkak, MD[1], Kathleen K. Christians, MD[1], Callisia N. Clarke, MD, MS[1], Beth A. Erickson, MD[3], William A. Hall, MD[3], Parag P. Tolat, MD[4], Zachary L. Smith, DO[5], Douglas B. Evans, MD[1], and Susan Tsai, MD, MHS[1]

- 2011-2020 185 potentially resectable PDAC patients
- Decrease (>50% CA19-9) or normalization of CA19-9 important prognostic factor
- Assess CA19-9 response in those who had 2 mo FFX and either continued FFX or were switched to Gem/Nab-paclitaxel
- 2 months FOLFIRINOX- 39% had CA19-9 response continued 2 additional months then 28 fractions CRT then surgery
- 61% did not have CA19-9 response- of these 41% switched to Gem/Nab-paclitaxel –of these who switched 96% responded

IMPORTANT TO TEMPER EXPECTATIONS IN PATIENTS RECEIVING NEOADJVUANT THERAPY!

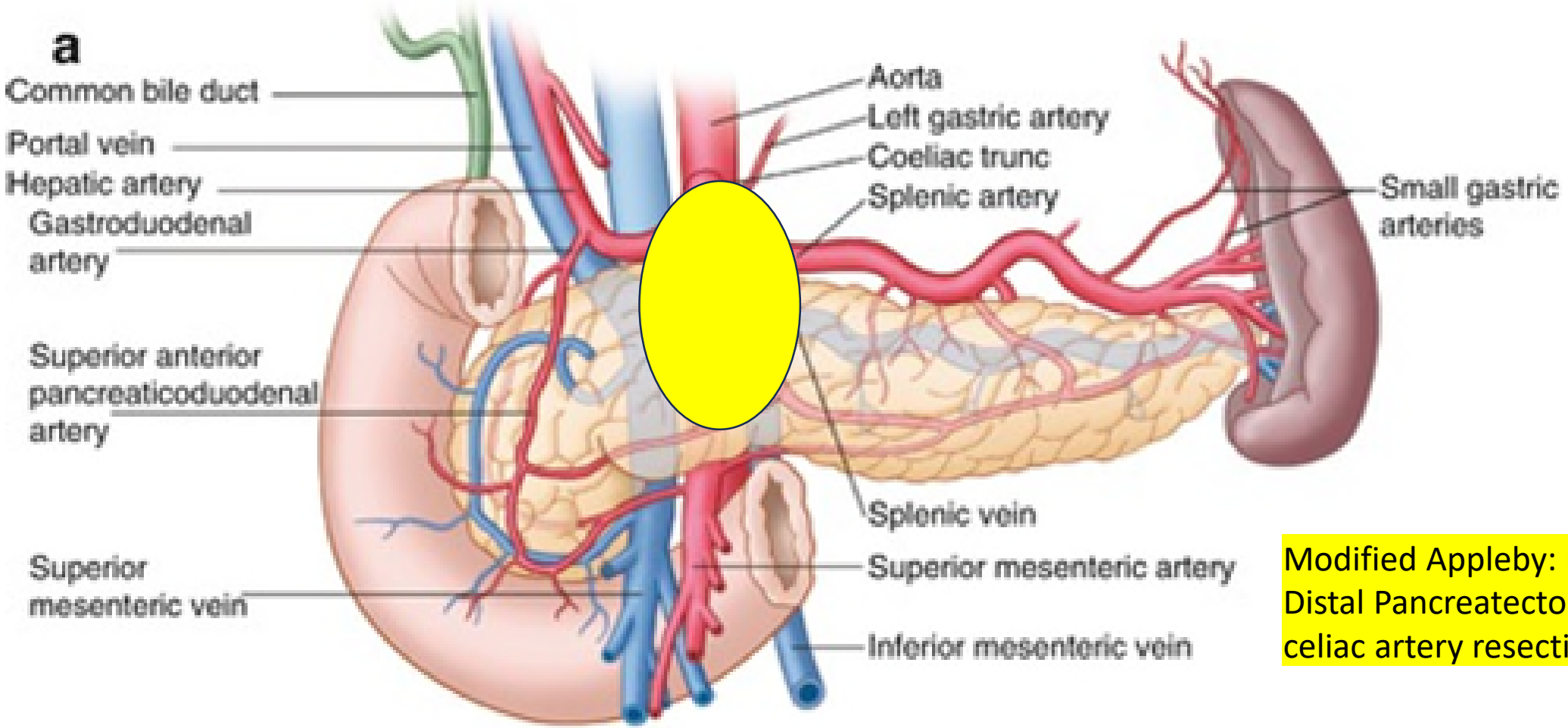
**** only applies to the 80% of patients that produce CA19-9***

Planning Surgical Resection Based on Tumor Location



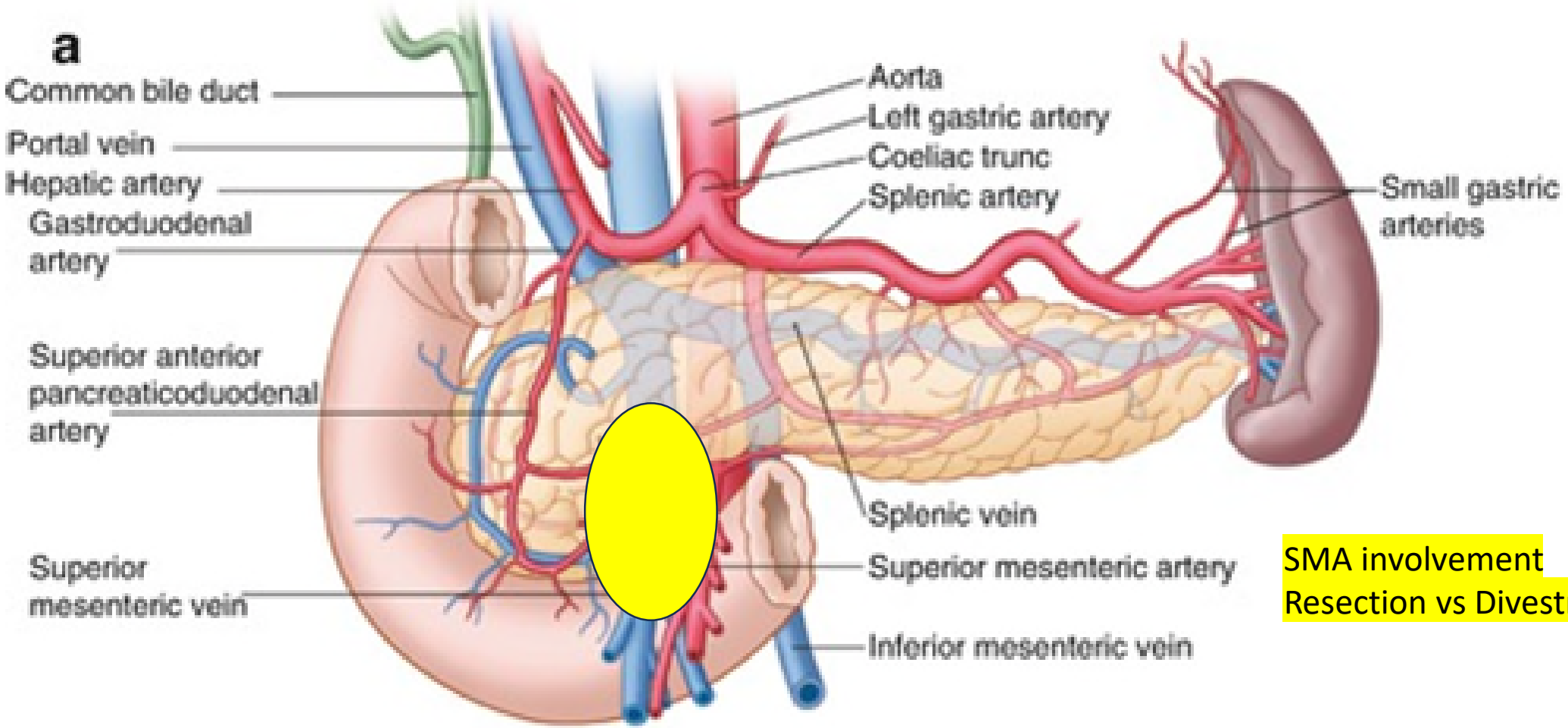
Hepatic artery reconstruction

Planning Surgical Resection Based on Tumor Location



Modified Appleby: DP-CAR
Distal Pancreatectomy with celiac artery resection

Planning Surgical Resection Based on Tumor Location



SMA involvement
Resection vs Divestment

Arterial Resection-Perioperative Outcomes and Long Term Outcomes

- N=236 1993-2023
- R0 Resection: 66%
- Median Survival: 20.9 mo (most recent cohort OS 26.9 mo)
- 30 d mortality 7%
- 90 d mortality 9.5%

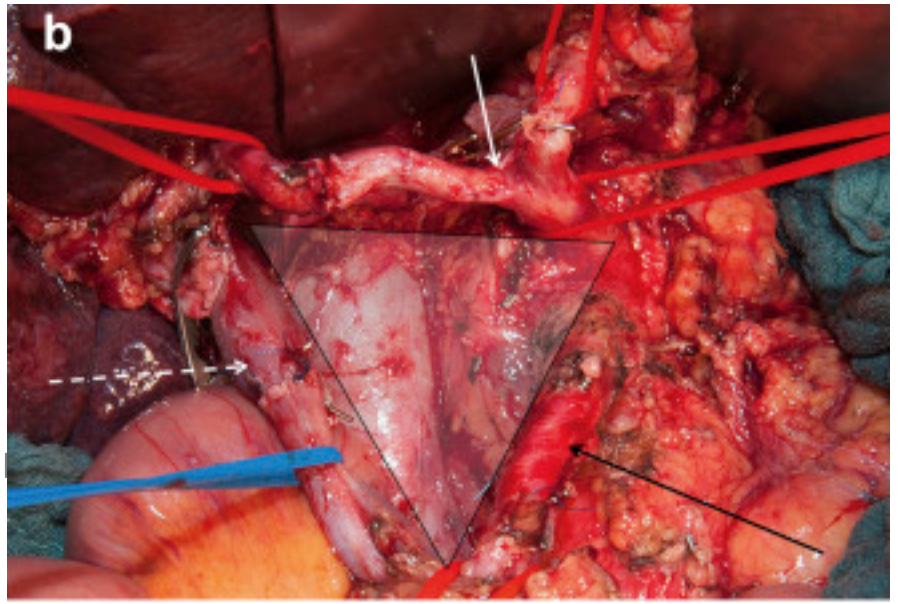
Napoli N *Int J Surgery* 2024

ORIGINAL ARTICLE

Surgery for Borderline Resectable and Locally Advanced Pancreatic Cancer with Arterial Encasement after Neoadjuvant Therapy

A Single-center Experience

Ishida H *Annals of Surgery* 2025



- Pancreatic cancer with arterial encasement >180 degrees who underwe resection after neoadjuvant therapy
  - Patients with abutment <180 degrees were excluded
  - Included the SMA, celiac, hepatic artery, or replaced hepatic artery
- Artery first approach, if no ingrowth into the artery, divestment was attempted, if not possible, arterial resection and reconstruction was performed
  - Complete dissection of the triangle was performed (tissue between CA, SMA, portomesenteric confluence)
- N=85 arterial encasement, 61/85 patients underwent resection
  - 47 arterial divestment (MOS 21.8 months), 14 resection (MOS 21.2 months)
  - No difference in R0 resection rate= 70.5%
- 5-year survival 22.1% and 90-day mortality 4.9%

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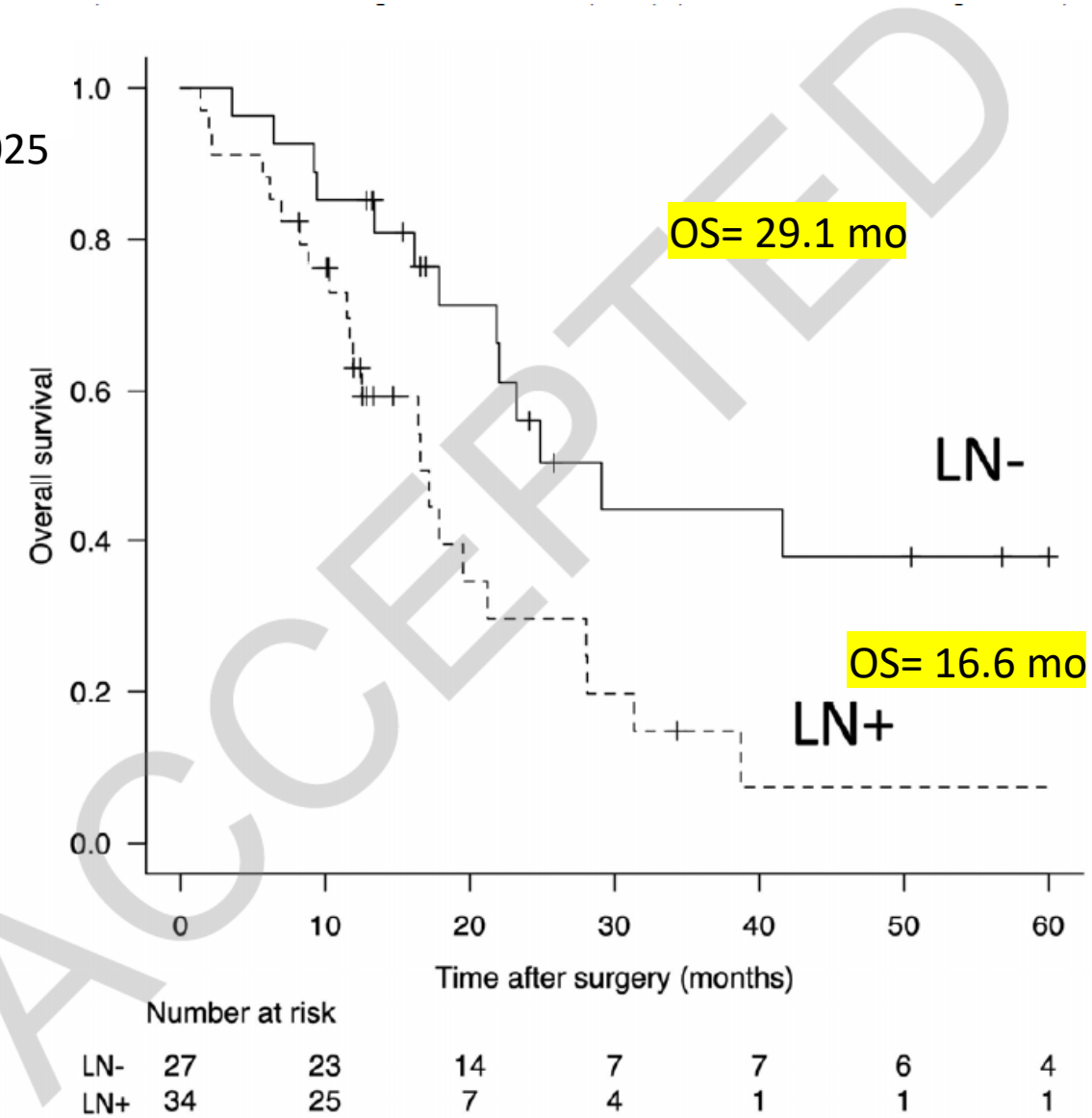
BIOLOGY REMAINS KING

5-year survival:

37.8% (LN-) vs 7.4% (LN+)



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Thank You!