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Systemic Therapies for Advanced Gastroesophageal Cancers: An Evolving Treatment Landscape

Kelsey S. Lau-Min, MD, MSCE Massachusetts General Hospital Cancer Center Harvard Medical School

Disclosures

- Employment GlaxoSmithKline (IF)
- Stock GlaxoSmithKline (IF)

Learning objectives

- Understand the importance of timely biomarker testing to guide treatment decision-making in advanced gastroesophageal cancers
- Review guideline-recommended systemic therapy options for HER2-negative and HER2-positive gastroesophageal cancers
- Explore emerging molecularly informed approaches in the management of advanced gastroesophageal cancers



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Overview of Advanced GE Cancers

Prognosis for advanced GE cancers is dismal



Incidence



5-year survival

Treatment for advanced GE cancers is rapidly evolving



Timely biomarker testing is essential



- At minimum:
- HER2/ERBB2
- PD-L1
- MMR/MSI
- Also consider:
- FGFR2b
- CLDN18.2
- And others

Courtesy of Samuel Klempner, MD



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Approach to HER2-Negative GE Cancers





а	Median overall survival (month)		
Population	Nivolumab plus chemotherapy	Chemotherapy	Unstratified HR for death (95% CI)
Overall (n = 1,581)	13.8	11.6	0.78 (0.70, 0.87)
PD-L1 CPS <1 (<i>n</i> = 265)	13.1	12.5	• 0.95 (0.73, 1.24)
PD-L1 CPS ≥1 (<i>n</i> = 1,297)	13.8	11.3	0.74 (0.66, 0.84)
PD-L1 CPS <5 (<i>n</i> = 607)	12.4	12.3 —	• 0.94 (0.79, 1.11)
PD-L1 CPS ≥5 (<i>n</i> = 955)	14.4	11.1	0.69 (0.60, 0.79)
PD-L1 CPS <10 (<i>n</i> = 795)	12.4	12.5 —	• 0.91 (0.78, 1.06)
PD-L1 CPS ≥10 (<i>n</i> = 767)	15.0	10.9	0.66 (0.56, 0.77)
		0.5	$1 \longrightarrow 2$
OS henefit n	ersists after e	Nivo + chemo bette	er Chemo better

C)



2L: Paclitaxel + ramucirumab (RAINBOW)



Second-Line or Subsequent Therapy Dependent on prior therapy and PS
Preferred Regimens • Ramucirumab and paclitaxel (category 1) ⁴³ • Fam-trastuzumab deruxtecan-nxki for HER2 overexpression positive adenocarcinoma ⁴⁴ • Docetaxel (category 1) ^{37,38} • Paclitaxel (category 1) ^{33,34,45} • Irinotecan (category 1) ⁴⁵⁻⁴⁸ • Fluorouracil ^{a,i} and irinotecan ^{46,49,50} • Trifluridine and tipiracil for third-line or subsequent therapy (category 1) ⁵¹
Other Recommended Regimens • Ramucirumab (category 1) ⁵² • Irinotecan and cisplatin ^{20,53} • Fluorouracil and irinotecan + ramucirumab ^{a,i,54} • Irinotecan and ramucirumab ⁵⁵ • Docetaxel and irinotecan (category 2B) ⁵⁶



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Approach to HER2-Positive GE Cancers









HER2 loss on IHC occurs in 20-60% of patients after trastuzumab

2L: Trastuzumab deruxtecan (DESTINY-Gastric01 and Gastric02)



Consider starting at 5.4 mg/kg -> 6.4 mg/kg Pneumonitis in 6-10% can be life-threatening

Trastuzumab deruxtecan in HER2-low disease



Second-Line or Subsequent Therapy Dependent on prior therapy and PS
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No clear role for trastuzumab beyond progression



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Additional Molecularly Informed Approaches

1L bemarituzumab in FGFR2b-positive tumors (FIGHT)



1L bemarituzumab in FGFR2-positive tumors (FIGHT)



CLDN18.2-positive tumors (SPOTLIGHT)

survival (%)

Probability of overall

CLDN18.2:

- Structural component of intercellular tight junctions

- Not routinely expressed outside gastric

mucosa

Zolbetuximab: anti-CLDN18.2 mAb

Chemo backbone: FOLFOX



CLDN18.2-positive tumors (GLOW)



AE: nausea, vomiting, decreased appetite

Additional tumor-agnostic approvals

- BRAF V600E alterations -> dabrafenib/trametinib
- NTRK fusions -> entrectinib, larotrectinib
- RET fusions -> selpercatinib



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Final Thoughts

Multidisciplinary supportive care is crucial

Only **38-55%** of patients in 1L phase III trials get to 2L therapy

- Physical symptom burden
- Malnutrition
- Malignant ascites
- Declining performance status



Take-home messages

- Timely biomarker testing is of utmost importance to guide treatment decision-making in advanced gastroesophageal cancers
- First-line systemic therapy has rapidly evolved in recent years and now includes the integration of immune checkpoint inhibitors for both HER2-negative and HER2-positive disease
- Additional advances in systemic therapy have centered around targeted therapy approaches, including for HER2, FGFR2, and CLDN18.2-positive disease
- Multidisciplinary supportive care is critical for all patients with advanced gastroesophageal cancer

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Current Management of localized Gastric Cancer: Surgery to Molecular-Directed Therapy

Mitchell C. Posner M.D., FACS Thomas D. Jones Professor and Vice Chairman Chief, Section of General Surgery and Surgical Oncology Physician-in-Chief, University of Chicago Medicine Comprehensive Cancer Center

Disclosures

Nothing to disclose

Gastroesophageal Cancer



Esophageal vs. Gastric Adenocarcinoma 7th edition 2010 AJCC/UICC Staging

Operative Standards For Cancer Surgery

Volume 2

Esophagus, Melanoma, Rectum, Stomach, Thyroid

🔹 Wolters Kluwer



AMERICAN COLLEGE OF SURG Inspiring Quality: Highest Standards, Better Outcomes

Surgical Rx Gastric Cancer

- Intraoperative staging
- Resection of the primary tumor
 - Partial & total gastrectomy
 - Total vs. Proximal for GEJ tumors
 - MIS gastrectomy
- Assessment of surgical margins
- Regional lymphadenectomy
- Reconstruction of the GI tract
Key Questions:

Surgical Rx Gastric Cancer

- In patients with localized and resectable gastric cancer, what is the optimal extent of lymph node dissection—D1 versus D2 versus D3—and what are the optimal indictors for morbidity, mortality, and long-term outcomes in gastrectomy?
- For gastroesophageal junction (GEJ) cancers, does an "esophageal" or "gastric" surgical approach offer better perioperative and oncologic outcomes?

Effect of Laparoscopic Distal Gastrectomy vs Open Distal Gastrectomy on Long-term Survival Among Patients With Stage I Gastric Cancer The KLASS-01 Randomized Clinical Trial



Long-Term Outcomes of Laparoscopic Distal Gastrectomy for Locally Advanced Gastric Cancer: The KLASS-02-RCT Randomized Clinical Trial



Laparoscopic vs Open Distal Gastrectomy for Locally Advanced Gastric Cancer Five-Year Outcomes From the CLASS-01 Randomized Clinical Trial

A All stages

1.00

CONCLUSIONS AND RELEVANCE This study found that laparoscopic distal gastrectomy with D2 lymphadenectomy performed by experienced surgeons in high-volume specialized institutions resulted in similar 5-year overall survival compared with open distal gastrectomy among patients with locally advanced gastric cancer.



Resection of the primary tumor

Surgical Rx Gastric Cancer

MIS gastrectomy

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- recommendation: Minimally invasive surgery is a suitable alternative to open surgery for cases including but not limited to early and distal gastric cancer. Minimally invasive gastrectomy for advanced gastric cancer requiring total gastrectomy when a surgeon's expertise is adequate. Robotic surgery for gastric cancer has been suggested to be noninferior to laparoscopic surgery
 - Randomized controlled trials, large retrospective studies
 - Strong recommendation, high-quality evidence

Regional Lymphadenectomy D2 Lymph Node Dissection



Surgical Rx Gastric Cancer

- Regional Lymphadenectomy
 - Recommendation: At least 16 regional lymph nodes should be removed and examined at gastrectomy. A D2 dissection is the minimum lymph node dissection that would enable routine resection and assessment of at least 16 regional nodes
 - Prospective trials and metaanalyses
 - strong recommendation, high quality evidence

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Key Questions:

Surgical Rx Gastric Cancer

- In patients with localized and resectable gastric cancer, what is the optimal extent of lymph node dissection—D1 versus D2 versus D3—and what are the optimal
 - D2 lymph node dissection preserving the pancreas and spleen should be considered standard for optimal staging and treatment (GRADE, 2A). Extended lymph node dissections beyond D2 should not be routinely performed, because they have been shown to lead to increased morbidity with no improvement in outcomes.

In patients with T1 tumors, advanced age, poor functional status, or multiple comorbidities, D1 or D1+ dissections may be considered.

Gastroesophageal Junction Classification



Key Questions:

Surgical Rx Gastric Cancer

 For gastroesophageal junction (GEJ) cancers, does an "esophageal" or "gastric" surgical approach offer better perioperative and oncologic outcomes?

The proximal and distant extent of the tumor greatly influences choice of operation. OS rates appear comparable for esophagectomy and gastrectomy. There are no statistically significant differences between R0 resection, lymph node yield, and perioperative results. Type I cancers be treated with esophagectomy and type III cancers be treated with extended gastrectomy. For type II cancers either an esophageal or a gastric surgical approach is reasonable. Trends Esophagectomy vs. Gastrectomy GEJ Adenocarcinoma – Siewert Type II



Esophagectomy vs. Gastrectomy Overall Survival Siewert Type II



Esophagectomy vs. Gastrectomy 3 year Overall Survival



Jezerskyte E, Ann Surg 2021 18

Esophagectomy vs. Gastrectomy Overall Survival



FIG. 1 Overall survival of patients with a resectable adenocarcinoma of the GEJ treated with an esophagectomy or gastrectomy

Esophagectomy vs. Gastrectomy Overall Survival

Oesophagector		ctomy	Gastrectomy		Odds Ratio Weight M-H, Fixed, 95% Cl		Odds Ratio M-H, Fixed, 95% Cl	
Study or Subgroup	Events Total		Events Total					
Blank 2018	13	56	37	186	2.6%	1.22 [0.59, 2.49]		
Chen 2022	2917	6599	107	504	22.3%	2 94 [2 36, 3 66]	-	
Kamarajah 2021	224	999	1685	8595	54.7%	1.19 [1.01, 1.39]		
Parry 2014	49	155	4	21	1.0%	1.96 [0.63, 6.15]		
Reddavid 2019	7	121	5	49	1.3%	0.54 [0.16, 1.79]		
Slewert 2000	12	33	72	173	2.9%	0.80 [0.37, 1.73]		
Tosolini 2019	36	91	84	179	6.9%	0,74 [0.44, 1.24]		
Voron 2019	14	119	9	64	2.1%	0.81 [0.33, 2.00]		
Xing 2020	17	28	24	28	1.9%	0.26 [0.07, 0.95]		
Zheng 2010	100	284	19	47	4.2%	0.80 [0.43, 1.51]		
Total (95% CI)		8485		9846	100.0%	1.49 [1.34, 1.67]	•	
Total events	3389		2046					
Heterogeneity: Chi#:	= 70.44, df = 9	(P < 0.0	0001); F=	= 87%		E.	a de la de rad	
Test for overall effec	t: Z = 7.06 (P •	0.0000	1)			0.	Esophagectomy Gastrectomy	

Fig. 11 Five-year overall survival

Esophagectomy vs. Gastrectomy Surgery vs. Surgery + CRT or C



366 Esophageal and GEJ Cancer Patients 75% adeno Primary Endpoint: Median OS



- pCR: 49% in SCC group and 23% in AC group
- R0 resection rate: 88% v. 59% for ITT groups



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Shapiro, Lancet Oncol, 2015 23



Patterns of Failure

	Pre-op CRT	S Alone	P value
LRR	14%	34%	<.001
Peritoneal carcinomatosis	4%	14%	<.001
Hematogenous spread	29%	35%	.025

At 10 years, risk of distant relapse (with or without locoregional relapse) was lower in the CRT arm (HR, 0.61; 95%Cl, 0.45 to 0.84)

Neoadjuvant Chemotherapy: FLOT4 Trial

- Modern trial
- Perioperative FLOT4 v. ECF/ECX

R0 resection: 85% v. 78%

- 716 pts with GEJ and gastric cancers randomized
 - ECF/ECX 100-- FLOT 5 yr OS = 45% v. 36% 80 Overall survival (%) 60-MS = 50 mosMS = 35 mos40-20-HR 0.77 (95% Cl, 0.63-0.94) Log-rank p value=0.012 0 12 24 48 60 72 0 36

Survival: FLOT4 Trial v. CROSS



	CROSS		FLOT	
Location Esophagus GE junction Stomach	74% 22% 0%		0% 56% (33% Siewerts 2-3) 44%	
5-Year Relative Survival Gastric Cancer		100 90	5-Year Relative Survival Esophageal Cancer	
80 70 60 50 40		80 70 60 50 46.7 40	%	
30 20 10 0 1 coolized Begienel Dister	23.0%	30 20 10 0	25.1% 4.8% ized Regional Distant Unknown	
Stage	OINIOWI	Loodin	Stage	

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Neoadjuvant Chemo v. Chemoradiotherapy: NEOAegis

Neoadjuvant trial in Adenocarcinoma of the Esophagus and EG Junction International Study

377 Esophageal and GEJ Cancer Patients 100% adeno Primary Endpoint: OS Non-inferiority



	Peri-op Chemo	CROSS	p-value
pCR	5%	16%	0.001
RO	82%	95%	<0.001
LN negative	44.5%	60%	0.004

Neoadjuvant Chemo v. Chemoradiotherapy: NEOAegis



Conclusion

- No evidence that peri-operative chemotherapy is unacceptably inferior to multimodal therapy, notwithstanding greater proxy markers of local tumor response in the CROSS arm
- No significant difference in severity of complications or post-op mortality, no negative effects of pre-op chemoradiation
- Data support equipoise

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Reynolds JV, Proc ASCO, 2021 30

A randomized phase III trial comparing adjuvant single-agent S1, S-1 with oxaliplatin, and postoperative chemoradiation with S-1 and oxaliplatin in patients with nodepositive gastric cancer after D2 resection: the ARTIST 2 trial



Phase III Trial to Compare Adjuvant Chemotherapy With Capecitabine and Cisplatin Versus Concurrent Chemoradiotherapy in Gastric Cancer: Final Report of the Adjuvant Chemoradiotherapy in Stomach Tumors Trial, Including Survival and Subset Analyses



UGT1A1 genotype guided irinotecan dosing 'gFOLFIRINOX' for Gastric/GEJ cancer R0 Analysis: Surgical and pathology results

Surgical Results	CRT CROSS ⁵ (n=134 (AC))	ECF/ECX ⁴ (n=360)	FLOT ⁴ (n=356)	gFOLFIRINOX (n=36)
Proceeded to surgery		341 (95%)	345 (97%)	35 (97%)
Resection rate	122 (91%)*	314 (87%)	336 (94%)	35 (97%)
Rate of margin-free R0 resection ITT	110 (82%)*	279 (78%)	301 (85%)	32# (89%)
Type of surgery esophagogastrectomy gastrectomy (total & partial)	134 (100%)	98 (27%) 200 (56%)	109 (31%) 208 (58%)	23 (66%) 12 (34%)
Mean # of LN removed (25%; 75% Quartile)	15	25 (19; 33)	24 (18; 32)	24 (19; 28)
ypT-stage ≤T1 T2 T3 T4 Tx	Not reported	53 (15%) 44 (12%) 175 (49%) 47 (13%) 41 (11%)	88 (25%) 44 (12%) 165 (46%) 37 (10%) 22 (6%)	12 (33%) 4 (11%) 17 (47%) 3 (8%)
ypN-stage NO N1 N2 N3 Nx	Not reported	146 (41%) 44 (12%) 54 (15%) 73 (20%) 43 (12%)	174 (49%) 55 (16%) 47 (13%) 57 (16%) 23 (7%)	19 (53%) 5 (14%) 6 (17%) 6 (17%)

Adjuvant Immunotherapy: Checkmate 577





Conclusions

- Adherence to operative standards, not unlike chemotherapy and RT standards, are essential for an optimal outcome
- Choice of operative approach (open, MIS, robotic) does not affect oncologic outcomes
- Peri-operative FLOT addresses the highest risk for recurrence in gastroesophageal adenocarcinomas distant spread

Conclusions

- Incorporating chemoradiotherapy into neoadjuvant regimen can improve local control parameters
- Total neoadjuvant therapy, chemotherapy + CRT addresses micrometastatic disease and local control
- Addition of adjuvant Nivolumab may address the need for more systemic control

MSI in Gastric Cancer



FREQUENTLY ALTERED GENES:

-cell cycle progression/regulation (TP53, IGFIIR, TCF4) [2]

-DNA integrity maintenance (hMSH6, hMSH3, MED1, RAD50, BLM, ATR, MRE11) [2]

-chromatin remodeling, cell death (RIZ, BAX, CASPASE5, FAS, BCL10, APAF1, ARID1A) [2,51]

-major histocompatibility complex class I genes (B2M, HLA-B) [43]

-mitotic network (AURKA A/B, E2F, FOXM1, PLK1, MYC activation targets) [2]

-signal transduction (EGFR, KRAS, PIK3CA, MLK3) [44-47,49,50]

-negative regulator of the Wnt pathway (RNF43) [52]

-micro RNA processing machinery (AGO2, TNRC6A) [53]

MSI in Gastric Cancer



MSI Biomarker in Gastric Cancer Prognostic



MSI Biomarker in Gastric Cancer Predictive



TremelImumab and Durvalumab Combination for the Non-OperatIve Management (NOM) of Microsatellite InstabiliTY (MSI)-High Resectable Gastric or Gastroesophageal Junction Cancer: The Multicentre, Single-Arm, Multi-Cohort, Phase II INFINITY Study



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TremelImumab and Durvalumab Combination for the Non-OperatIve Management (NOM) of Microsatellite InstabiliTY (MSI)-High Resectable Gastric or Gastroesophageal Junction Cancer: The Multicentre, Single-Arm, Multi-Cohort, Phase II INFINITY Study



• 18 patients MSI/dMMR resectable cT2-4 any N gastric or GEJ cancer



- pCR 60% (major/complete response 80%)
- All pts with pCR had negative ctDNA pre-surgery

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Conclusions

- Surgery: dealer's choice
- Neoadjuvant therapy: dealer's choice
- Immunotherapy: promising
- Individualized approach: the future and a necessity

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Thank You



