With Esophageal Cancer, When Is Prophylactic TEVAR Indicated To Prevent An Aorto-Esophageal Fistula: It Improves Palliation But Does It Improve Survival

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Disclosure

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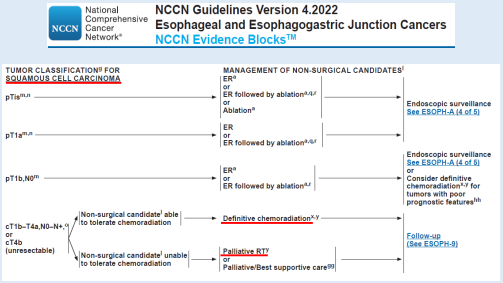
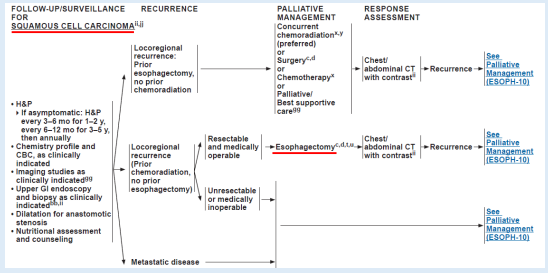
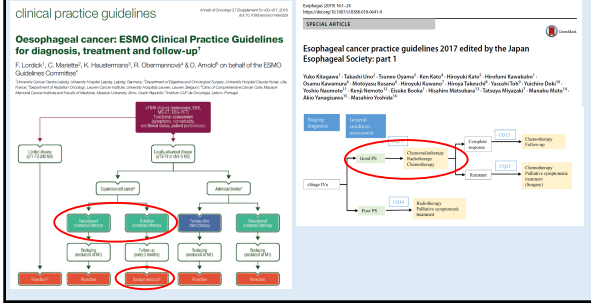
■ I do not have any potential conflict of interest

Aorto-esophageal fistula

- Most common causes
  - Thoracic aortic aneurysm
  - ingestion of a foreign body
  - advanced esophageal cancer
- Chiari triad
  - midthoracic pain
  - sentinel arterial hemorrhage
  - final exsanguination
    - it is unpredictable with the symptom free interval

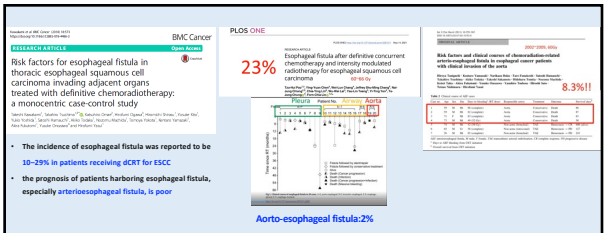






Advanced esophageal cancer

- Definite or palliative or neoadjuvant chemoradiation therapy (CCRT) is the standard treatment
  - Incidence of aortoesophageal fistula (AEF) after CCRT for locally advanced esophageal cancer?
  - What is the role and risk/benefits of TEVAR procedure?

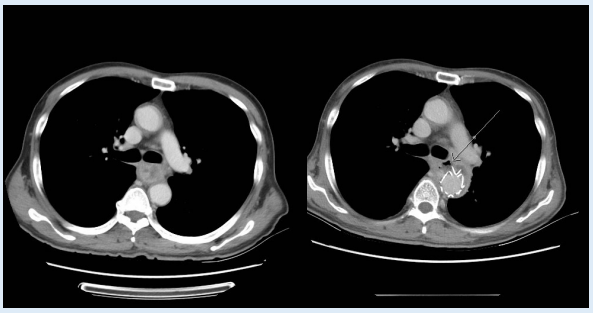


- The incidence of esophageal fistula was reported to be 10–29% in patients receiving dCRT for ESCC
- the prognosis of patients harboring esophageal fistula, especially arterioesophageal fistula, is poor

Aorto-esophageal fistula:2%

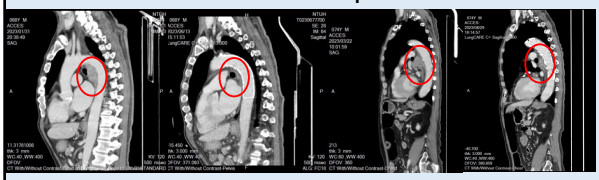
Lethal Fistula after CCRT

- Airway or Pleural fistula: 20%
- Aorto-esophageal fistula: 2-8%
  - Mortality is 100% if untreated

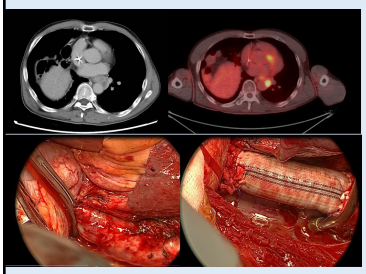


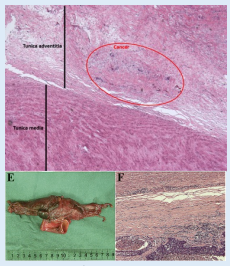
Purpose of prophylactic TEVAR

- Cover the site of advanced esophageal cancer invasion
- Prevent catastrophic AEF after CCRT related tumor necrosis
- Facilitate further curative resection if possible



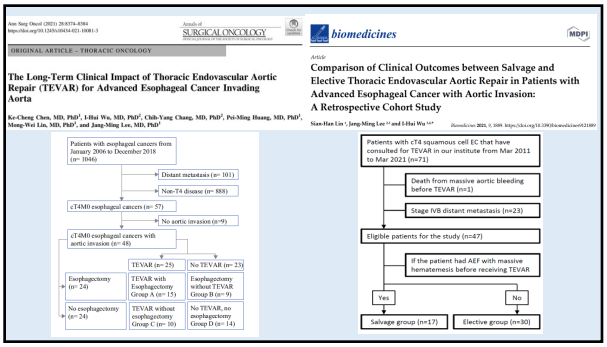
Local advanced esophageal cancer with aortic invasion





The involved aorta is diseased

Ann Thorac Surg 2014;97:460–6



Ann Surg Oncol (2021) 28:8374–8384
https://doi.org/10.1245/s10434-021-10081-3
Annals of SURGICAL ONCOLOGY
ORIGINAL ARTICLE – THORACIC ONCOLOGY

The Long-Term Clinical Impact of Thoracic Endovascular Aortic Repair (TEVAR) for Advanced Esophageal Cancer Invading Aorta

TABLE 3 Univariate and multivariable analysis of correlation between clinical features and progression-free survival in esophageal cancer patients with aortic invasion

		Univariable			Multivariable		
		Progression HR	95% CI95% CI	*p*-value	Progression HR	95% CI	*p*-value
Age		0.975	0.929—1.024	0.312			
Sex, male		0.308	0.069—1.370	0.122			
ASA classification ≥3 ASA classification ≥3		1.313	0.588—2.936				
Smoking		0.354	0.140—0.896	0.028	0.528	0.189–1.477	0.224
Clinical N positive Clinical N positive		0.875	0.258—2.965	0.830			
Subgroups[a]	A	1		1			
	B/C	2.845	0.855—9.465	0.088	2.895	0.869—9.641	0.083
	D	5.283	1.687—16.546	0.004	4.371	1.333—14.333	0.015

Subgroups: (A): Esophagectomy with TEVAR; (B/C): TEVAR or esophagectomy only; (D) No TEVAR or esophagectomy

ASA American Society of Anesthesiologists, *HR* hazard ratio, *CI* confidence interval, *TEVAR* thoracic endovascular aortic repair

[a]Trend test for correlation between disease-free survival and subgroups showed $p = 0.003$ in univariate analysis and $p = 0.0.004$ in multivariable analysis

Esophagus (2020) 17:79–85
https://doi.org/10.1007/s10388-019-00686-7
ORIGINAL ARTICLE

Thoracic endovascular aortic repair for esophageal cancer invading the thoracic aorta: a questionnaire survey study

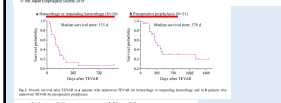
Masayuki Watanabe[1,2] · Masanobu Nakajima[1,3] · Katsunori Nishikawa[1,4] · Hiroyuki Kato[1,5] · Hisahiro Matsubara[1,6]

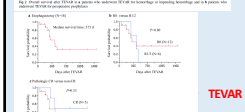
Received: 11 April 2019 / Accepted: 1 October 2019 / Published online: 5 October 2019

World J Surg (2018) 42:1551–1558
https://doi.org/10.1007/s00268-017-4334-7
ORIGINAL SCIENTIFIC REPORT

Result of Thoracic Endovascular Aortic Repair for Patients with Esophageal Cancer

Akira Matsumoto[1] · Yuji Kanaoka[1] · Takashi Baba[1] · Ren Takizawa[1] · Masayuki Hara[1] · Koji Maeda[1] · Katsunori Nishikawa[1] · Yutaka Suzuki[2] · Katsuhiko Yanagi[3] · Takao Ohki[3]





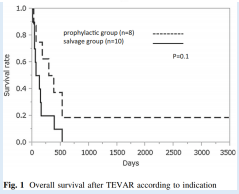
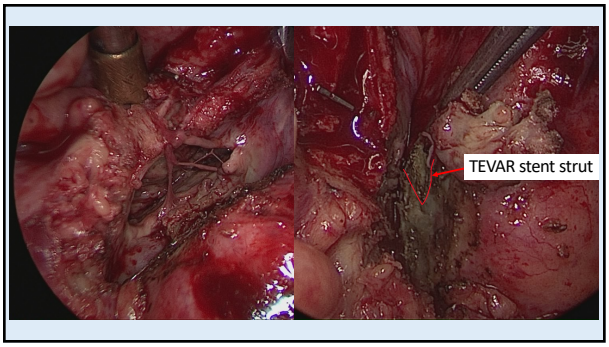
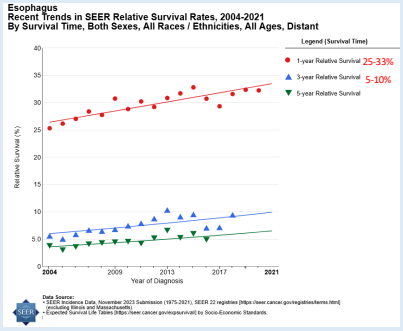


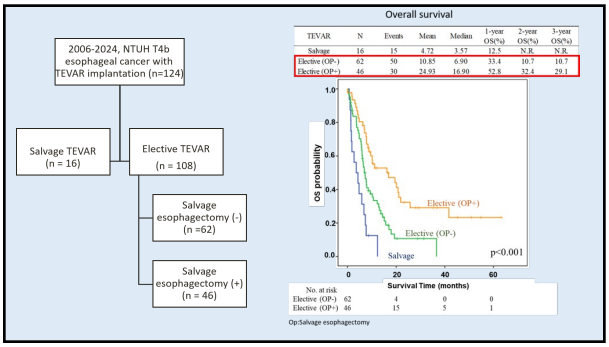
Fig. 1 Overall survival after TEVAR according to indication

TEVAR

- an efficacious modality to control a life-threatening hemorrhage from aortoesophageal fistula
- prolong the survival of patients with locally advanced esophageal cancer invading the aorta
- preoperative TEVAR is safe as it enables partial resection of the aortic wall without hemorrhagic events







Overall survival

TEVAR	N	Events	Mean	Median	1-year OS(%)	2-year OS(%)	3-year OS(%)
Salvage	16	15	4.72	3.57	12.5	N.R.	N.R.
Elective (OP-)	62	50	10.85	6.90	33.4	10.7	10.7
Elective (OP+)	46	30	24.93	16.90	52.8	32.4	29.1

No. at risk				
Elective (OP-)	62	4	0	0
Elective (OP+)	46	15	5	1

Op:Salvage esophagectomy

	Progression-free survival				Overall survival			
Variable	Univariate HR (95% CI)	p-value	Multivariate HR (95% CI)	p-value	Univariate HR (95% CI)	p-value	Multivariate HR (95% CI)	p-value
Age								
≤65	1		1		1		1	
>65	0.88(0.57-1.37)	0.579	0.96(0.60-1.53)	0.851	1.05(0.67-1.64)	0.830	1.10(0.68-1.79)	0.687
Gender								
Female	1		1		1		1	
Male	0.98(0.48-2.02)	0.953	0.78(0.37-1.65)	0.513	1.00(0.44-2.94)	0.996	0.89(0.38-2.09)	0.783
cN								
cN=0	1		1		1		1	
cN=1	1.25(0.43-3.68)	0.681	0.88(0.29-2.65)	0.822	1.16(0.39-3.45)	0.797	0.80(0.26-2.45)	0.700
cN=2	0.98(0.35-2.78)	0.974	0.73(0.25-2.09)	0.552	0.91(0.32-2.59)	0.862	0.73(0.25-2.12)	0.566
cN=3	1.84(0.66-5.15)	0.244	1.10(0.38-3.20)	0.867	1.59(0.56-4.48)	0.382	1.01(0.34-2.98)	0.983
cM								
cM=0	1		1		1		1	
cM=1	1.86(1.25-2.76)	0.002	1.86(1.11-3.12)	0.019	1.49(0.99-2.25)	0.056	1.17(0.68-1.99)	0.570
CCRT after TEVAR								
No	1				1			
Yes	0.79(0.49-1.27)	0.327			0.59(0.36-0.98)	0.040		
Group								
Salvage	1		1		1		1	
Elective (OP-)	0.59(0.33-1.04)	0.066	0.44(0.23-0.84)	0.012	0.42(0.23-0.76)	0.004	0.38(0.20-0.74)	0.005
Elective (OP+)	0.31(0.17-0.58)	<0.001	0.36(0.19-0.69)	0.002	0.19(0.10-0.37)	<0.001	0.21(0.11-0.41)	<0.001

Op:Salvage esophagectomy

Conclusion

- In patients with advanced esophageal cancer with aortic invasion
  - Prophylactic TEVAR before CCRT
    - feasible with low perioperative morbidity and mortality
    - facilitate subsequent curative resection for advanced esophageal cancers
    - prevent AEF
  - In conjunction with salvage esophagectomy
    - better disease progression-free survival
    - better overall survival

Thanks for your attention !!