최소 침습 식도제거술

로버트 메리트 박사
오하이오 웩스너 메디컬 센터
흉부 수술 과 디렉터

도입: 식도제거술 2.0

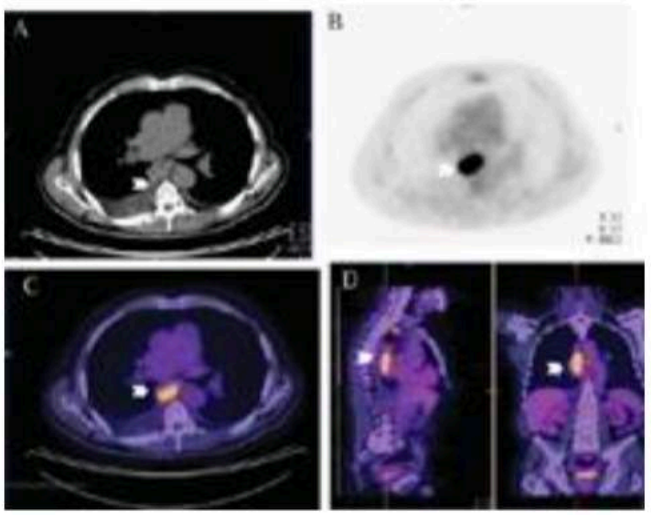
- 식도암 관리 리뷰
- 식도제거술 오버뷰
- 최소 침습 식도제거술 결과
- 오하이오 웩스너 메디컬 센터의 경험 리뷰

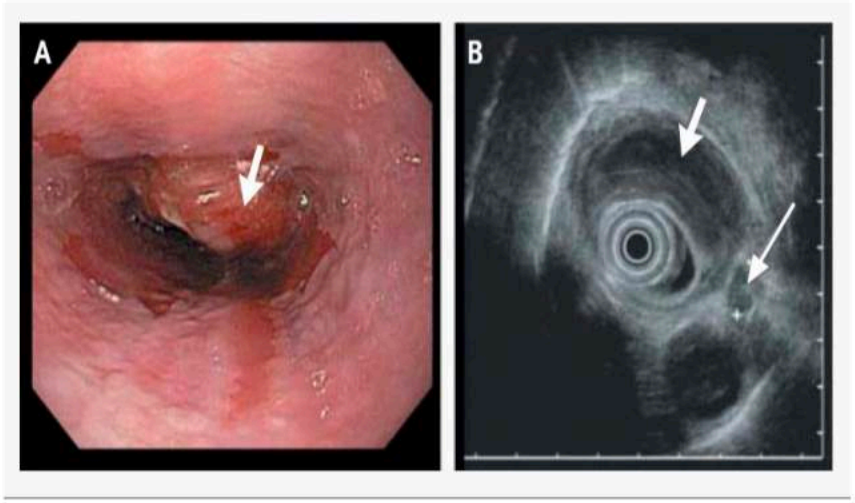
식도암의 역학

- 미국 10만명당 4.8 케이스 발생
- 미국 17,900 식도암 새 케이스
- 17,000 명 사망 예상
- 스커머스 셀 카시노마, 아데노 카시노마는 90% 까지
- 50% 이상의 식도암이 진단 시 잘라낼 수 없음

식도암

병기





- EUS 는 T기 발견에 8-90% 정확. N기 발견에 7-80%
- 펫 시티는 식도암 환자의 15%

식도암

생존 데이타

Table 2. Five-Year Survival Rates for Esophageal Carcinoma, According to the Tumor–Node–Metastasis Classification.*

Stage	Tumor	Node	Metastasis	5-Yr Survival
				%
0	Tis	N0	M0	>95
I	T1	N0	M0	50–80
IIA	T2-3	N0	M0	30–40
IIB	T1-2	N1	M0	10–30
III	T3 T4	N1 Any N	M0 M0	10–15
IVA	Any T	Any N	M1a	<5
IVB	Any T	Any N	M1b	<1

N Engl J Med 2003;349:2241-52.

식도암

병기따른 관리

- 초기 – 1기 2기
  - 식도제거술
  - 내시경 점막 절제술
- 지역적으로 발전된 – 3기
  - 니오어드저번트 화학 방사선
  - 식도제거술
  - 화학방사선
- 발전된 – 4기
  - 완화 화학 요법과 방사선

크로스 시험

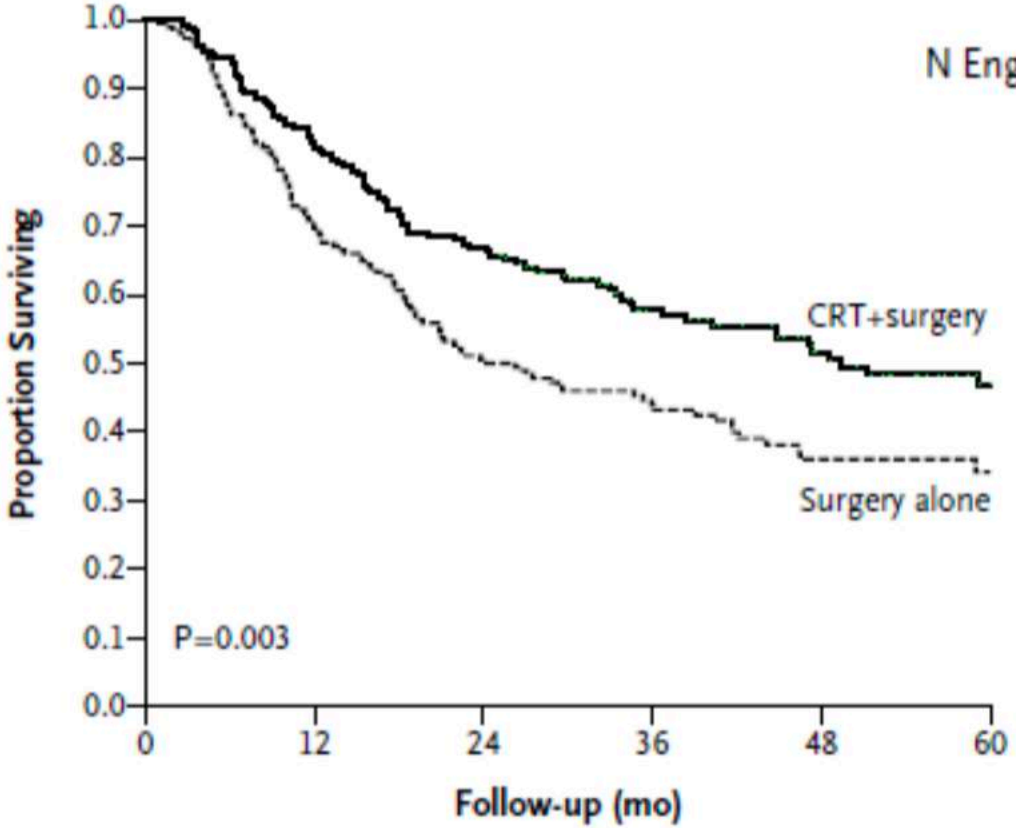
Preoperative Chemoradiotherapy for Esophageal or Junctional Cancer

van Hagen, M.C.C.M. Hulshof, J.J.B. van Lanschot, E.W. Steyerberg
M.I. van Berge Henegouwen, B.P.L. Wijnhoven, D.J. Richel,
A.P. Nieuwenhuijzen, G.A.P. Hospers, J.J. Bonenkamp, M.A. Cuesta
B. Blaisse, O.R.C. Busch, F.J.W. ten Kate, G.-J. Creemers, C.J.A. Pun
.M. Plukker, H.M.W. Verheul, E.J. Spillenaar Bilgen, H. van Dekken
M.J.C. van der Sangen, T. Rozema, K. Biermann, J.C. Beukema,
A.H.M. Piet, C.M. van Rij, J.G. Reinders, H.W. Tilanus,
and A. van der Gaast, for the CROSS Group*

N Engl J Med 2012;366:2074-84.

크로스 시험

A Survival According to Treatment Group



N Engl J Med 2012;366:2074-84.

No. at Risk						
CRT+surgery	178	145	119	75	49	28
Surgery alone	188	131	94	62	33	17
Total	366	276	213	137	82	45

니오어드저번트 화학 방사선과 합병증

Variable	Neoadjuvant Therapy N= 54	Esophagectomy Alone N= 84	P-Value
Anastomotic Leak	**8/54 (14.8%)**	**9/84 (10.7%)**	**0.65**
Pneumonia	4/54 (7.4%)	11/84 (13%)	0.45
Respiratory Failure	8/54 (14.8%)	12/84 (14.3%)	0.87
Chylothorax	4/54 (7.4%)	0/84 (0%)	0.04
Pulmonary Embolus	1/54 (1.9%)	3/84 (3.6%)	0.95
Myocardial Infarction	0/54 (0%)	1/84 (1.2%)	0.82
Arrhythmia	6/54 (11.1%)	10/84 (11.9%)	0.90
Total Complications	**31/54 (57.4%)**	**47/84 (56%)**	**0.98**

Merritt RE, et al. Morbidity and Mortality of Esophagectomy after Neoadjuvant Chemoradiation. Ann Thorac Surg 2011;92(6):2034-40.

식도제거술

Traditional open (Ivor Lewis)

- Right thoracotomy and laparotomy
- Intrathoracic gastric-esophageal anastomosis
- Better lymph node dissection
- Higher respiratory morbidity rate

Transhiatal

- Laparotomy and blunt transabdominal dissection
- Cervical gastric-esophageal anastomosis
- Fewer lymph nodes resected
- Lower respiratory morbidity rate

Thoracoscopic/Laparoscopic

전체 최소 침습 식도제거술
첫번째 보고

- 34 year old male with a T3N0 GE junction tumor
- Total laparoscopic and thoracoscopic approach
- Intrathoracic anastomosis with a 21 mm EEA stapler
- Operative time was 7.5 hours
- Esophagram on POD #6 was negative for leak.
- EBL was 250 mL
- LOS was 8 days

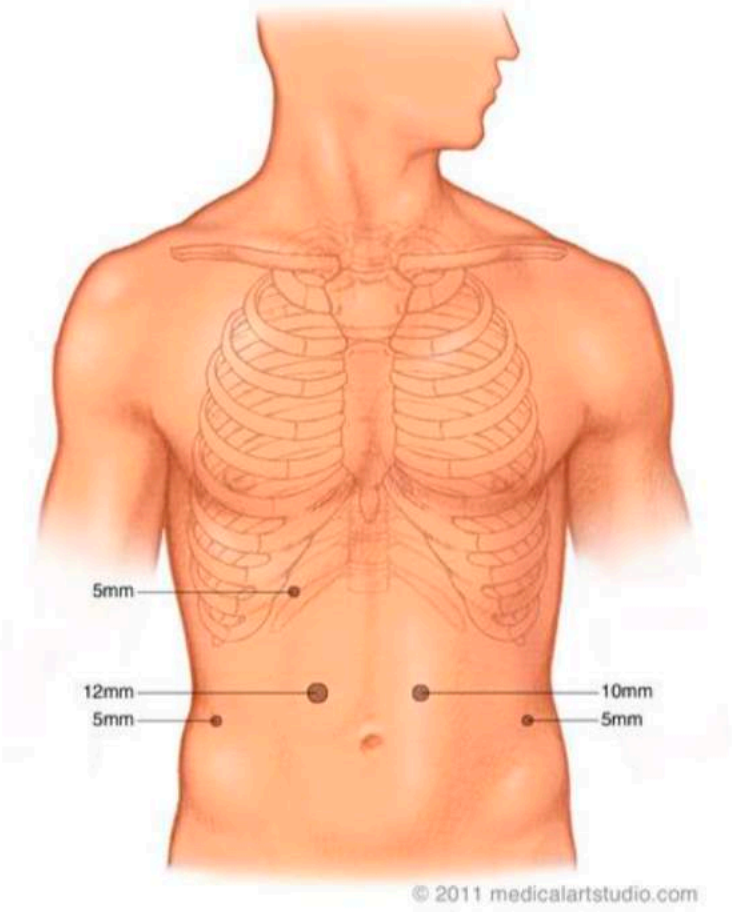
전체 흉부내시경, 복강경 아이보 루이스 식도제거술 초기 경험 첫번째 보고

TABLE 4. 30-DAY MAJOR MORBIDITY AND MORTALITY

Variable	*Value*
Median ICU days	1.0
Median ventilator days	0.0
Median length of stay (days)	10
Anastomotic leak rate	1/15 (6.67%)
Pneumonia rate	0/15 (0%)
Recurrent nerve palsy	0/15 (0%)
Re-intubation	0/15 (0%)
Pulmonary embolus	0/15 (0%)
Acute MI	0/15 (0%)
Chylous effusion	1/15 (6.67%)
Atrial fibrillation	1/15 (6.67%)
Anastomotic stricture	0/15 (0%)
Hemorrhage	0/15 (0%)
Gastric outlet obstruction	0/15 (0%)
Mortality	0/15 (0%)

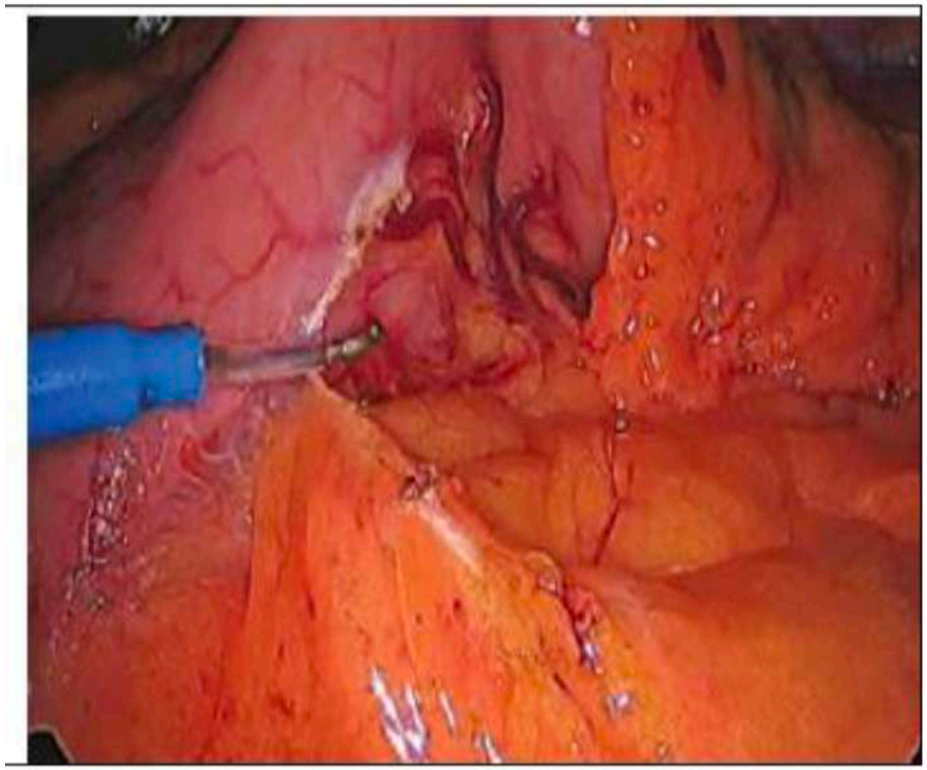
ICU, intensive care unit; MI, myocardial infarction.

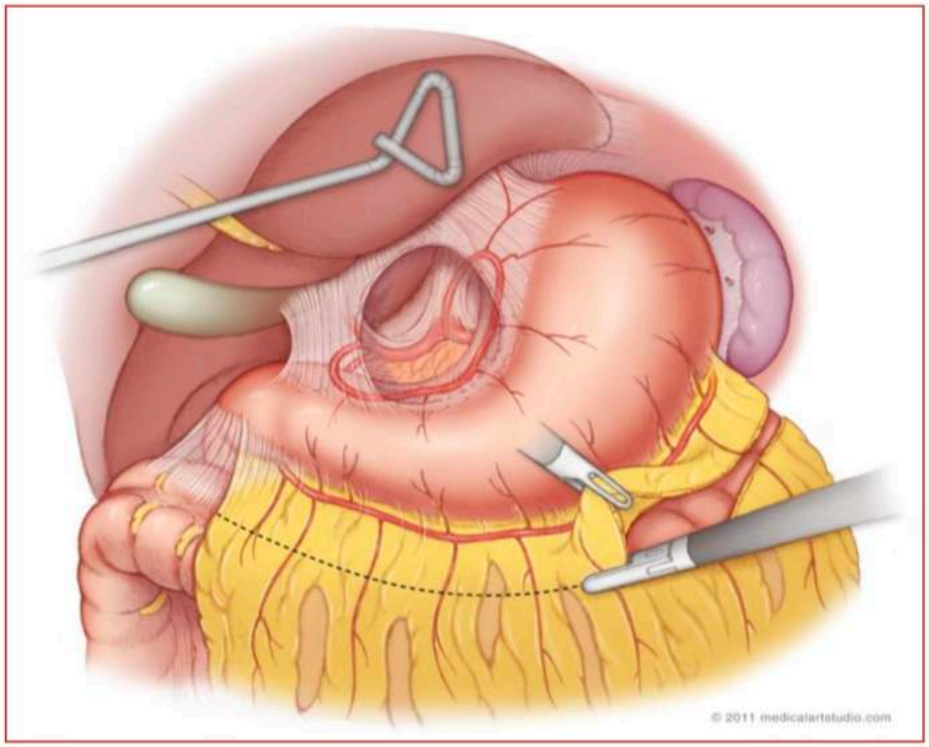
복강경 포트 자리



Merritt RE. J Laparoendosc Adv Surg Tech 2012;22;214-9

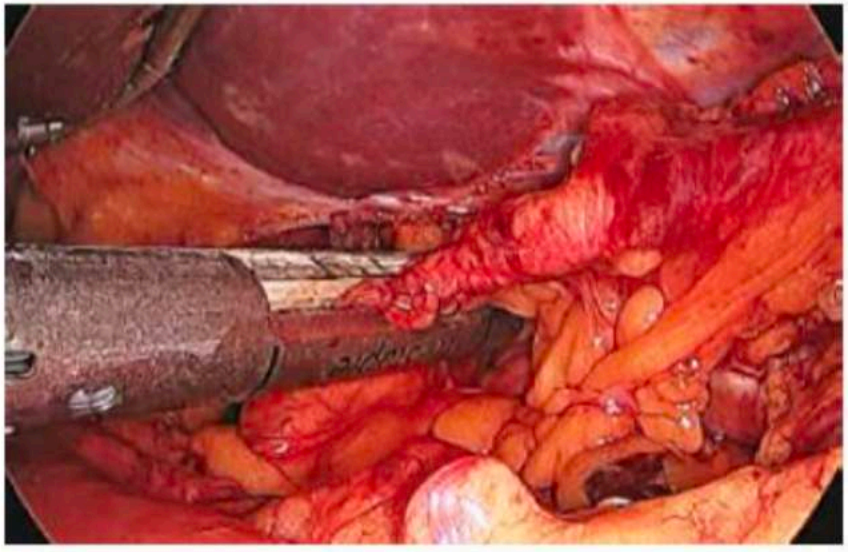
위 - 장 연결

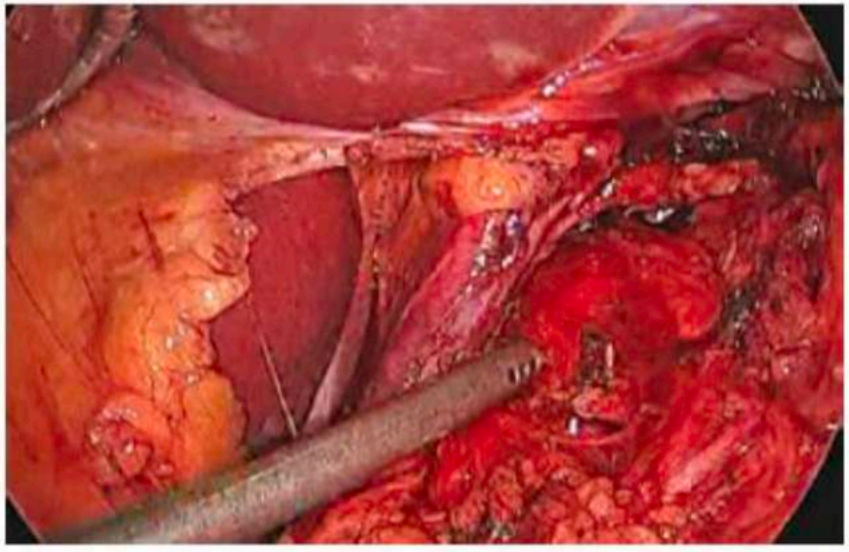




Merritt RE. J Laparoendosc Adv Surg Tech 2012;22;214-9

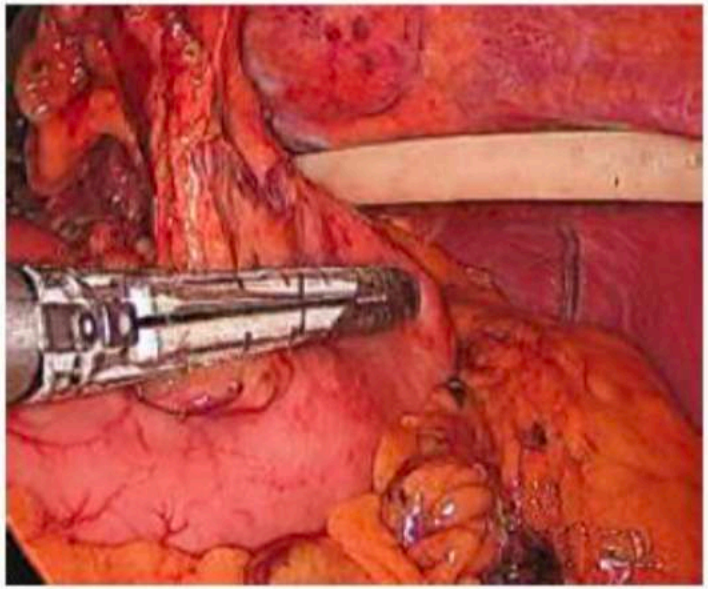
왼쪽 위 혈관과 틈새 분리

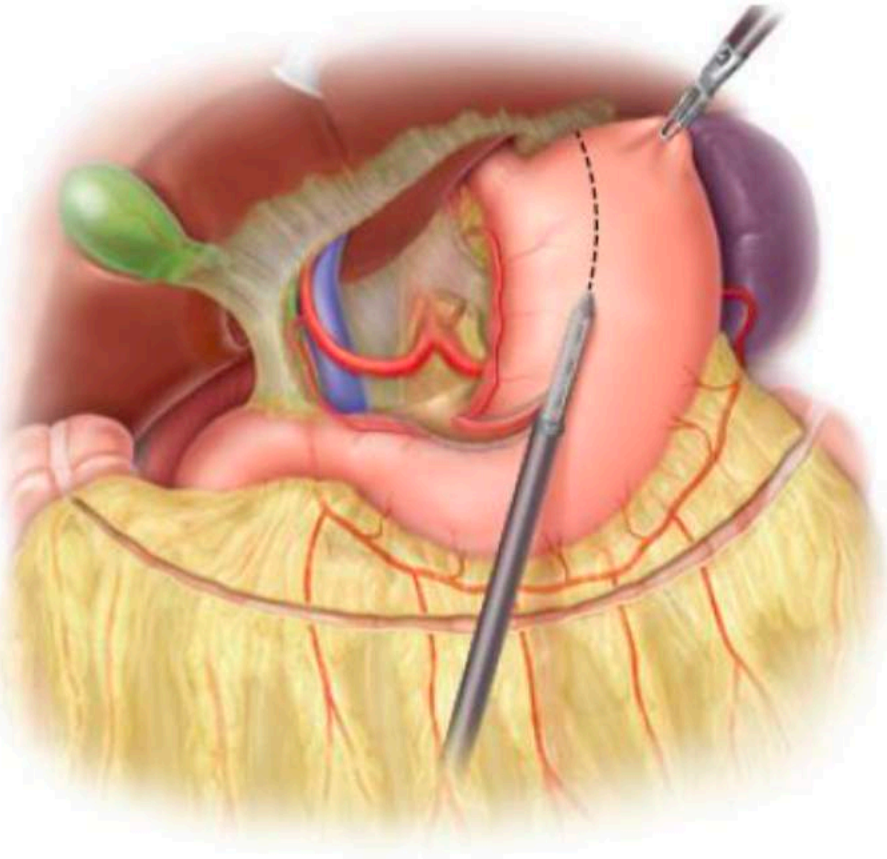




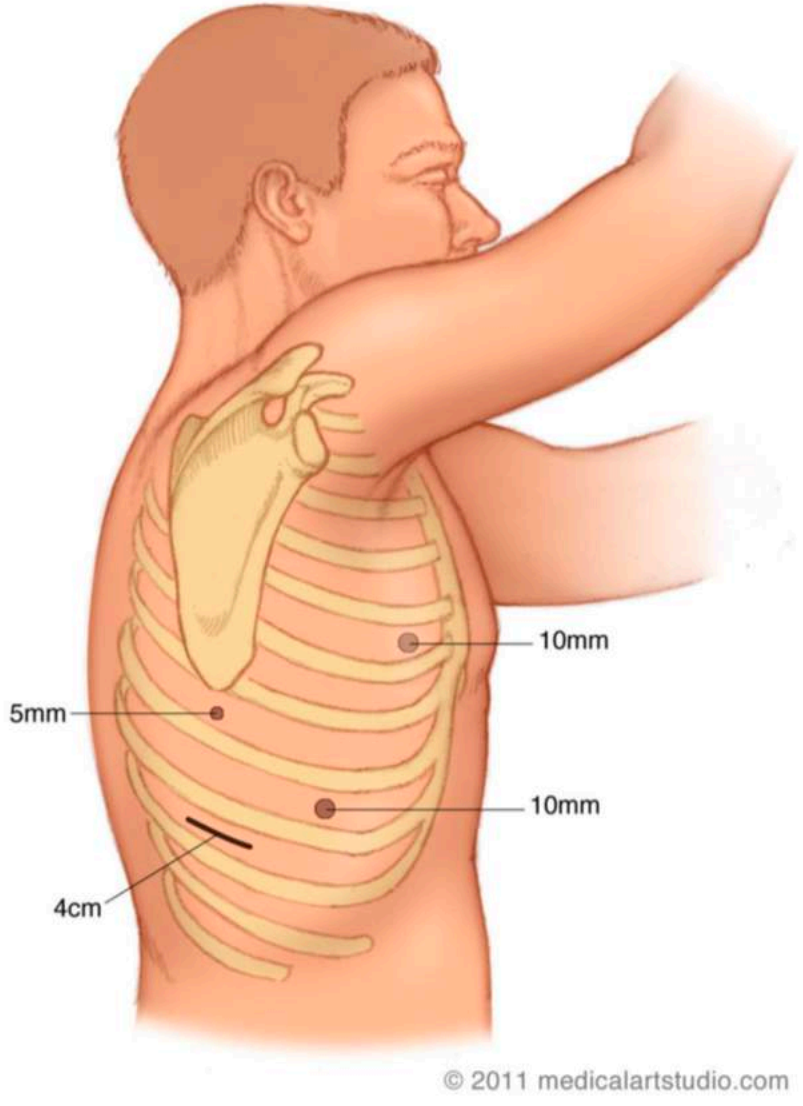
Merritt RE. J Laparoendosc Adv Surg Tech 2012;22;214-9

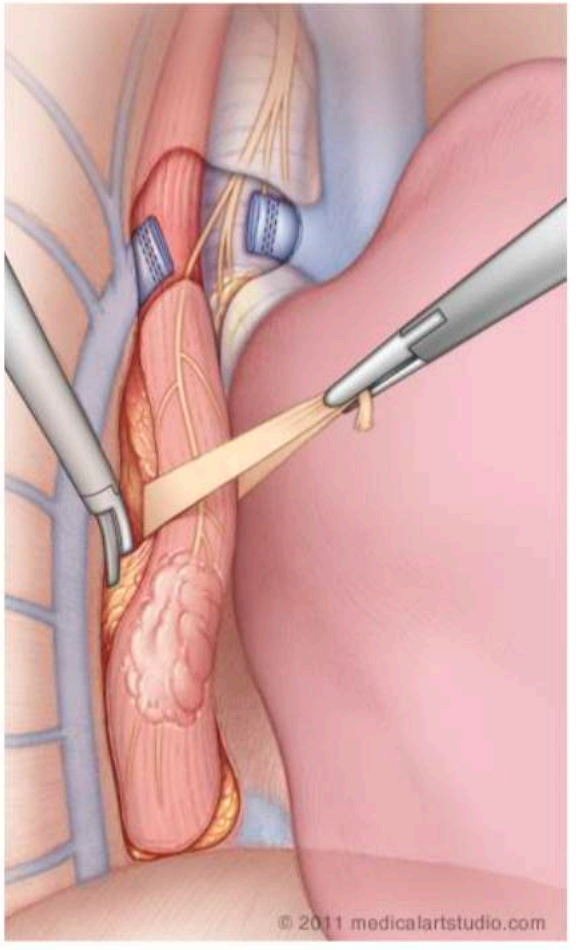
위 도관 형성



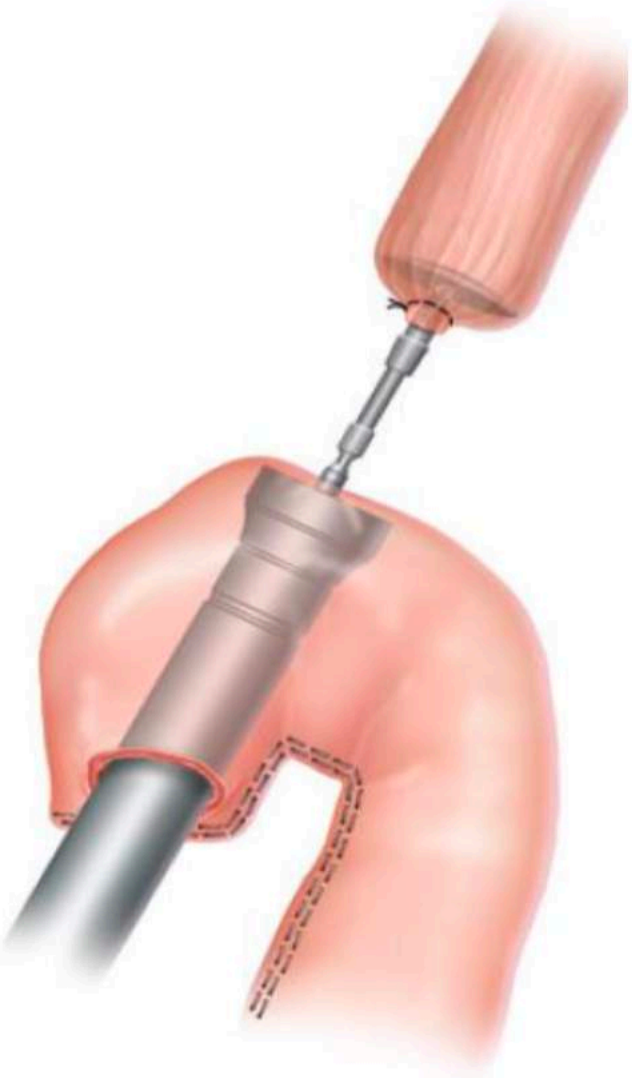


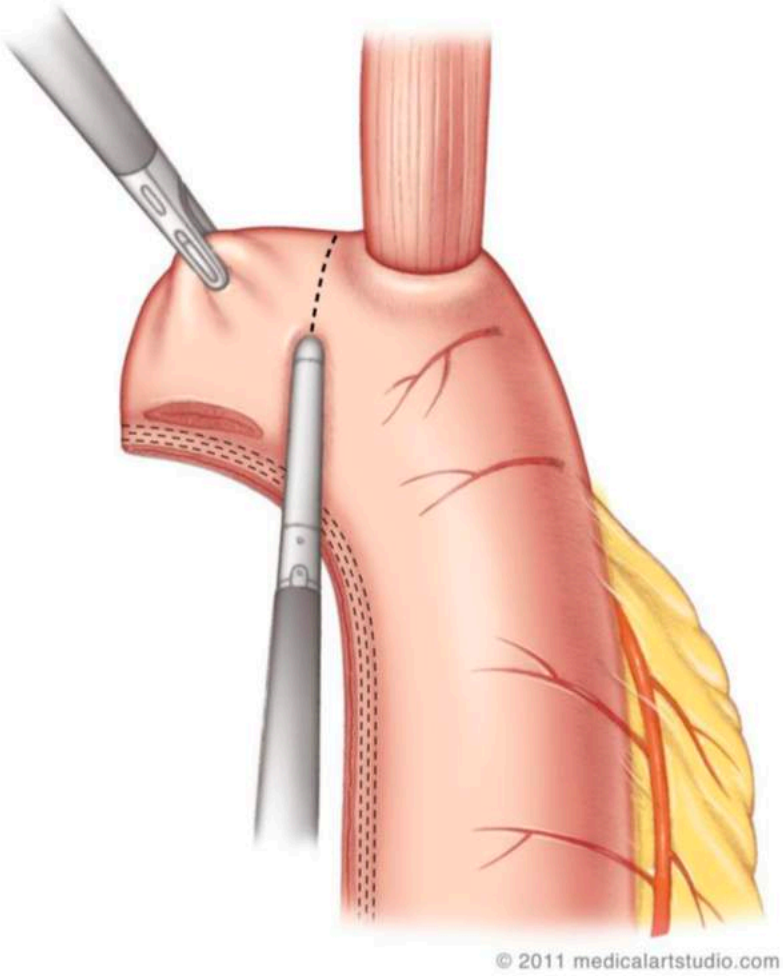
흉강경 접근 절개





식도-위 문합

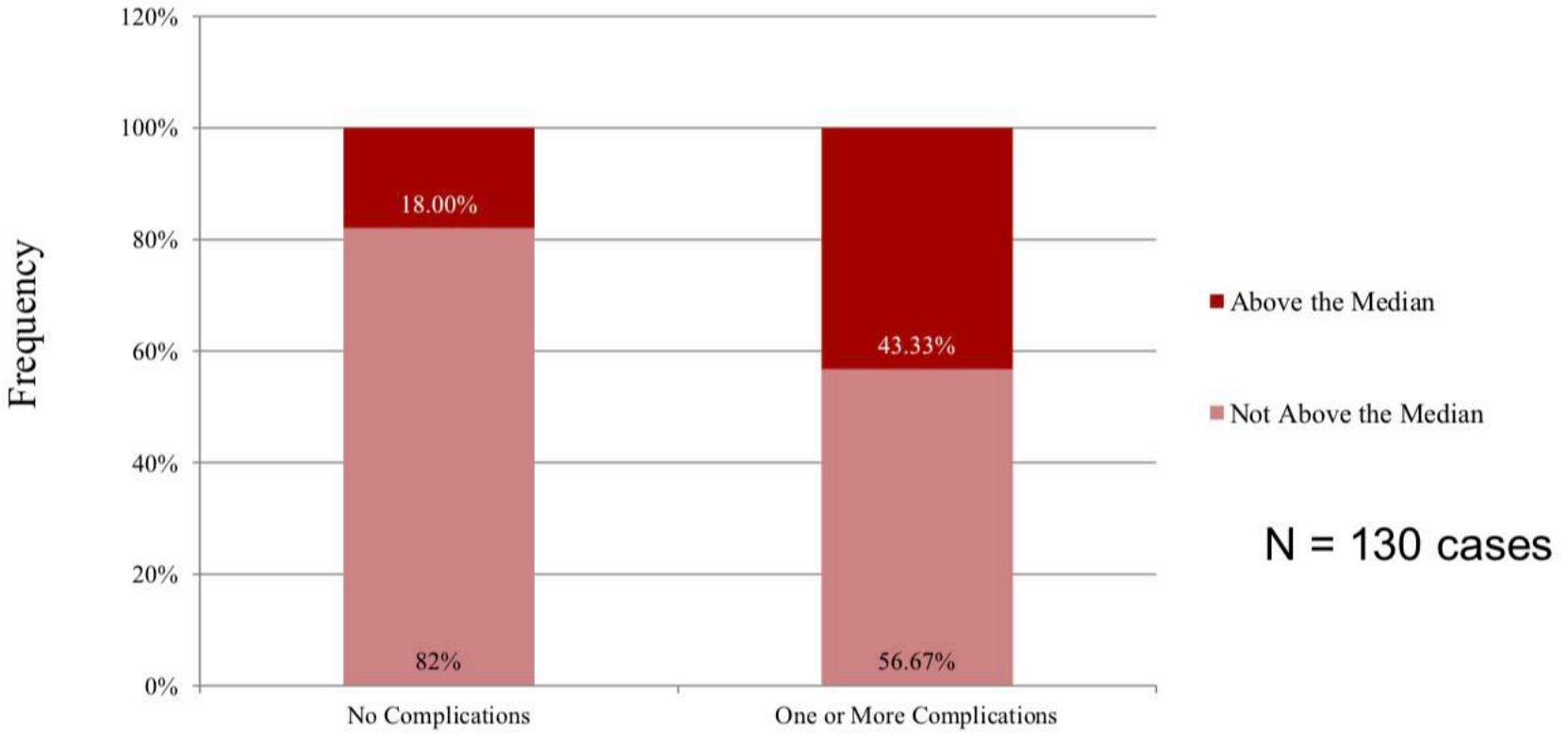




최소 침습 아이보 루이스 식도제거술 최근

Author	N	LOS (days)	Mortality (%)	Leak (%)
Bizekis 2002	35	9	6	6
Nyguyen 2003	3	8	4.3	8.7
Merritt 2012	15	10	0	6.7
Tapias 2012	40	7	2.5	0
Luketich 2012	530	7	0.9	4.3
OSUMC 2020	**130**	**8**	**0.8**	**3.1**

입원 길이 중간 위 와 아래 정도



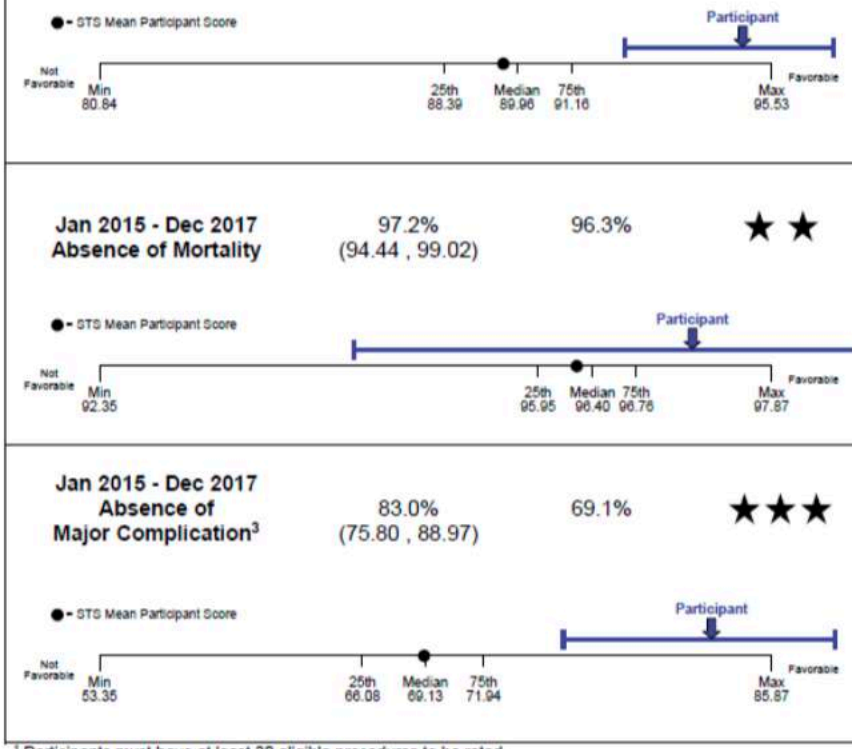
STS General Thoracic Surgery Database
Esophagectomy Composite Quality Rating

Participant 40178
STS Period Ending 12/31/2017

Duke Clinical Research Institute

Table 3: Esophagectomy Composite Quality Rating

Quality Domain	Participant Score (95% CI)	STS Mean Participant Score	Participant Rating[1]
Jan 2015 - Dec 2017 Overall	94.9% (92.32 , 96.89)	89.7%	★★★
Jan 2015 - Dec 2017 Absence of Mortality	97.2% (94.44 , 99.02)	96.3%	★★
Jan 2015 - Dec 2017 Absence of Major Complication[3]	83.0% (75.80 , 88.97)	69.1%	★★★



Quality Domain	Eligible Procedures	Detail	Count	Percent[2]
Jan 2015 - Dec 2017 Absence of Mortality	112	Operative Mortality	1	
Jan 2015 - Dec 2017 Absence of Major Complication	112	Major Complication	13	
		Unexpected Return to OR	3	23.1%
		Anastomotic Leak Req. Med Rx only	0	0.0%
		Reintub./Resp. Failure	1	7.7%
		Initial Vent Support >48hrs	0	0.0%
		Pneumonia	4	30.8%
		New Renal Failure per RIFLE criteria	0	0.0%
		Recurrent laryngeal nerve paresis	0	0.0%
		Multiple Complications (more than 1 of the above)	5	38.5%

[2] Percentages represent the proportion that the specific complication contributed to the total number of patients with a major complication
This information is intended to facilitate and focus process and quality improvement initiatives by providers

[1] Participants must have at least 30 eligible procedures to be rated
* = Participant performance is significantly lower than the STS mean based on 97.5% Bayesian probability
** = Participant performance is not significantly different than the STS mean based on 97.5% Bayesian probability
*** = Participant performance is significantly higher than the STS mean based on 97.5% Bayesian probability
[3] Defined as one or more of any of the following: Unexpected return to OR, Anastomotic leak req. medical Rx, Reintubation/Respiratory failure Initial vent support > 48 hrs, Pneumonia, New renal failure per RIFLE criteria, Recurrent laryngeal nerve paresis.

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Wexner Medical Center

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