Transanal surgery for rectal tumors: What is the role?

Matthew T. Brady, MD| February 22, 2018

Disclosures:
None

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Local excision of rectal cancer: what is the role?

- Rectal cancer surgery brief history
- Anatomy and function of the rectum
- Complications inherent to anterior resection
- Role of local excision in the treatment of rectal cancer

Surgery for rectal cancer

1. Lirici, marco maria & G. S. H ü scher, Cristiano. (2016). Techniques and technology evolution of rectal cancer surgery: a history of more than a hundred years. Minimally Invasive Therapy & Allied Technologies. 25. 10.1080/13645706.2016.1198381.
2. https://www.academiamedicinasaopaulo.org.br/biografias/343/BIOGRAFIA-ANGELITA-HABR-GAMA.pdf

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Colorectal cancer impact

- 4-5% lifetime risk of developing colorectal cancer

- 2018 Estimates
  - 97, 220 new cases of colon cancer annually
  - 43,000 new cases of rectal cancer annually

https://www.cancer.org/cancer/colon-rectal-cancer/about/key-statistics.html

Rectal anatomy and function

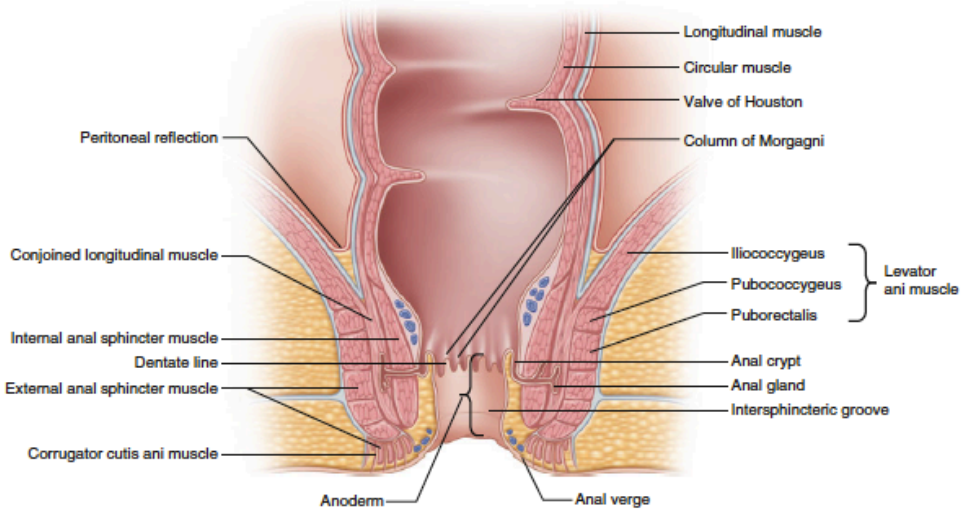
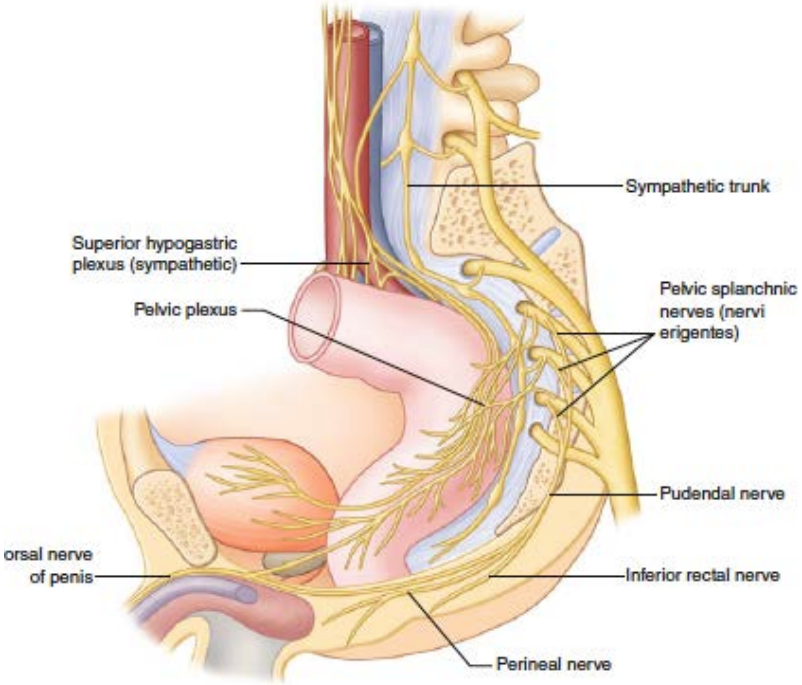


FIGURE 1-1. Anal canal.



Carmichael, J.C., Mills, S. Anatomy and Emryology of the Colon, Rectum, and Anus. In S.R. Steele et al. (eds.). *The ASCRS Textbook of Colon and Rectal Surgery Third Edition.* DOI 10.1007/978-3-319-25970-3_1. p3-26.

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Anterior resection complications

- Anastomotic leak
- Temporary stoma for some cases
- Urinary dysfunction
- Sexual dysfunction
- Functional changes

Low Anterior Resection Syndrome (LARS)

- Fecal incontinence
- Urgency
- Frequent small bowel movements
- Clustering of stools
- Evacuatory dysfunction

ORIGINAL CONTRIBUTION

Low Anterior Resection Syndrome and Quality of Life: an International Multicenter Study

TABLE 1. The LARS score questionnaire with scoring instructions

LARS score questionnaire

The aim of this questionnaire is to assess your bowel function. Please tick only one box for each question. It may be difficult to select only one answer, as we know that for some patients symptoms vary from day to day. We would kindly ask you to choose one answer which best describes your daily life. If you have recently had an infection affecting your bowel function, please do not take this into account and focus on answering questions to reflect your usual daily bowel function.

Do you ever have occasions when you cannot control your flatus (wind)?

☐ No, never	0
☐ Yes, less than once per week	4
☐ Yes, at least once per week	7

Do you ever have any accidental leakage of liquid stool?

☐ No, never	0
☐ Yes, less than once per week	3
☐ Yes, at least once per week	3

How often do you open your bowels?

☐ More than 7 times per day (24 hours)	4
☐ 4–7 times per day (24 hours)	2
☐ 1–3 times per day (24 hours)	0
☐ Less than once per day (24 hours)	5

Do you ever have to open your bowels again within 1 hour of the last bowel opening?

☐ No, never	0
☐ Yes, less than once per week	9
☐ Yes, at least once per week	11

Do you ever have such a strong urge to open your bowels that you have to rush to the toilet?

☐ No, never	0
☐ Yes, less than once per week	11
☐ Yes, at least once per week	16

Add the scores from each of the five answers to one final score.
Interpretation: 0–20 = No LARS 21–29 = Minor LARS
30–42 = Major LARS

LARS = low anterior resection syndrome.

Juul T, Ahlberg M, Biondo S, et al. Low anterior resection syndrome and quality of life: an international multicenter study. Dis Colon Rectum. 2014;57:585–91.

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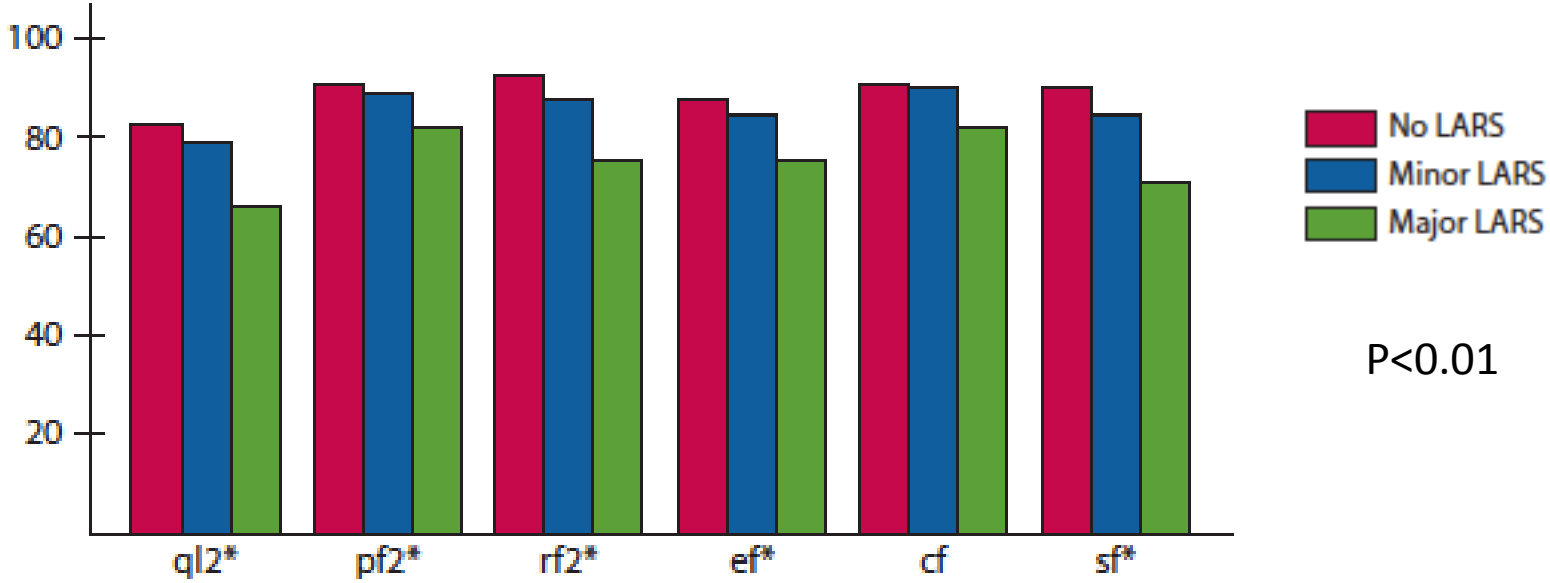
ORIGINAL CONTRIBUTION

Low Anterior Resection Syndrome and Quality of Life: an International Multicenter Study



P<0.01

Juul T, Ahlberg M, Biondo S, et al. Low anterior resection syndrome and quality of life: an international multicenter study. Dis Colon Rectum. 2014;57:585–91.

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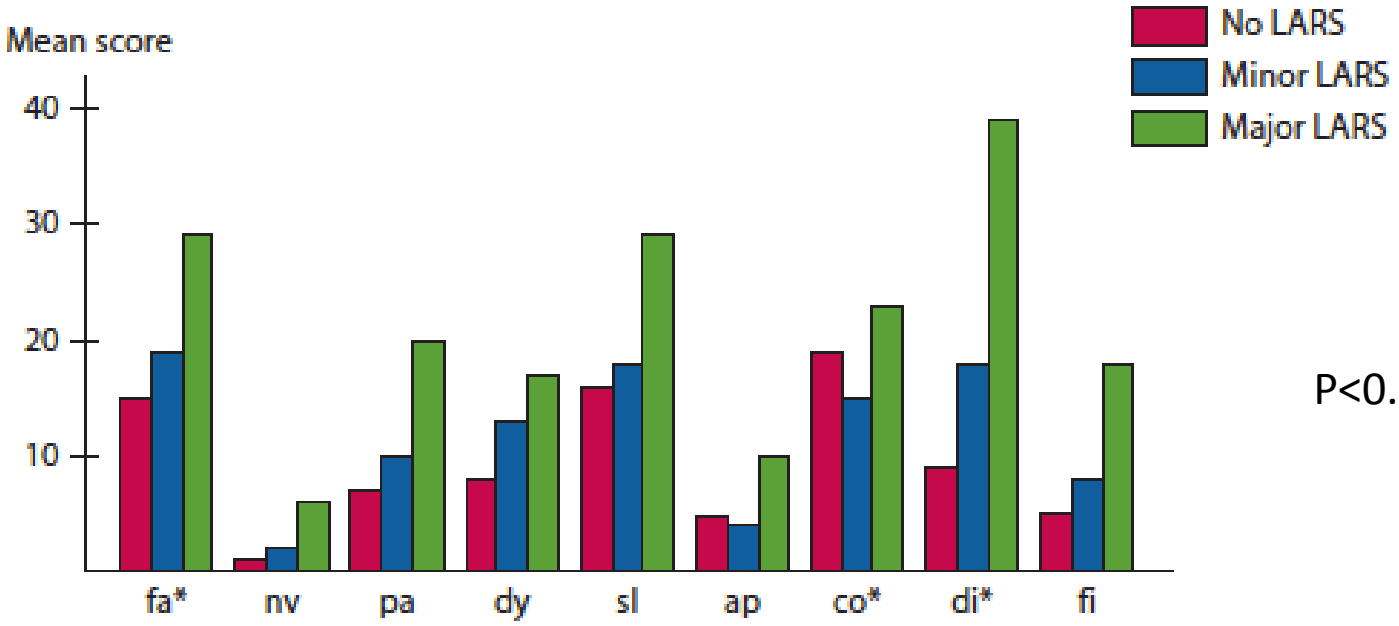
Low Anterior Resection Syndrome and Quality of Life: an International Multicenter Study



P<0.01

Juul T, Ahlberg M, Biondo S, et al. Low anterior resection syndrome and quality of life: an international multicenter study. Dis Colon Rectum. 2014;57:585–91.

Are patients prepared for this?

- 47% of patients reported being unaware of postoperative bowel function outcomes
- 33% reported being aware there were “changes” but were unaware of any specifics
- 47% unaware of sexual function changes
- 57% reported being unaware of urinary function changes

Scheer AS, et. al. The myth of informed consent in rectal cancer surgery: what do patients retain? Dis Colon Rectum. 2012; 55:970-975.

Comparative Quality of Life in Patients Following Abdominoperineal Excision and Low Anterior Resection for Low Rectal Cancer

P. How, M.R.C.S., B.Sc.[1] • S. Stelzner, F.R.C.S.[2] • G. Branagan, F.R.C.S.[3]
K. Bundy, M.Sc.[4] • K. Chandrakumaran, F.R.C.S.[5] • R. J. Heald, M.Chir.[1]
B. Moran, M.B., B.Chir., F.R.C.S.I.[5]

- Similar global QOL at 1 and 2 years postop
- Higher QOL in APE when adjusted for comorbidities

  79.9 vs 60.5 p =0.003
- Higher cognitive and social function in APE cohort

TABLE 4. Frequency of fecal incontinence in LAR patients

Frequency of FI	*No. of patients*
Daily	3
Weekly	3
Sometimes (>1 episode in past 4 wk)	3
Rarely (1 episode in past 4 wk)	2
Very rarely (no episode in past 4 wk, but happens sometimes)	7

LAR = low anterior resection; FI = fecal incontinence.

How P, et. al. Comparative quality of life in patients following abdominoperineal excision and low anterior resection for low rectal cancer. *Dis Colon Rectum.* 2012 Apr;55(4):400-406.

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Organ Preservation Strategies

1. Lirici, marco maria & G. S. H ü scher, Cristiano. (2016). Techniques and technology evolution of rectal cancer surgery: a history of more than a hundred years. Minimally Invasive Therapy & Allied Technologies. 25. 10.1080/13645706.2016.1198381.
2. https://www.academiamedicinasaopaulo.org.br/biografias/343/BIOGRAFIA-ANGELITA-HABR-GAMA.pdf

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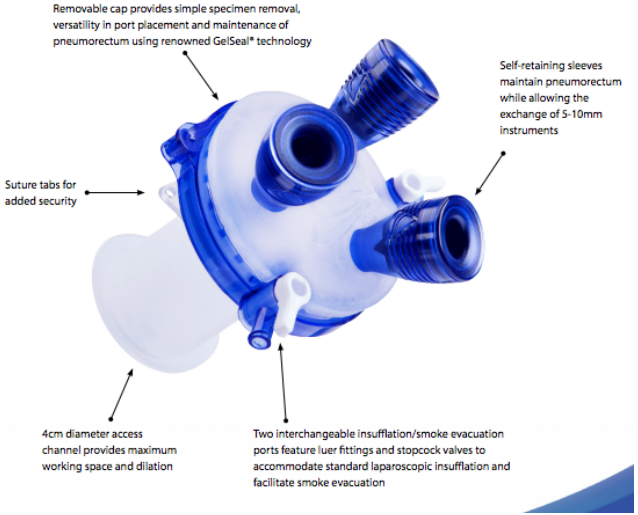
Gerhard Buess, MD

Transanal Endoscopic Surgery Platforms

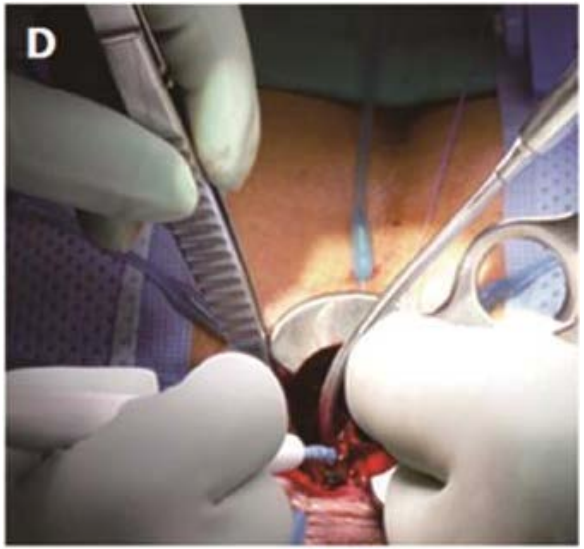
TEM

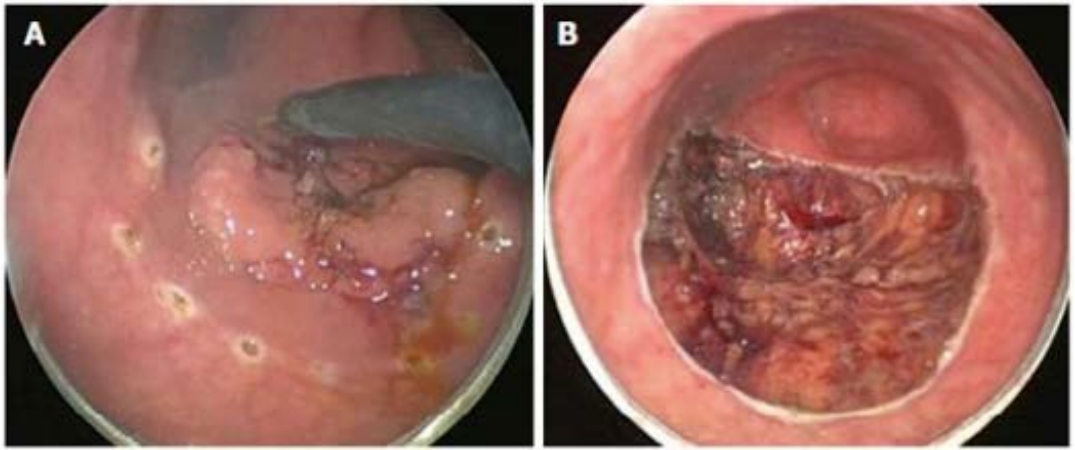
TEO



TAMIS

Transanal excision vs. TEM





Devaraj B, Kaiser AM. Impact of technology on indications and limitations for transanal surgical removal of rectal neoplasms. World J Surg Proced 2015; 5(1): 1-13

DISEASES OF THE COLON & RECTUM

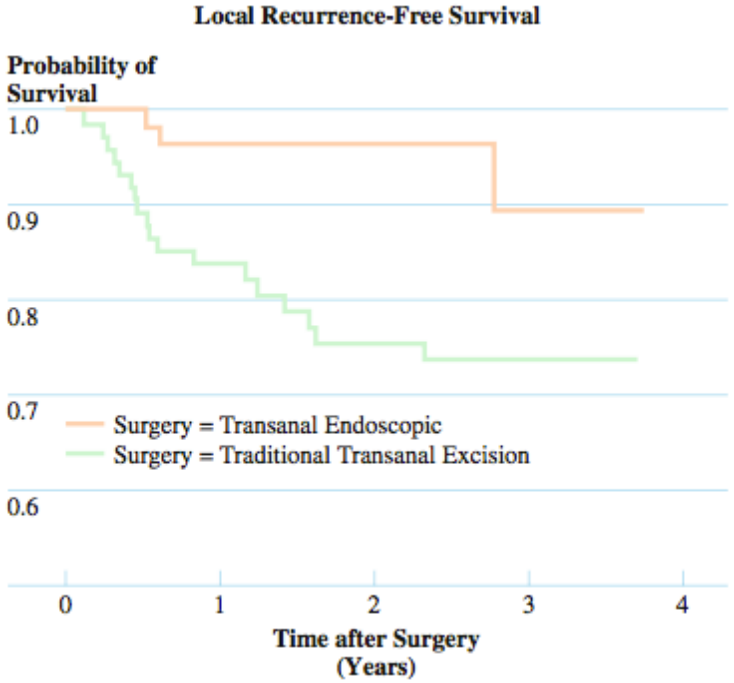
Transanal Endoscopic Microsurgery is more Effective than Traditional Transanal Excision for Resection of Rectal Masses

ORIGINAL CONTRIBUTION

Jesse S. Moore, M.D. • Peter A. Cataldo, M.D. • Turner Osler, M.D. • Neil H. Hyman, M.D.

TABLE 2. Surgical outcomes by group

	TEM (n=82)	*TA (n=89)*	*P value*
Any complication (yes)	12 (15)	15 (17)	0.69
Major or minor complication			0.99
Major	4 (33)	6 (40)	
Minor	8 (67)	9 (60)	
LOS (days)	0.63±1	1.46±3	0.007
Specimen fragmentation			<0.001
Whole	77 (94)	58 (65)	
Fragmented	5 (6)	28 (31)	
Unreported	0 (0)	3 (3)	
Margins (clear)*	74 (90)	63 (71)	0.001
Recurrence (yes)	4 (5)	24 (27)	0.004
All cause mortality (deaths)	2 (2)	26 (29)	0.01



Moore JS, Cataldo PA, Osler T, Hyman NH. Transanal endoscopic microsurgery is more effective than traditional transanal excision for resection of rectal masses. Dis Colon Rectum. 2008;51:1026–1030

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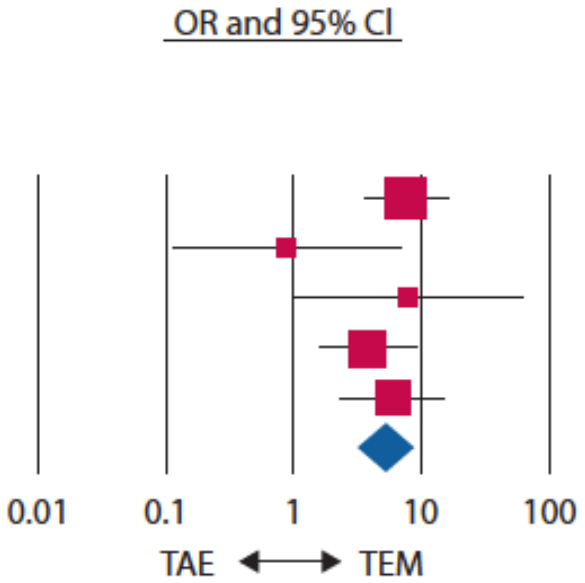
TAE vs. TEM: Negative Margin

Study name	Statistics for each study				
	OR	Lower limit	Upper limit	*Z* Value	*p* Value
de Graaf E (17)	7.656	3.708	15.806	5.503	0.000
Lebedyev A (18)	0.900	0.115	7.067	–0.100	0.920
Christoforidis D (19)	7.972	1.039	61.192	1.996	0.046
Moore J (8)	3.817	1.614	9.028	3.050	0.002
Langer C (20)	6.000	2.427	14.834	3.880	0.000
	5.281	3.201	8.712	6.515	0.000



Clancy, C. et. al. Transanal Endoscopic Microsurgery Versus Standard Transanal Excision for the Removal of Rectal Neoplasms: A systematic Reivew and Meta-analysis. Dis Colon Rectum. 2015;58:254-61.

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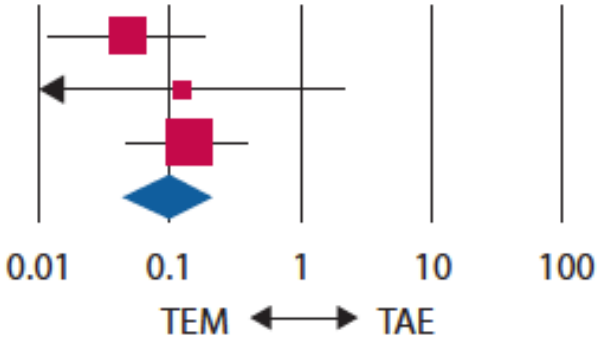
TAE vs. TEM: Specimen Fragmentation

B

Study name	OR	Lower limit	Upper limit	*Z* Value	*p* Value
de Graaf E (17)	0.046	0.012	0.178	–4.484	0.000
Christoforidis D (19)	0.121	0.007	2.102	–1.450	0.147
Moore J (8)	0.141	0.052	0.388	–3.798	0.000
	0.096	0.044	0.209	–5.909	0.000



Clancy, C. et. al. Transanal Endoscopic Microsurgery Versus Standard Transanal Excision for the Removal of Rectal Neoplasms: A systematic Reivew and Meta-analysis. Dis Colon Rectum. 2015;58:254-61.

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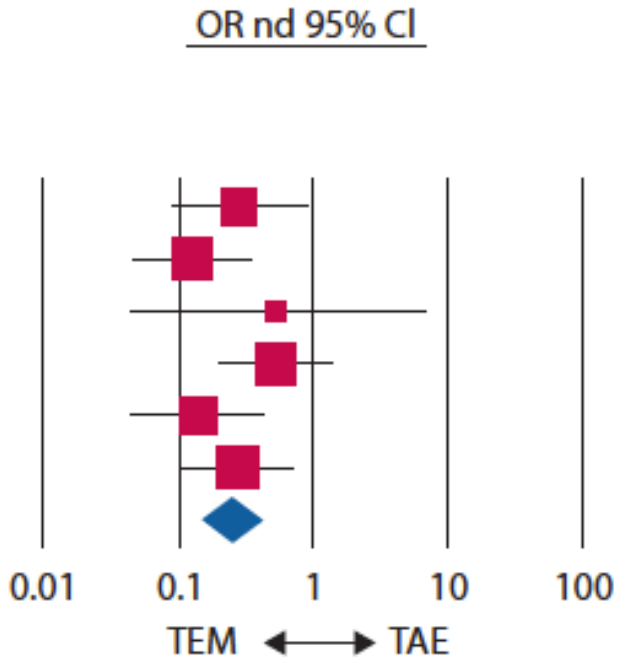
TAE vs. TEM: Local recurrence

Study name	OR	Lower limit	Upper limit	*Z* Valuee	*p* Value
Han Y (16)	0.282	0.088	0.903	–2.132	0.033
de Graaf E (17)	0.127	0.047	0.345	–4.047	0.000
Lebedyev A (18)	0.526	0.044	6.293	–0.507	0.612
Christoforidis D (19)	0.527	0.203	1.368	–1.316	0.188
Moore J (8)	0.139	0.046	0.421	–3.490	0.000
Langer C (20)	0.272	0.108	0.689	–2.745	0.000
	0.248	0.154	0.401	–5.690	0.000



Clancy, C. et. al. Transanal Endoscopic Microsurgery Versus Standard Transanal Excision for the Removal of Rectal Neoplasms: A systematic Reivew and Meta-analysis. Dis Colon Rectum. 2015;58:254-61.

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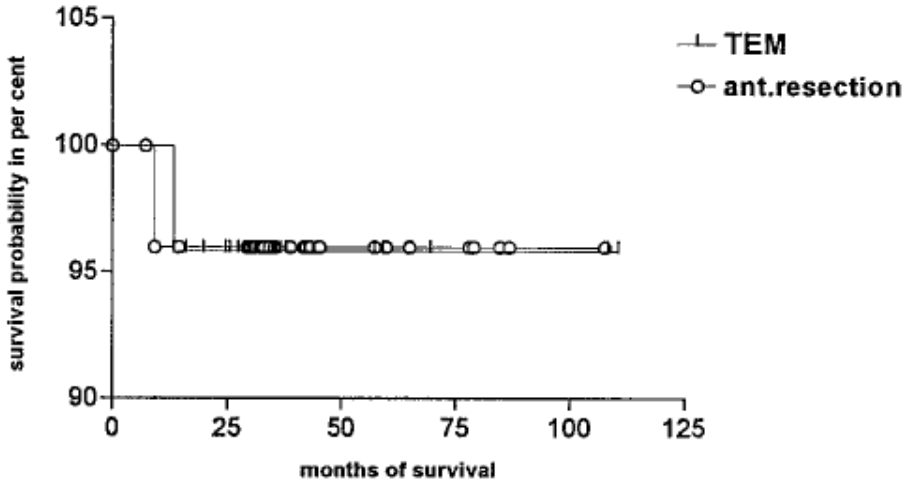
Surgical Cure for Early Rectal Carcinomas (T1)

Transanal Endoscopic Microsurgery *vs.* Anterior Resection

Günther Winde, M.D.,* Hubert Nottberg, M.D.,* Ralph Keller, M.D.,†
Kurt W. Schmid, M.D.,‡ Hermann Bünte, M.D.*

- Significant reductions in
  - Hospital length of stay
  - Postoperative analgesics
- 4% Local recurrence rate in TEM



Winde G, et. al. Surgical cure for early rectal carcinomas (T1): Transanal Endosocpic Microsurgery vs. Anterior Resection. *Dis Colon Rectum*. 1996;39:969-976.

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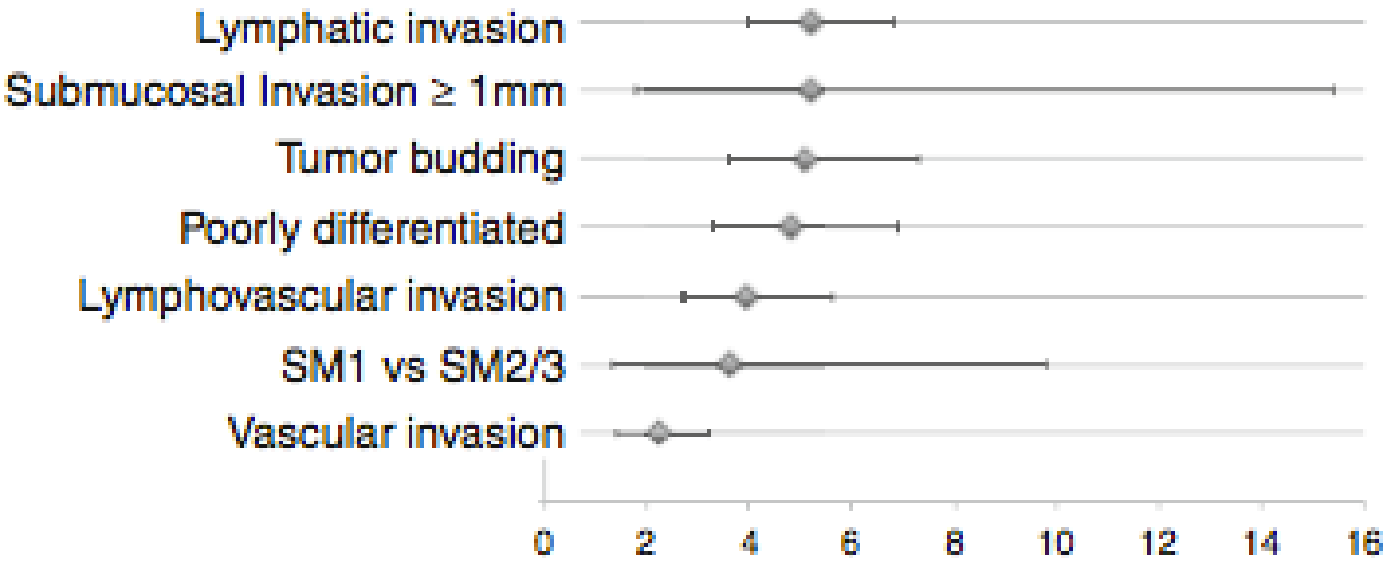
Risk factors for local recurrence

TABLE 29-1. Local recurrence rates (percentage) at 36 months following TEM excision of rectal cancer

	Lymphatic invasion	Maximum tumor diameter (cm)					
Depth of invasion		≤1	1.1–2	2.1–3	3.1–4	4.1–5	≥5.1
pT1 sm1	No	3.0	3.6	4.4	5.4	6.6	8.1
	Yes	5.2	6.4	7.7	9.4	11.4	13.7
pT1 sm2–3	No	10.5	12.7	15.3	18.5	22.1	26.4
	Yes	17.8	21.4	25.5	30.3	35.7	41.8
pT2	No	9.8	11.9	14.3	17.3	20.7	24.7
	Yes	16.7	20.0	23.9	28.5	33.7	39.5
pT3	No	19.7	23.6	28.0	33.2	39.0	45.4
	Yes	32.2	37.9	44.1	51.0	58.3	65.7

Bach SP, et al. Transanal Endoscopic Microsurgery (TEM) Collaboration. A predictive model for local recurrence after transanal endoscopic microsurgery for rectal cancer. Br J Surg. 2009;96(3):280–90.

Risk of lymph node metastasis



Bosch SL, Teerenstra S, de Wilt JH, Cunningham C, Nagtegaal ID. Predicting lymph node metastasis in pT1 colorectal cancer: a systematic review of risk factors providing rationale for therapy decisions. Endoscopy. 2013 Oct; 45(10):827–34

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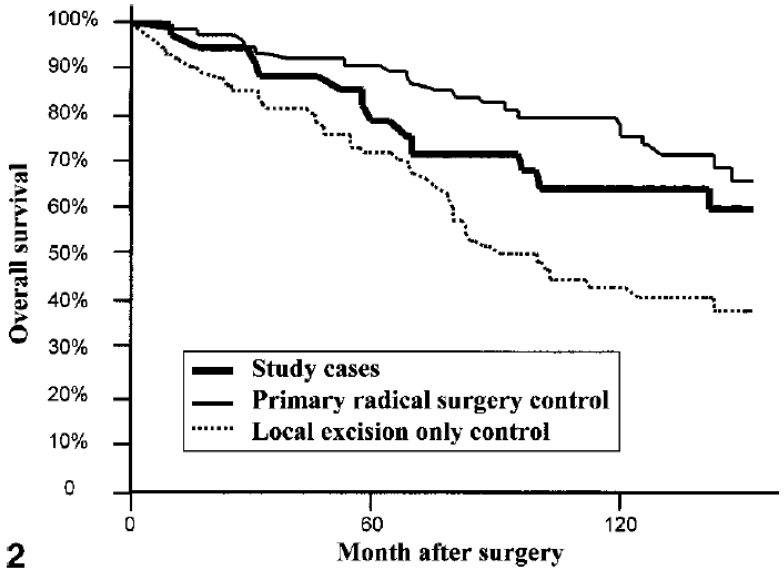
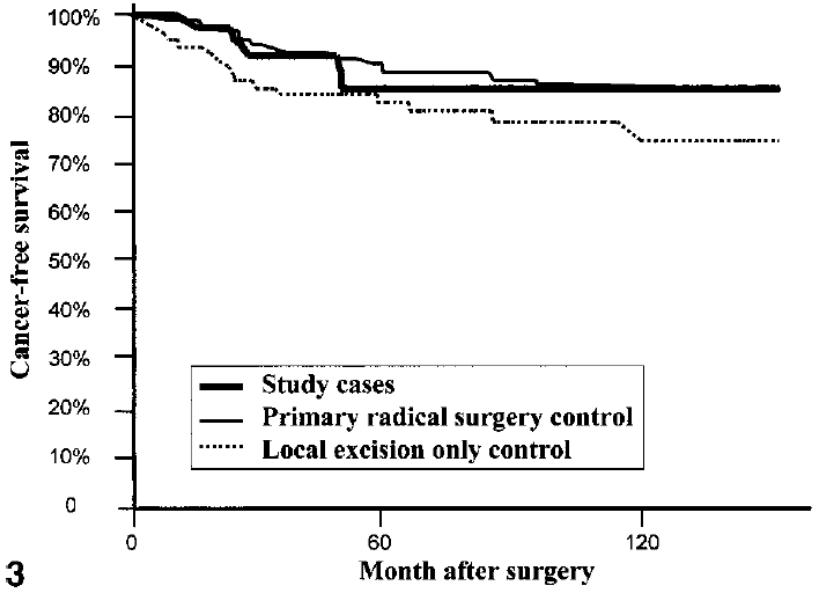
What if you identify high risk features?



Overall Survival



Disease Free Survival

Hahnloser D, et. al. Immediate Radical Resection After Local Excision of Rectal Cancer: An Oncologic Compromise. Dis Colon Rectum. 2005; 48:429-437.

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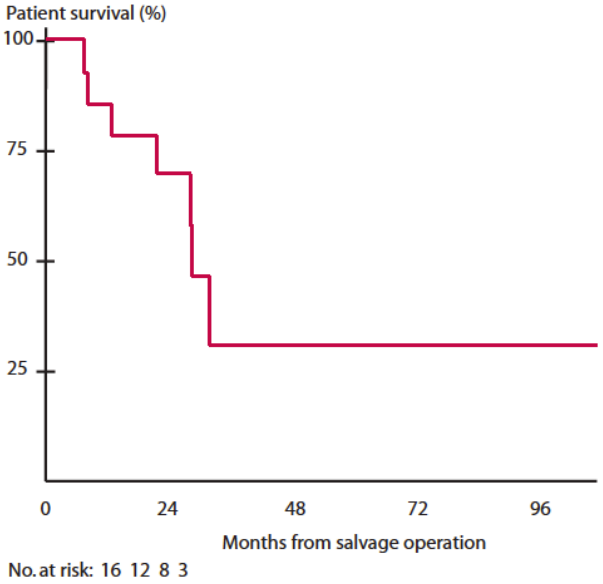
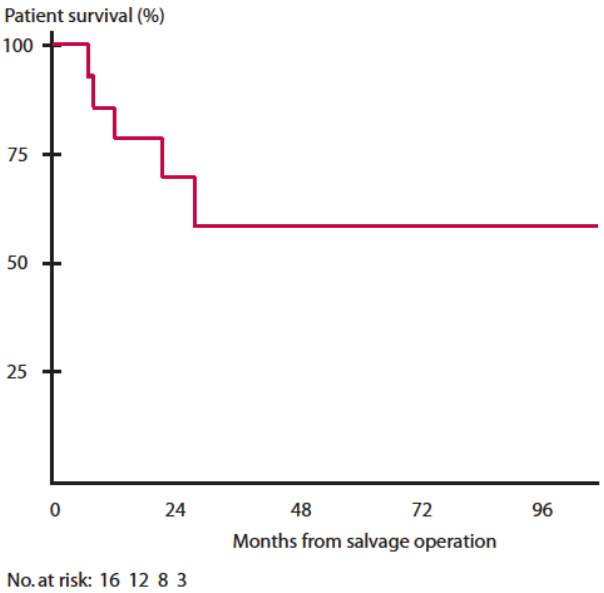
Is salvage surgery effective



Overall Survival



Cancer Specific Survival

Doornebosch, PG, et. al. Treatment of Recurrence after transanal Endoscopic Microsurgery (TEM) for T1 Rectal Cancer. Dis Colon Rectum. 2010 Sep; 53(9):1234-9.

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Is salvage surgery effective

Table 1.
Procedures Performed in Patients Undergoing Salvage Surgery for Recurrence Following Local Excision of Early Rectal Cancer

Salvage Procedure	n	Standard[a]	Extended[a]
APR	31	13	18
LAR	11	6	5
Total pelvic exenteration	4		4
Transanal excision	3		
Diverting ostomy	1		

APR = abdominoperineal resection; LAR = low anterior resection.

[a]Standard and extended resection refers to the need to perform *en bloc* resection of adjacent organs or structures.

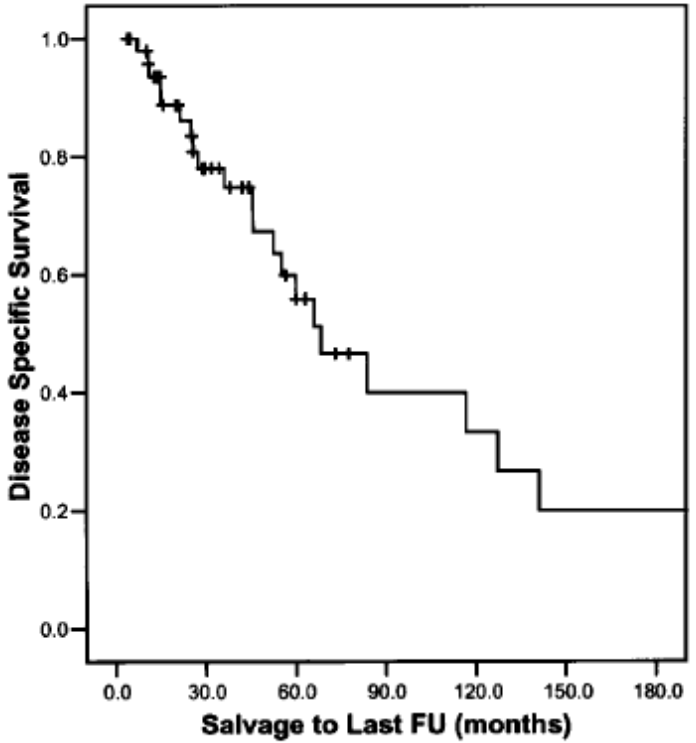
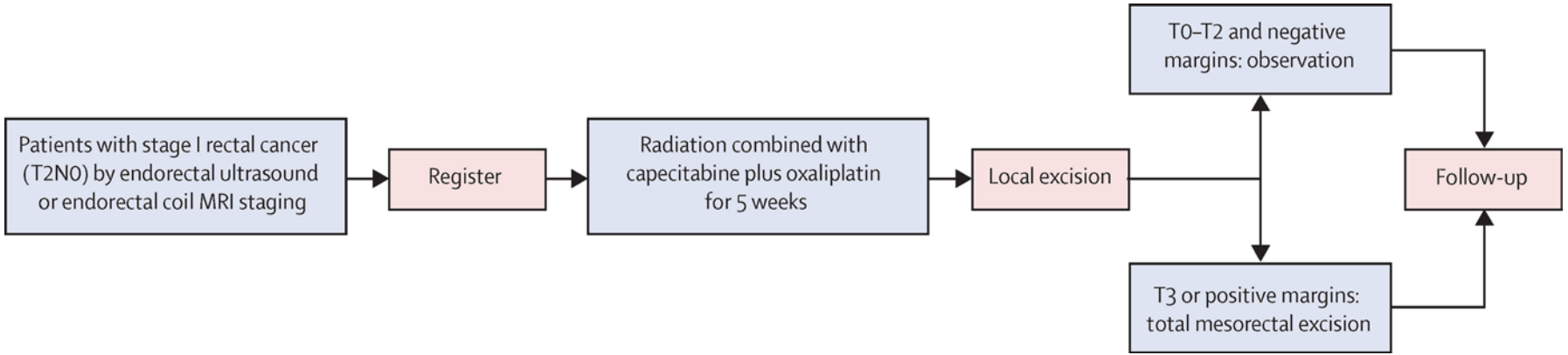


Figure 1. Actuarial survival for salvage surgery following transanal excision of early rectal cancer. FU = follow-up.

Weiser MR, et. al. Surgical salvage of recurrent rectal cancer after transanal excision. Dis Colon Rectum. 2005 Jun;48(6):1169-75.

Organ preservation for clinical T2N0 distal rectal cancer using neoadjuvant chemoradiotherapy and local excision (ACOSOG Z6041): results of an open-label, single-arm, multi-institutional, phase 2 trial

Julio Garcia-Aguilar, Lindsay A Renfro, Oliver S Chow, Qian Shi, Xiomara W Carrero, Patricio B Lynn, Charles R Thomas Jr, Emily Chan, Peter A Cataldo, Jorge E Marcet, David S Medich, Craig S Johnson, Samuel C Oommen, Bruce G Wolff, Alessio Pigazzi, Shane M McNevin, Roger K Pons, Ronald Bleday



Garcia-Aguilar J, et. al. Organ prservation for clinical T2N0 distal rectal cancer using neoadjuvant chemoradiotherapy and local excision (ACOSOG Z6041): results of a n open-label, single-arm, multiinstitutional, phase 2 trial. Lancet Oncol. 2015;16(15):1537-46.

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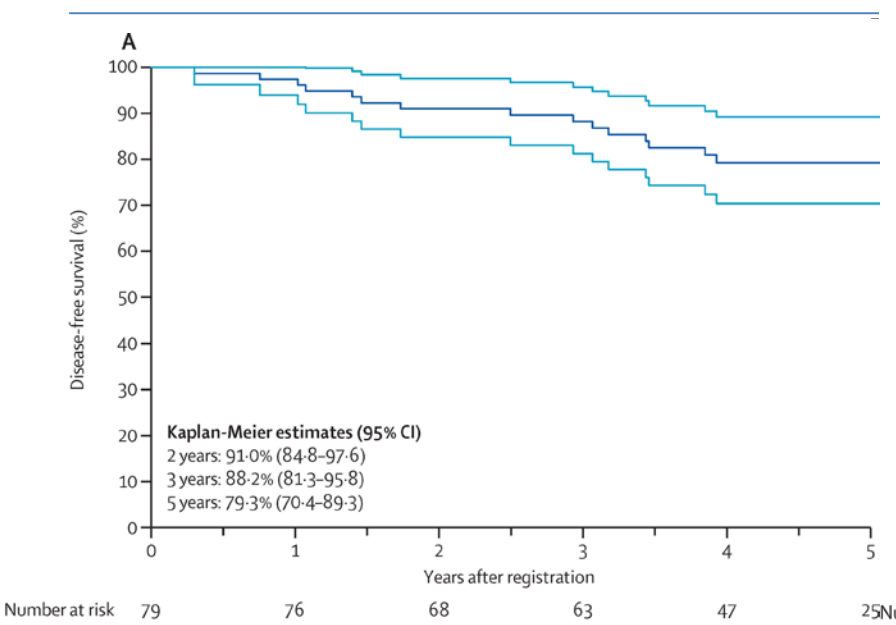
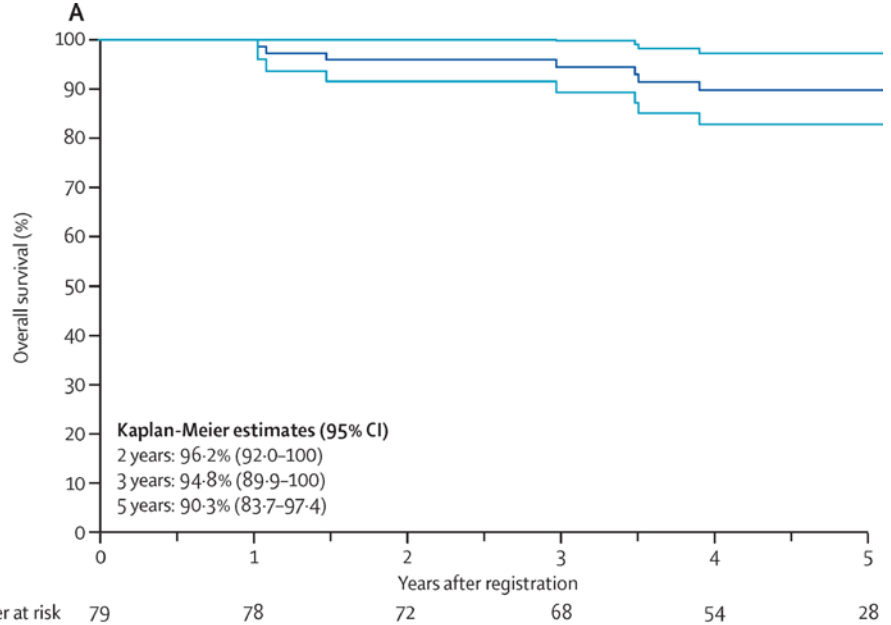
ACOSOG Z6041



Disease free survival



Overall Survival

Garcia-Aguilar J, et. al. Organ prservation for clinical T2N0 distal rectal cancer using neoadjuvant chemoradiotherapy and local excision (ACOSOG Z6041): results of a n open-label, single-arm, multiinstitutional, phase 2 trial. Lancet Oncol. 2015;16(15):1537-46.

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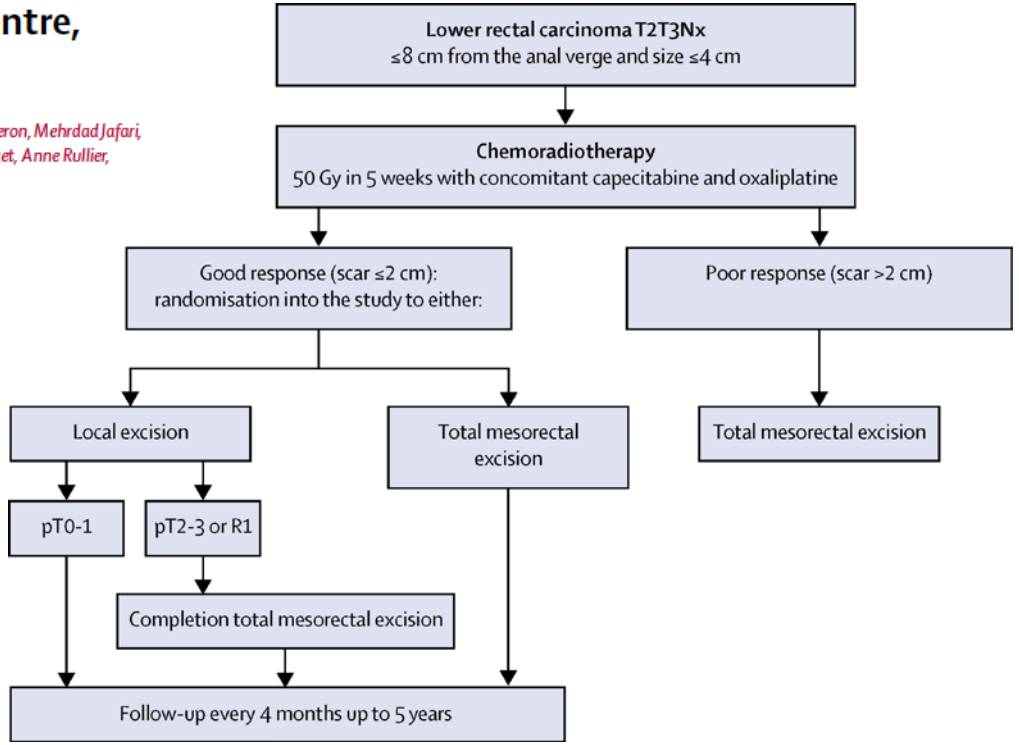
Organ preservation for rectal cancer (GRECCAR 2): a prospective, randomised, open-label, multicentre, phase 3 trial

Eric Rullier, Philippe Rouanet, Jean-Jacques Tuech, Alain Valverde, Bernard Lelong, Michel Rivoire, Jean-Luc Faucheron, Mehrdad Jafari, Guillaume Portier, Bernard Meunier, Igor Silieznieff, Michel Prudhomme, Frédéric Marchal, Marc Pocard, Denis Pezet, Anne Rullier, Véronique Vendrely, Quentin Denost, Julien Asselineau, Adélaïde Doussau

- Multi-institutional study
- T 2-3, N 0-1 rectal cancers
- <8cm from anal verge



Rullier E, et. al. Organ preservation for rectal cancer (GRECCAR 2): a prospective, randomised, open-label, multicentre, phase 3 trial. Lancet. 2017; 390: 469-479.

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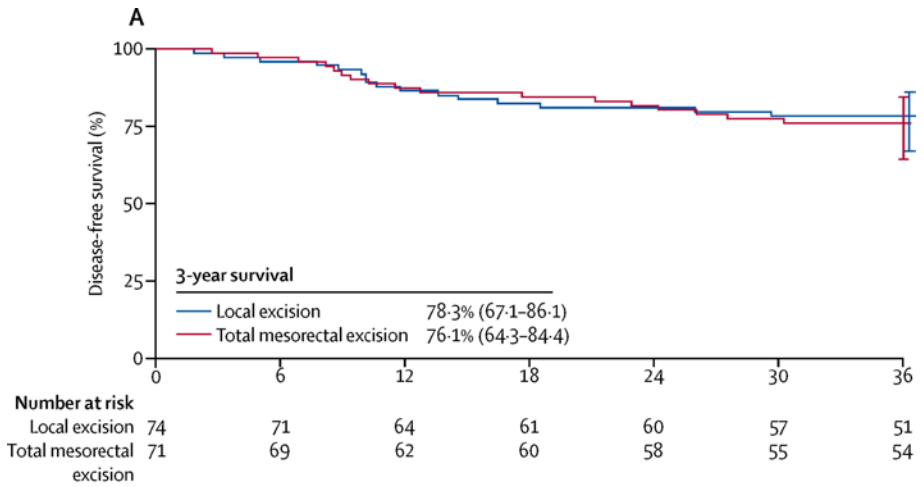
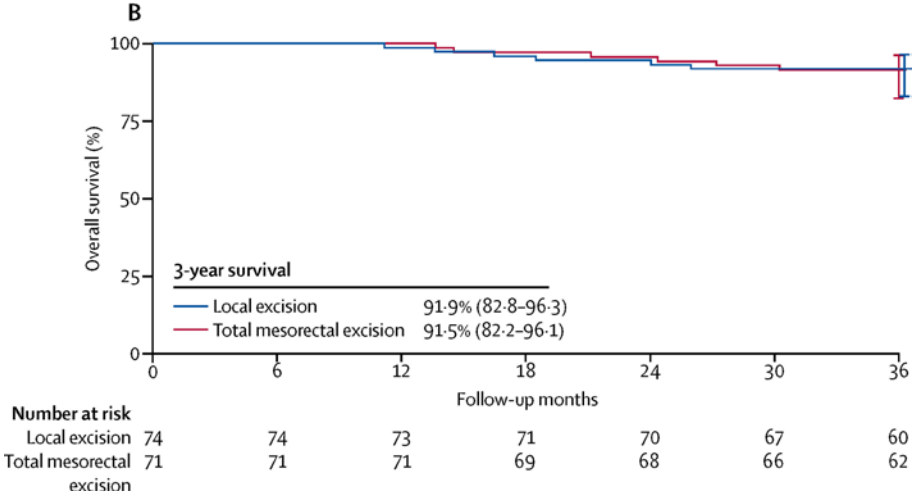
GRECCAR 2



Disease Free Survival



Overall Survival

Rullier E, et. al. Organ preservation for rectal cancer (GRECCAR 2): a prospective, randomised, open-label, multicentre, phase 3 trial. Lancet. 2017; 390: 469-479.

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Take away points

- Local excision for rectal cancer is appropriate in select patients
- Preoperative tumor assessment can help identify factors associated with increased risk of recurrence
- Neoadjuvant therapy in conjunction with local excision can result in acceptable oncologic outcomes in patients who are poor candidates for anterior resection

Thank you