Personalized Approaches to Gastrointestinal Cancers

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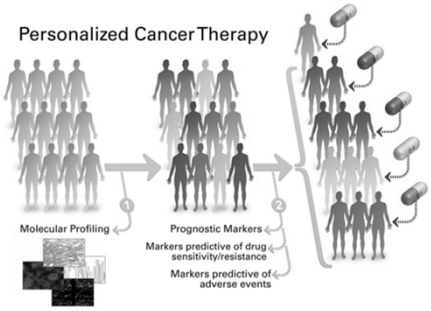
Disclosures

None

Objectives

- What is personalized medicine and how does it relate to cancer?
- What role does the surgeon play in personalized cancer care?
- What personalized strategies do we utilize for our cancer patients?

What is personalized cancer care



Go through some genomic studies

- This view of personalized cancer care is pretty narrow.
  -Feasibility
  -Cost
- What can we do to personalize the care of the patient in our office?

Personalized Surgical Care

- Multimodal therapy and the importance of tumor board
- Preoperative optimization and tailored Enhanced Recovery After Surgery (ERAS) protocols
- Operative choices
- Postoperative care

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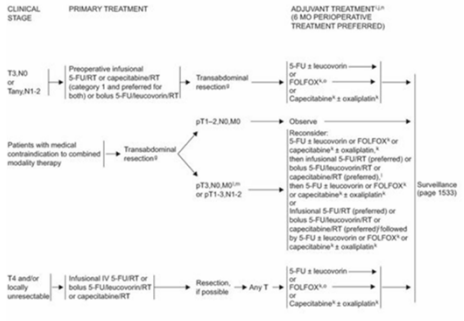
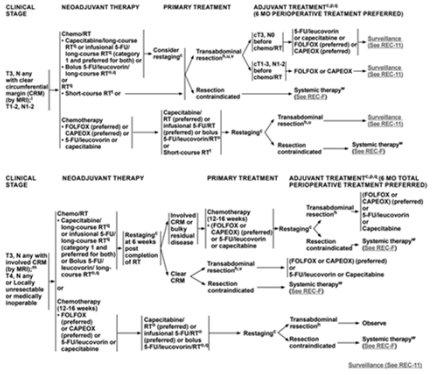
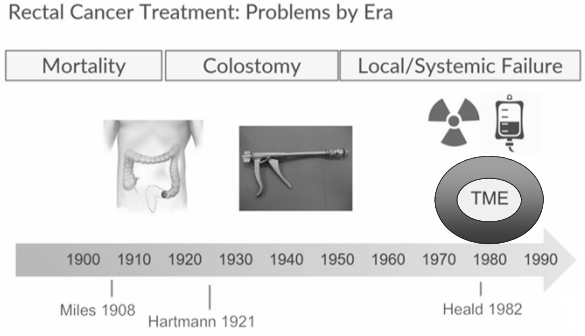
Multimodal Therapy – Rectal Cancer – NCCN 2013



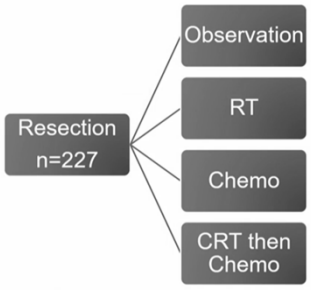
Multimodal Therapy – Rectal Cancer NCCN 2018



Rectal Cancer Treatment: Problems by Era



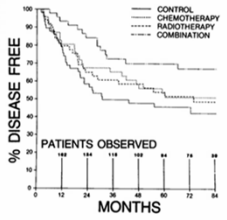
GITSG: Gastrointestinal Tumor Study Group



N Engl J Med 1985:312;1465-1472

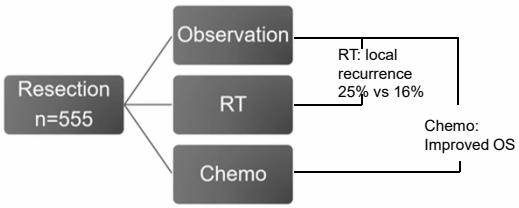
GITSG: Gastrointestinal Tumor Study Group

Terminated early:
CRT/Chemo recurrence 33%
Control recurrence 55%



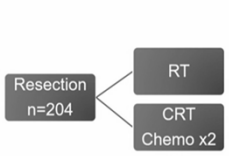
N Engl J Med 1985:312;1465-1472
N Engl J Med 1986; 315:1294-1295

NSABP: National Surgical Adjuvant Breast and Bowel Project



JNCI 1988;80:21-29

NCCTG: North Central Cancer Treatment Group



	LOCAL RECURRENCE	DISTANT RECURRENCE
RT	25.0%	46.0%
CRT Chemo x2	13.5%	28.8%

ChemoRT + chemo: 36% reduced risk of cancer-related death

N Engl J Med 1991:324;709

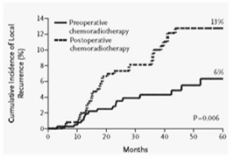
German Rectal Cancer Study Group

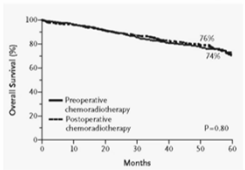
N Engl J Med 2004;351:1731-40.

German Rectal Cancer Study Group

LR 13→6%

OS – no different





Can preoperative long course chemoradiation increase sphincter salvage rates by downstaging

N Engl J Med 2004;351:1731-40.

1990 NIH Consensus Conference

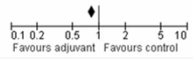
- GITSG - NCCTG - NSABP R-01

FAVORED TRIMODALITY TREATMENT
including adjuvant therapy for stage II

JAMA. 1990;264(11):1444-1450

Does Adjuvant Chemotherapy Work?

Overall Survival:
17% reduction in risk of death



Disease Free Survival:
25% reduction in disease recurrence

21 trials
9,785 rectal cancer

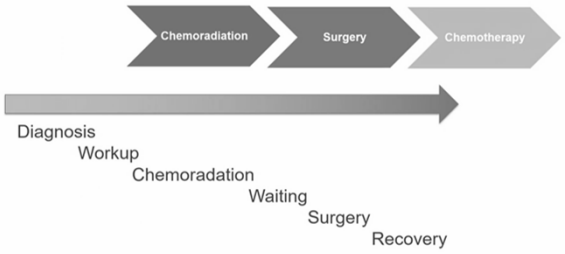
Cochrane Database of Systematic Reviews 2012, Art. No.: CD004078.

The evolution of rectal cancer treatment

Two Problems:

Distant Recurrence

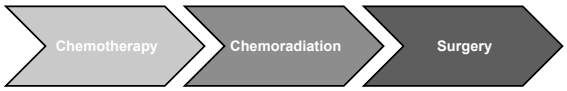
Overtreatment



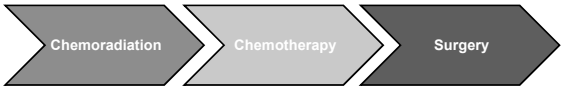
4-6 months from diagnosis to chemo

Total Neoadjuvant Therapy

"Induction"



"Consolidation"



Where are we going?

- Can we omit radiation in certain patients?
- Can we omit surgery in certain patients?

Personalized Surgical Care

- Multimodal therapy and the importance of tumor board
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- Operative choices
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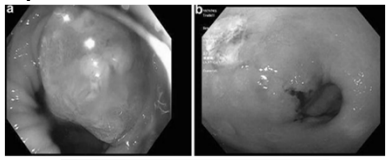
Preoperative Measures

- Preoperative tumor assessment
- Nutrition
- Frailty, exercise tolerance
- Counseling expectations, site marking
- Patient factors

Preoperative tumor assessment



Malnutrition

Implications of preoperative hypoalbuminemia in colorectal surgery

Adam Truong, Mark H Hanna, Zhobin Moghadamyeghaneh, Michael J Stamos

- Prevalence in GI surgery patients 30-50%
- Albumin < 3.5 is the strongest preoperative predictor of both 30 day morbidity and mortality
- Albumin level independently predicts complication rates such as sepsis, ARF, bleeding, SSI, failure to wean from ventilation amongst 61 other complications.

J Surg Oncol. 2017 Jun;115(8):997-1003. doi: 10.1002/jso.24617. Epub 2017 Apr 24.

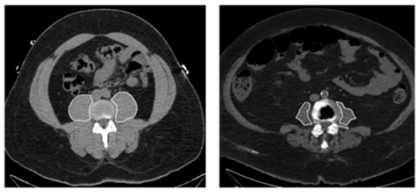
Modified frailty index predicts postoperative outcomes in older gastrointestinal cancer patients.

Vermillion SA[1], Hsu FC[2], Dorrell RD[1], Shen P[3], Clark CJ[3].

- ACS-NSQIP 2005-2012
- Surgery for GI cancers (N=41,500)
  - Age 60-90
  - 64% colorectal cancer (N=28,700)
  - Only 2.8% were considered frail (N=1,164)
- Frail patients hold longer LOS (11.7 vs. 9 days; p<.0001)
- Frailty was an independent predictor of:
  - Major complications OR 1.5 (95% CI 1.39-1.65 p<.001)
  - 30 days mortality OR 1.48 (95% CI 1.42-1.75, p<.001)
- **Gani et al**. N=1,169; 25% sarcopenic
  - Adjusted median total hospital cost $38,000 vs. $24,000, p<.001

Sarcopenia (muscle wasting) is a surrogate for frailty

- Inflammation, age, malnutrition, chronic disease.
- Psoas muscle size at L3 is a representative



Pre-habilitation improves patients' functional capacity to tolerate the stress of surgery

- 75 patients undergoing resection for colorectal cancer
- Randomized to prehabilitation + rehabilitation vs. rehabilitation alone
- Pre-habilitation: exercise, nutrition and coping strategies.

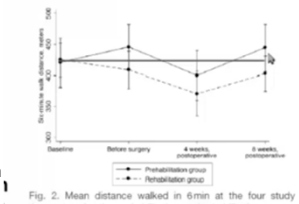


Fig. 2. Mean distance walked in 6 min at the four study time points for the prehabilitation and rehabilitation groups ($P = 0.016$). *Whiskers* represent 95% CIs.

Enhanced Recovery After Surgery (ERAS)

- Perioperative procedures and practices applied to patients undergoing elective surgery.
- Aim is to attenuate stress response to surgery to enable rapid recovery.
- Improves outcomes: decreased length of stay, decreased narcotic use, improved patient satisfaction.

Fast track surgery versus conventional recovery strategies for colorectal surgery (Review)

Cochrane Library
Cochrane Database of Systematic Reviews

Spanjersberg WR, Reurings J, Keus F, van Laarhoven CJHM

- 4 RCTs with at least 7 ERP measures each
- RR for all complications 0.5
- LOS -2.94 d
- Readmissions equal
- Major complications equal

ERAS

Preop	Surgery	Postop
• Preoperative counseling • Marking when needed • Mechanical and abx prep • Carbohydrate load • Clear liquid diet until 2 hours before surgery • Heparin, Tylenol, Celecoxib (/ gabapentin) • Entereg	• Minimally invasive technique when possible • Intrathecal duramorph or TAP blocks with liposomal bupivacaine • Conservative fluid administration • Low insufflation pressures	• Clear liquid diet POD#0 • Regular diet POD#1 • Out of bed POD#0 • Foley out POD#1 or 2 • Walk five times a day • Meals out of bed, in chair

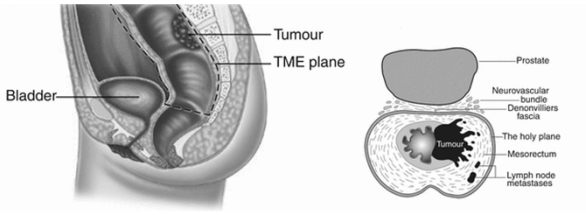
Personalized Surgical Care

- Multimodal therapy and the importance of tumor board
- Preoperative optimization and tailored Enhanced Recovery After Surgery (ERAS) protocols
- Operative choices
- Postoperative care

Operative Measures

- Choice of operation and approach
- Lymph nodes, TME, CRM, and emergence of CME
- Intraoperative care

Total Mesorectal Excision

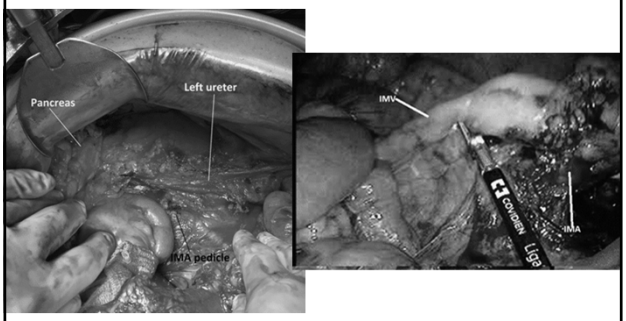


- Sharp dissection in the plane between the parietal and visceral layers of endopelvic fascia.
- ID and preserve autonomic sacral nerves.

Making sense of the options

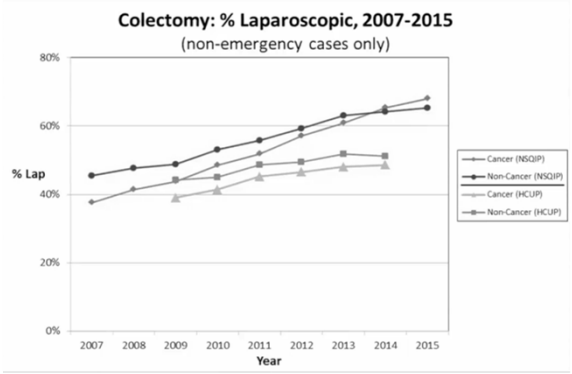
- Open
- Laparoscopic
- Robotic
- TAMIS
- TaTME

Open vs Laparoscopic

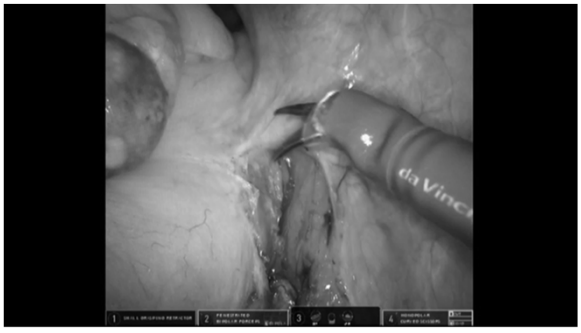


Open vs Laparoscopic

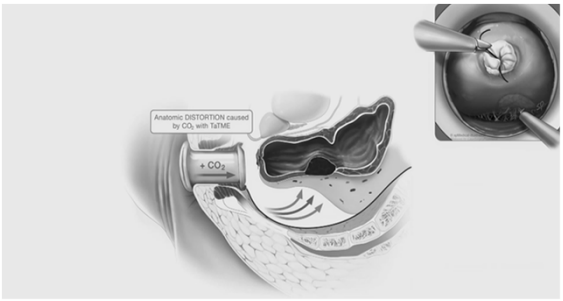
- COLOR II
- ALaCaRT
- ACOSOG Z 6051



Laparoscopic vs Robotic

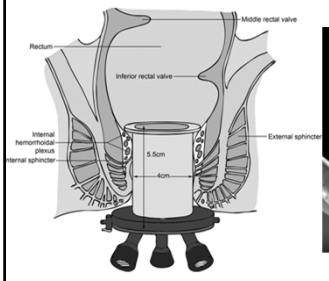


What is TaTME



Atallah S., Knol J, et.al. – Tech Coloproctol 2017

TAMIS



Postop

- Genetic counseling for appropriate patients
- Tailored therapies
- OncotypeDX

Conclusion

- Cancer care is growing more complex.
- Personalized care means we are considering more factors than we ever have before.
- By implementing multidisciplinary tumor boards, doing and tailoring preop, intraop, and post op care to each patient's needs, we can improve outcomes while reducing side effects.

Thank you for your attention!