Short vs. Long Course Radiation: Outcomes in Rectal Cancer Total Neoadjuvant Therapy

Shari Tian, BS; Emily F Simon, MD; Emily Steinhagen, MD, FACS, FASCRS; Kayvan Barekatain, MD; Kristen Westfall, MD, MPH; Jay Han, BS; Ronald Charles, MD

University Hospitals | UH RISES Research in Surgical Outcomes and Effectiveness | Case Western Reserve University EST. 1826

BACKGROUND

Total Neoadjuvant Therapy (TNT) is the **gold standard** for **locally advanced rectal cancer** (LARC).

Patients with a **complete clinical response** can pursue **organ preservation** and **surveillance**.

The relative efficacy of **short-course radiotherapy (SCRT)** and **long-course chemoradiotherapy (LCCRT)** in TNT remains unclear.

AIM: Assess the impact of **TNT radiation course** on **perioperative outcomes and survival** in LARC patients.

METHODS

INCLUSION:
- Single-institution
- Retrospective: 2017-2023
- Stage II-III rectal cancer
- Received TNT with SCRT or LCCRT

EXCLUSION:
- Age <18
- Metastatic disease at time of diagnosis

PERIOPERATIVE OUTCOMES:
- Clinical response
- Non-operative management (NOM) vs surgical resection
- Tumor regrowth during NOM
- Pathological response
- Tumor regression grade

SURVIVAL ENDPOINTS:
- Disease-free survival (local or distant recurrence)
- Overall survival (mortality)

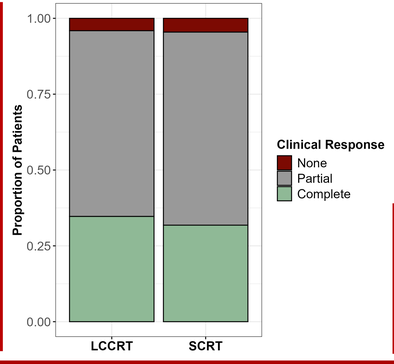
STATISTICAL ANALYSIS:
- Univariate: Chi-Square
- Multivariate Logistic Regression
- Cox Proportional-Hazards Model

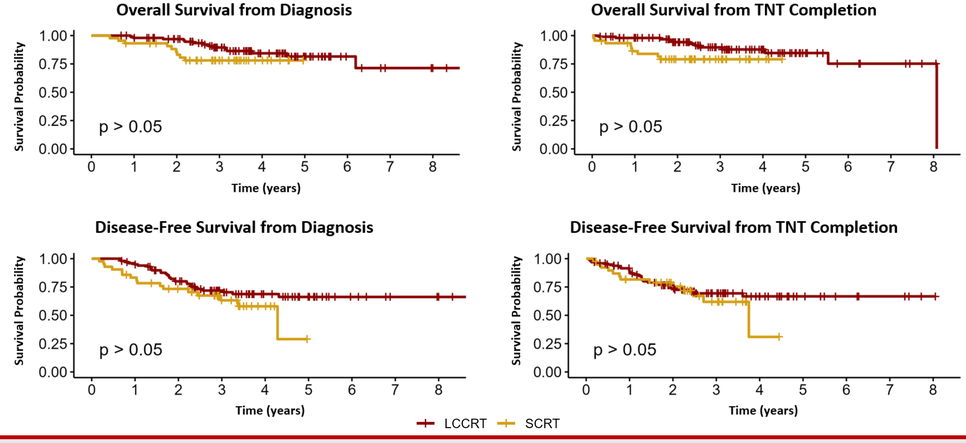
RESULTS

Table 1: Patient Demographics and Clinical Characteristics

Variable	N (%) or Mean ± SD	Variable	N (%) or Mean ± SD
Age	64.4 ± 12	TNT Radiation	
Sex		Short	46 (31.3)
Male	91 (61.9)	Long	101 (68.7)
Female	56 (38.1)	TNT Chemotherapy	
Race		Induction	39 (26.5)
White	130 (88.4)	Consolidation	108 (73.5)
Black	13 (8.8)		
Other	4 (2.7)		

Multivariate logistic regression adjusted for age and nodal stage: **No significant association** between radiation course and **all perioperative outcomes,** including **clinical response**





Cox proportional-hazards models adjusted for age and nodal stage:
- **Increased hazard of death** for **SCRT** from diagnosis (n = 143, HR = 2.25) and TNT completion (n = 142, HR = 2.54), though **findings were not significant**
- **Increased hazard of recurrence** for **SCRT** from diagnosis (n = 141, HR = 1.57) and TNT completion (n = 136, HR = 1.28), though **findings were not significant**

CONCLUSIONS & LIMITATIONS

No difference between short and long course radiation in **overall mortality or disease recurrence.**

No difference between short and long course radiation in **clinical response, surgery vs. non-operative management, tumor regrowth, pathological response, or tumor regression grade.**

Larger datasets and additional analyses are needed to evaluate the impact of TNT radiation course on **adverse effects of treatment, surgical complications, and quality of life.**