

# Is There a Role for Neoadjuvant Radiation Dose Escalation in Esophageal Cancer? A Meta-Analysis

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## Background

In treating esophageal cancer chemo-radiation is used in the definitive as well as neo-adjuvant setting. Optimal dosage of radiation for best outcome has been debated. The aim of this study is to evaluate clinical outcomes of lower radiation dosage compared to higher.

## Methods

Online search for studies comparing radiation dose from 1990 to present was performed. Primary outcome was overall-survival rates for up to 5 years. Secondary outcomes included post-treatment complications and treatment response. A cut point of 51 Gy and less was considered as lower dose and greater than 51 Gy was considered higher dose. Quality of included studies was evaluated by STROBE criteria. Relative Risk (RR) and 95% Confidence Intervals (CI) were calculated from pooled data.

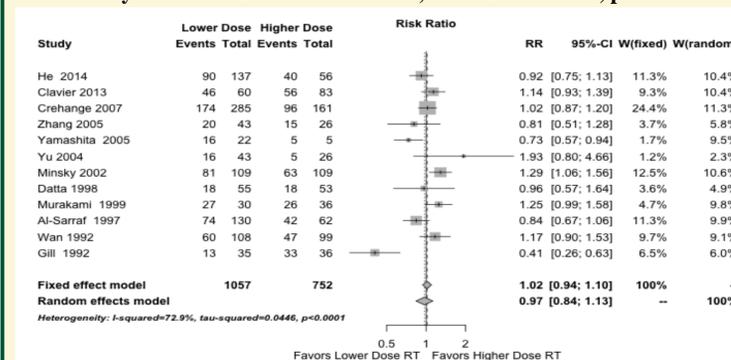
## Results

The search strategy yielded 142 studies, 12 met our selection criteria and included 1876 patients receiving radiation for resectable esophageal carcinoma. Of these patients, 1057 received lower and 819 were treated with greater than 51 Gy. Median age was 63 and 64 years for lower and higher radiation dose respectively. Meta-analysis showed no statistically significant difference in survival and toxicities between the two groups. 1 year overall survival (RR=0.97, 95% CI 0.84-1.13, p=0.69), 2 year overall survival (RR=1.29, 95% CI 0.76-2.19, p=0.34), 3 year overall survival (RR=1.18, 95% CI 0.82-1.68, p=0.37), 4 year overall survival (RR=1.37, 95% CI 0.64-2.94, p=0.41), 5 year overall survival (RR=1.11, 95% CI 0.72-1.69, p=0.64), Esophagitis (RR=0.76, 95% CI 0.39-1.50, p=0.43), Dermatitis (RR=0.98, 95% CI 0.12-7.94, p=0.99), Fistula formation (RR=0.72, 95% CI 0.32-1.60, p=0.42), Hematologic complications (RR=1.10, 95% CI 0.20-6.02, p=0.91), Stricture formation (RR=1.39, 95% CI 0.54-3.58, p=0.5).

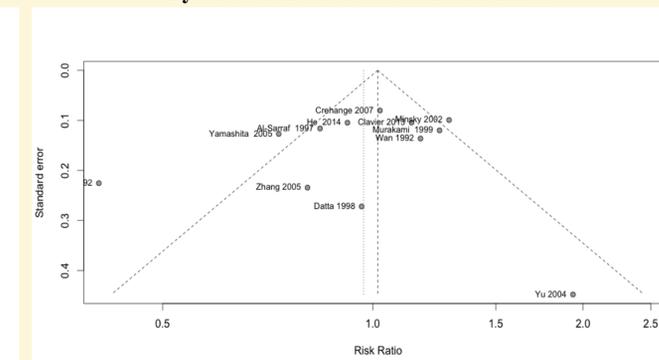
## Conclusion

Lower radiation dose appears to be as effective as higher dose in esophageal carcinoma with similar toxicity profile and survival rates. Larger prospective randomized trials, focusing on patient-reported quality-of-life are required to consolidate these results.

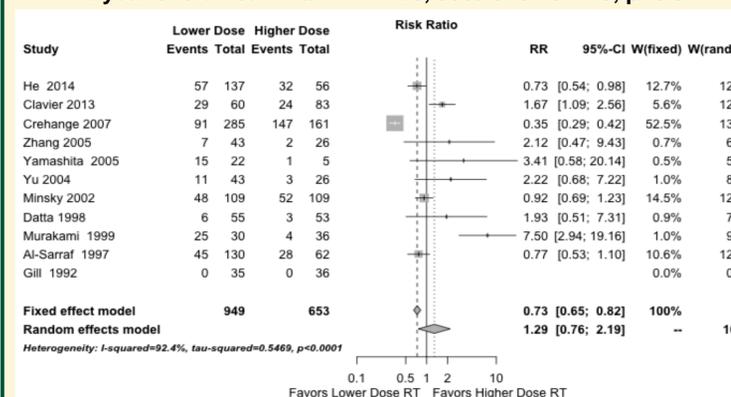
1 year overall survival: RR=0.97, 95% CI 0.84-1.13, p=0.69



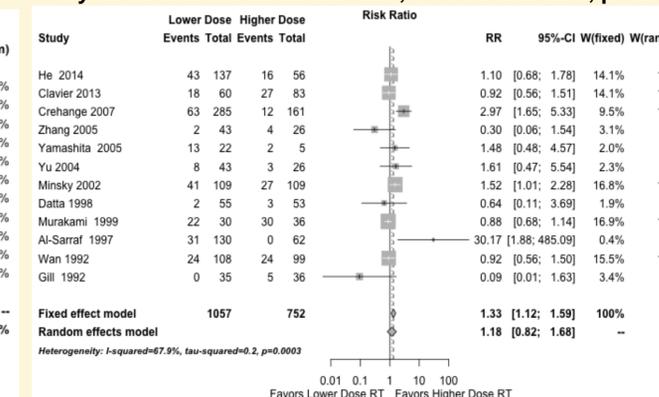
1 year overall survival : Standard Error



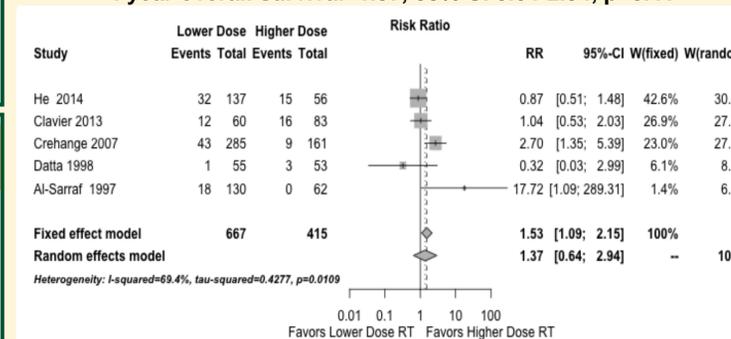
2 year overall survival: RR=1.29, 95% CI 0.76-2.19, p=0.34



3 year overall survival: RR=1.18, 95% CI 0.82-1.68, p=0.37



4 year overall survival=1.37, 95% CI 0.64-2.94, p=0.41



5 year overall survival: RR=1.11, 95% CI 0.72-1.69, p=0.64

