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Extended vs. Small Field Irradiation in High Risk Post Esophagectomy Patients Receiving Combined Chemoradiation Therapy: A Decade Experience in Treatment of Esophageal Cancer

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**EXTENDED vs. SMALL FIELD IRRADIATION IN HIGH RISK POST ESOPHAGECTOMY PATIENTS RECEIVING COMBINED CHEMORADIATION THERAPY: A DECADE EXPERIENCE IN TREATMENT OF ESOPHAGEAL CANCER**

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**CONCLUSION:**

• Boost fields were CT-planned with 2 cm margins around the target volume.

• Inclusion criteria were based on pre-operative observation of regional lymph nodes and/or pericardial effusion.

• The first phase of RT involved AP/PA beam arrangement to 30-45 Gy, with either extended field (including anastomotic site with field size range 22x12-24x12 cm, median 19x12 cm) followed by a second phase of CT-planned radiation.

• Treatment outcomes were analyzed using the Kaplan-Meier method and log-rank test. The median follow-up time was 136 months.

**METHODS AND MATERIALS**

• Data were analyzed for patients treated at London Regional Cancer Centre (LRCC) from 1989 to 1999 who were deemed high risk for recurrence after esophagectomy.

• Patients who underwent esophagectomy were included.

• The difference between small and extended field remained statistically significant (P=0.04).

• The overall survival rate was 50% and 31% respectively for small field and extended field RT.

**INTRODUCTION**

• Postoperative radiation therapy (RT) and postoperative chemoradiation1 have been used for esophageal cancer patients deemed high risk for recurrence after esophagectomy.

• Definition of optimal RT target volume after esophagectomy is difficult due to significant changes in patient anatomy and function.

• Radiation oncologists have advocated the inclusion of the anastomotic site within the irradiation volume due to concerns for potential increased relapse risk.

**RESULTS**

• The first relapse rate after adjuvant therapy was 25/35 (71.4%) and 2/14 (14.2%) with extended field (P < 0.001). Recurrence locally to anastomosis or adjacent site was 10/35 (28.6%) with small field and 0/14 (0%) with extended field.

• The large time to recurrence ranged from 1 week to 14 months (range 3-142 months), the two- and five-year overall survival rates were 50% and 31%, respectively.

• The two- and five-year disease specific survivals were 54% and 32%, respectively for small field and 97% and 89% respectively, for the extended field RT (Table 3).

• In small field RT, the first relapse rate after adjuvant therapy was 28.0% and the median time to relapse was about 30 months. Local-regional relapse with small field was 23.5% (71%) and 2-14 (13%) years with extended field RT (P=0.001) (Table 2).

• The difference between small and extended field remained statistically significant (P=0.03) when adjusted for margin status. Recurrence locally to anastomosis or adjacent site was 10.9 (28%) with small field and 0% with extended field RT (P=0.04) (Table 3).

• Complications of extended field RT were reviewed including RT treatment interruptions (P=0.71), chemoradiation delays (P=0.26), and late gastrointestinal Grade 2 toxicities (P=0.26) were not statistically significant when compared with patients treated with small field RT.

**CONCLUSION**

• Esophageal cancer patients with high risk features of regional nodal involvement, positive or close reactive margins and T3, T4 disease, postoperative RT with extended field to include the anastomotic site, improved local-regional disease control without added late toxicity upon retrospective analysis.

• Confirmation of these findings and evaluation of acute and chronic toxicity and patient quality of life associated with this treatment regimen, requires prospective investigation.