

**Proton radiation for treatment of cancer of the oropharynx: early experience at Loma Linda University Medical Center using a concomitant boost technique.**

Slater JD, Yonemoto LT, Mantik DW, Bush DA, Preston W, Grove RI, Miller DW, Slater JM.

Department of Radiation Medicine, Loma Linda University Medical Center, Loma Linda, CA 92354, USA. jdslater@dominion.llumc.edu

**Abstract:**

**PURPOSE:** To assess accelerated fractionation using photon and proton radiation to improve local control and reduce complications in treating locally advanced oropharyngeal cancer.

**METHODS AND MATERIALS:** Twenty-nine patients with localized Stage II-IV oropharyngeal cancer received accelerated photon and proton radiation, 75.9 GyE in 45 fractions/5.5 weeks, to the primary disease, involved lymph nodes, and potential areas of subclinical spread. Follow-up ranged from 2 to 96 months.

**RESULTS:** Five-year actuarial control for local disease was 88%, and for neck node disease, 96%; yielding a 84% locoregional control rate at 5 years. Four patients developed distant metastases. The 5-year actuarial locoregional control rate was 84%. The actuarial 2-year disease-free survival rate was 81%; at 5 years, it was 65%. All patients completed the prescribed treatment; though aggressive nutritional and anesthetic support was necessary. Late Grade 3 toxicity was seen in 3 patients.

**CONCLUSIONS:** Protons used as a concomitant boost with photons effectively delivered an accelerated time-dose schedule to the cancer with a more tolerable schedule to surrounding normal tissues. Preliminary results reveal increased locoregional control without increased toxicity. Future studies must evaluate the optimum time-dose schedule.