

Determination and delineation of nodal target volumes for head-and-neck cancer based on patterns of failure in patients receiving definitive and postoperative IMRT.

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Clinical investigation: head and neck

Determination and delineation of nodal target volumes for head-and-neck cancer based on patterns of failure in patients receiving definitive and postoperative IMRT

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## Abstract

**Purpose:** We present the guidelines for target volume determination and delineation of head-and-neck lymph nodes based on the analysis of the patterns of nodal failure in patients treated with intensity-modulated radiotherapy (IMRT).

**Methods and Materials:** Data pertaining to the natural course of nodal metastasis for each head-and-neck cancer subsite were reviewed. A system was established to provide

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guidelines, 126 patients (52 definitive, 74 postoperative) were treated between February 1997 and December 2000 with IMRT for head-and-neck cancer. The median follow-up was 26 months (range 12–55), and the patterns of nodal failure were analyzed.

**Results:** These guidelines define the nodal target volume based on the location of the primary tumor and the probability of microscopic metastasis to the ipsilateral and contralateral (Level I–V) nodal regions. Following these guidelines, persistent or recurrent nodal disease was found in 6 (12%) of 52 patients receiving definitive IMRT, and 7 (9%) of 74 patients receiving postoperative IMRT had failure in the nodal region.

**Conclusion:** On the basis of our clinical experience in implementing inverse-planning IMRT for head-and-neck cancer, we present guidelines using a simplified, but clinically relevant, method for nodal target volume determination and delineation. The intention was to provide a foundation that enables different institutions to exchange clinical experiences in head-and-neck IMRT. These guidelines will be subject to future refinement when the clinical experience in head-and-neck IMRT advances.



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## Keywords

Target definition; IMRT; Imaging-based; Head-and-neck cancer

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