Abstract: Background. Completion cervical lymphadenectomy is usually performed after excisional biopsy of nodal metastases from melanoma. Radiation (XRT) might be effective for some patients in lieu of formal lymph node dissection.

Methods. Thirty-six patients with parotid or cervical node metastases from melanoma were treated with excision of nodal disease and postoperative XRT without formal lymph node dissection. Radiation was delivered to the primary site (if known), the site of nodal excision, and the undissected ipsilateral neck.

Results. With a median follow-up of 5.3 years, the disease recurred within the regional basin in two patients and at distant sites in 14 patients. The actuarial 5-year regional control and distant metastasis–free survival rates were 93% and 59%, respectively. Two patients had a clinically significant side effect develop.

Conclusions. The results of this study suggest that selected patients may receive regional XRT after local excision of nodal disease from melanoma in lieu of formal lymph node dissection.

Keywords: melanoma; radiation; surgery

Cervical adenopathy may be the first presentation of unrecognized primary melanoma or the site of first recurrence after wide local excision of a primary lesion. If the diagnosis of nodal disease is obtained by means of local excision, literature suggests that the likelihood of additional disease remaining in the lymph node basin ranges from 42% to 66%.1–7 For these patients, completion lymph node dissection, which involves all levels of the cervical basin and sometimes the parotid, removes any residual disease and results in satisfactory regional control for most patients.
For some patients, however, completion neck dissection involves unnecessary surgical and anesthetic risk with little clinical benefit aside from procuring regional control. We hypothesized that cervical radiation therapy after local excision results in adequate regional control with minimal morbidity. Evidence in support of this hypothesis is twofold. First, for patients with nodal extracapsular extension—a feature known to increase the risk of regional failure after formal neck dissection alone—adjuvant radiation therapy results in significantly lower than expected regional failure rates. Second, elective radiation therapy to the cervical basin in patients with thick head and neck primary lesions results in regional control higher than that predicted by the incidence of nodal disease had elective lymph node dissection or sentinel lymph node biopsy been performed.

Although the standard practice at our institution has been completion lymph node dissection for patients with nodal metastases diagnosed by means of local excision, 36 patients have been collected over a period of 20 years who received cervical radiation therapy instead. The outcomes of these patients are reported.

**MATERIALS AND METHODS**

Patients were identified through a search of The University of Texas M. D. Anderson Cancer Center Department of Radiation Oncology and institutional patient databases. Between the years 1983 and 2003, 450 patients received radiation to the cervical lymphatics and were without visceral metastases at the time of radiation. For this analysis, we selected only those patients who had had a regional surgical procedure (excision of clinically apparent nodal disease [ie, not sentinel lymph node biopsy]) and were referred for therapeutic radiation in lieu of completion lymphadenectomy. Patients who had undergone previous elective or therapeutic neck dissections and subsequently had nodal recurrence, removed by means of local excision, were excluded from this analysis. A waiver of informed consent was obtained before analysis from our institutional review board.

Disease relapse was scored if there was any clinical or radiographic evidence of tumor regrowth. Actuarial data for regional control and disease-free, distant metastasis-free, disease-specific, and complication-free survival curves were calculated with the Kaplan–Meier method.

Complications were recorded retrospectively and classified according to symptoms. Clinically significant complications were those requiring any form of medical therapy (eg, long-term use of pain medications or hearing loss) or those requiring surgical intervention.

**RESULTS**

**Patient, Tumor, and Treatment Characteristics.** Thirty-six patients fulfilled the criteria for this analysis. The duration of follow-up for the 24 patients alive at last contact ranged from 2.9 to 243 months (median, 63 months [5.3 years]). Patients' ages at the time of presentation ranged from 30 to 90 years (median, 53 years). There were 31 male and five female patients. All patients underwent complete history and physical examination, routine blood tests, chest radiography, and other appropriate radiologic imaging studies. The primary site was the head and/or neck in 20 patients and unknown in the remaining 16 patients.

The primary lesion, when known, was widely excised in all patients. The type of melanoma was as follows: superficial spreading, six patients; nodular, five patients; lentigo maligna melanoma, one patient; desmoplastic, two patients; and unclassified, six patients. The median Breslow thickness in these patients was 1.5 mm (range, 0.5–7 mm), and the Clark level was as follows: II, one patient; III, four patients; IV, six patients; V, three patients. Breslow thickness was unknown in five patients, and the Clark level was unknown in six patients. Primary ulceration was documented in one patient and satellitosis in one other patient.

In all 36 patients, surgery was performed for clinically apparent lymphadenopathy. Twenty patients were initially seen with nodal disease that was part of their initial diagnosis of melanoma, and the remaining 16 patients had nodal recurrence after excision of a cutaneous primary lesion.

The surgical nodal procedure was a nodal excision in 20 patients, a superficial parotectomy in 15 patients, and a wide parotidectomy in one patient. Review of the surgical specimens noted a median of one lymph node removed (range, 1–8) and a median of one lymph node pathologically involved with disease (range, 1–3). For the 35 patients in whom the size of the largest involved lymph node was documented, it ranged...
from 0.6 cm to 6 cm (median, 2 cm). Nine patients had documented nodal extracapsular extension.

Radiotherapy portals were designed to cover the regional lymphatic basins as previously described.8 The prescription dose was 30 Gy delivered twice weekly (given Monday and Thursday or Tuesday and Friday) at 6 Gy per fraction over 2.5 weeks, specified as a maximal dose. In one patient, a single boost dose (6 Gy) was delivered to a reduced field. Three patients received 1 year of adjuvant interferon.

**Patient Survival and Disease Outcome.** After a median follow-up of 5.3 years, 14 patients have had disease recurrence, and 12 patients have died; 10 of these patients died of metastatic disease. There have been 14 distant failures, two regional cervical failures, and one local failure. The actuarial 5-year disease-specific, disease-free, and distant metastasis–free survival rates were 69%, 59%, and 59%, respectively.

The 5-year actuarial regional control rate was 93%. One of the two regional failures occurred in an upper jugular node of a patient with a parotid nodal metastasis measuring 0.6 cm from a 5-mm thick, Clark level V primary lesion. The other regional failure occurred in the subcutaneous tissue overlying the occipital region in a patient who had a single occipital lymph node metastasis measuring 2 cm with documented extracapsular extension. The primary lesion in this patient was 3.5-mm thick and Clark level IV. Both patients had received 30 Gy in five fractions, and the failures were within the field of radiation.

**Toxicity.** Two patients had clinically significant complications requiring medical management. One patient had ear pain requiring pain medication, and the other patient had osteoradionecrosis of the mandible after a tooth extraction and required hyperbaric oxygen treatments. The 3- and 5-year actuarial rates of clinically significant treatment-related complications were 8% and 8%, respectively.

**DISCUSSION**

Our current practice recommendation for patients diagnosed with cervical or parotid node metastases from melanoma is to complete a formal neck dissection. This recommendation is based on the frequency of residual disease after excision. Table 1 outlines four retrospective series examining the rate of subclinical cervical disease after excision of a palpable parotid metastasis. Whereas Table 2 outlines three retrospective series examining the rate of residual nodal disease after excision of a palpable node. These series show that residual disease was identified in 42% to 66% of patients at the time of completion lymph node dissection. Although the series detailed in Table 2 generally examined the incidence of residual nodal disease after excisional biopsy of a palpable axillary or groin node, it is believed that these data apply to melanoma patients in general and that the risk of residual cervical disease is high. Despite this high incidence, radiation therapy provided satisfactory regional control and was well tolerated. This suggests that a subgroup of patients might benefit from regional radiation therapy, particularly if observation of the neck is being contemplated because of medical comorbidities.

The current results also have implications for patients with microscopic nodal metastases diagnosed at the time of sentinel lymph node biopsy. Standard practice is to perform formal neck dissection for these patients because of the risk of residual involved nonsentinel lymph nodes. Recent data suggest that this risk depends on the primary Breslow thickness and the size of the sentinel node metastasis.11 Depending on combinations of these two factors, the rate of involved nonsentinel lymph nodes ranges from 12% to 42%, a rate of residual disease that is lower than for patients with clinically apparent nodal metastases removed by simple excision (Tables 1 and 2). It is expected that radiation would control this burden of microscopic disease as it has in the current series and several other series examining patients at high risk of regional recurrence.8,9 We concede that this treatment strategy will require additional confirmation of efficacy before uniform acceptance, but we do advocate a policy of regional irradiation for debilitated patients after identification of occult regional nodal metastasis by sentinel lymph node biopsy when completion lymph node dissection is not planned.

### Table 1. Incidence of subclinical cervical disease after excision of a palpable parotid metastasis.

<table>
<thead>
<tr>
<th>Series</th>
<th>No. involved/ no. in series (%)</th>
<th>Weighted average</th>
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<tbody>
<tr>
<td>Caldwell and Spiro1</td>
<td>7/14 (50)</td>
<td></td>
</tr>
<tr>
<td>Ball and Thomas2</td>
<td>5/7 (71)</td>
<td></td>
</tr>
<tr>
<td>Barr et al3</td>
<td>3/6 (50)</td>
<td>42%</td>
</tr>
<tr>
<td>O’Brien et al4</td>
<td>7/26 (27)</td>
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Although a strictly applied policy of completion lymph node dissection for all patients at risk of residual microscopic disease can be questioned, it is generally believed that observation—without some form of regional therapy—is not appropriate for patients with an involved sentinel lymph node, and there are no data to suggest that systemic therapy is a substitute for comprehensive regional treatment. Early regional therapy can avoid subsequent recurrence and may have a positive effect on overall survival. In a randomized trial examining immediate versus delayed dissection of regional nodes in patients with melanoma, the patients requiring delayed dissection for regional recurrence were found to have worse survival than patients found to have nodal disease at the time of elective lymph node dissection. Although this comparison is problematic because it assumes that all of the patients in the immediate elective dissection arm who were found to have involved lymph nodes were destined to have clinically apparent regional disease develop, the results substantiate the principle that early intervention is better than waiting for symptomatic recurrence.

In conclusion, it is unlikely that comprehensive surgical dissection would have improved on the regional control results obtained in the current series. Given the retrospective nature of this review, however, we do not recommend that all patients receive therapeutic radiation instead of formal dissection, but that radiation remains in the armamentarium of clinicians caring for patients with nodal metastases. Therapeutic radiation is appropriate for patients with significant medical comorbidities when detailed prognostic information is of little relevance and enrollment in a clinical trial is unlikely, but observation would place the patient at unnecessary risk of regional recurrence. Characteristics that increase the risk of regional recurrence have been well described in the literature, and it is apparent that regional radiation therapy can decrease this risk with minimal morbidity.

**REFERENCES**


**Table 2.** Incidence of additional nodal disease after excision of a palpable lymph node.

<table>
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<th>Series</th>
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<tr>
<td>Kane et al</td>
<td>15/22 (68)</td>
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<tr>
<td>Karakousis et al</td>
<td>46/61 (75)</td>
<td>66%</td>
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<tr>
<td>Meyer et al</td>
<td>29/53 (55)</td>
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