Nasopharyngectomy After Failure of 2 Courses of Radiation Therapy

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Background: Recurrence of nasopharyngeal carcinoma after initial therapy has been reported to range between 18% and 54%. As an alternative to surgical salvage, patients with recurrent nasopharyngeal carcinoma are offered a second course of radiation therapy. If this second course fails, patients may be candidates for surgical resection.

Objective: To identify the effectiveness and morbidity of surgical resection of recurrent nasopharyngeal carcinoma in patients who have received 2 cycles of external beam radiation.

Design and Setting: Retrospective survey of 6 patients in a university-based practice who underwent resection of recurrent nasopharyngeal carcinoma after 2 courses of radiation therapy.

Patients: Our study group comprised 4 women and 2 men aged between 35 and 67 years. All patients underwent 2 courses of radiation with a mean total dose of 11500 rad (115 Gy) (range, 9500-13200 rad [95-132 Gy]) delivered to the nasopharynx prior to resection. The mean duration between the second course of radiation and resection is 21 months (range, 8-52 months). The mean follow-up period is 7.2 years (range, 4.2-11.5 years).

Intervention: Nasopharyngectomy after failure of 2 courses of radiation therapy.

Main Outcome Measures: Postoperative clinical outcome and morbidity.

Results: Five years after resection, 1 patient died of disease. The remaining 5 patients (83%) are alive with no evidence of disease. Osteomyelitis is the most common complication, affecting 5 patients. Three of the 5 patients with osteomyelitis required operative debridement of the nasopharynx and split-thickness skin grafting. Other complications include oronasal fistula (2 patients), chronic otitis media (2 patients), and nasopharyngeal stenosis (1 patient).

Conclusion: Although poor wound healing is evident, the overall 5-year survival of 83% is encouraging.


The local control rate of nasopharyngeal carcinoma treated with external beam radiation (EBRT) has ranged between 18% and 54%.1-4 Preliminary optimistic results have been reported with the use of stereotactic radiosurgery or intensity-modulated radiation therapy, with and without chemotherapy.5 Pending extended follow-up, the effectiveness of multimodality therapy in controlling local disease is yet to be defined.

Even more trying is locally recurrent or persistent local disease in patients who have received 2 courses of EBRT. Hwang et al6 found that 38 (51%) of their 74 patients retreated with EBRT had persistent disease after the second course. The surgical excision of nasopharyngeal carcinoma in reirradiated patients is rarely attempted; hence, the role of surgery in this population remains poorly defined.

METHODS

In a retrospective review of salvage nasopharyngectomy performed at Stanford University Medical Center, we report the outcome in 6 of 44 patients who underwent resection of recurrent nasopharyngeal carcinoma after receiving 2 courses of EBRT. The remaining 38 patients underwent surgical resection after a single course of EBRT had failed, and results were reported in previous reviews.7,8 This group of 6 patients is composed of 4 women and 2 men aged between 35 and 67 years. All patients underwent 2 courses of EBRT with a mean total dose of 11500 rad (115 Gy) (range, 9500-13200 rad [95-132 Gy]) delivered to the nasopharynx. In addition, 2 patients received intracavitary seeds. The mean duration between the second course of radiation therapy and surgical resection is 21 months (range, 8-52 months). The goal of surgical treatment in all 6 patients was curative resection.

Patient selection was based on the extent of local disease. Resection was offered to surgical candidates who showed no evidence of new onset cranial nerve involvement or intracranial extension. Given the difficulty of distinguishing bony involvement from osteoradionecrosis after high-dose EBRT, bony erosion seen on imaging was not a contraindication to the procedure.

The surgical technique is based on the work of Wilson9 with the modifications outlined by Fee et al9 in 1988. All patients underwent a trans-
palatal approach as well as transcervical approach (for carotid artery isolation). This was supplemented with a transantral approach in 1 patient and facial degloving in another. The clivus (and first vertebral body) was drilled with a large cutting burr, and a wide sphenoidotomy was created. The defect was covered using a split-thickness skin graft. All patients received perioperative antibiotics as long as the nasal packing remained in place.

RESULTS

All patients tolerated the surgical resection without immediate complications and had a mean hospital stay of 5 days (range, 1-11 days). Patient 2 was kept intubated overnight. Patient 1 had temporary dysphagia that resolved prior to discharge. Three patients tolerated an oral diet at the time of discharge, and 2 patients were discharged on nasogastric tube feeds (which were discontinued during follow-up outpatient visit). No diet information is available for patient 4.

The most common complication is osteomyelitis of the clival bone, which was seen in 5 patients. Poor skin graft adherence was seen in all 5 patients. All patients were treated with oral antibiotics (culture directed, if possible), and 3 required home intravenous antibiotics. Three patients underwent operative debridement and replacement of split-thickness skin graft with excellent results.

Other complications included oronasal fistula, which developed in 2 patients and required surgical closure in 1. Patient 3 developed a nasopharyngeal stenosis that was released during debridement of the nasopharynx. Two patients developed chronic otitis media.

The mean follow-up period is 7.2 years (range, 4.2-11.5 years). Five years after resection, patient 4 died of disease. The remaining 5 patients (83%) are alive with no evidence of disease.

COMMENT

After 2 courses of EBRT, little is left in the way of curative treatment of persistent or recurrent nasopharyngeal carcinoma. Given that few such patients undergo surgical resection, the role of nasopharyngectomy in this group remains poorly defined. In a 1997 retrospective analysis, Hsu et al included 7 of their patients who underwent nasopharyngectomy after 2 or more courses of radiation therapy. Their patients received a mean of 12800 rad (128 Gy) of EBRT preoperatively and had a mean follow-up of 19 months after nasopharyngectomy. Only 1 patient was alive without evidence of disease, 1 was alive with local disease, 1 died from distant metastasis, 3 died from local disease, and 1 died from another cause (cerebrovascular accident). Osteomyelitis was seen in only 1 of the 7 patients, 1 patient had cranial nerve X and XII palsy, and another had an oronasal fistula.

The morbidity of nasopharyngectomy in twice-irradiated patients is dominated by poor wound healing. None of our patients had a cerebrospinal fluid leak, meningitis, or perioperative death. Osteomyelitis was seen in most (83%) of our patients secondary to poor bone coverage using the split-thickness skin graft. There is a need for more durable reconstructive techniques. Although free-flap reconstruction would provide healthy tissue for bone coverage, anchoring the flap in this location poses a challenge. Oronasal fistula was seen in 2 patients (33%). In comparison, Fee et al reported a series of 15 patients who underwent nasopharyngectomy after only 1 course of radiation therapy. The complications reported include 2 patients (13%) with permanent cranial nerve paralysis, 2 (13%) with osteomyelitis requiring intravenous antibiotics, 2 (13%) with aspiration pneumonia, 2 (13%) requiring prolonged nasogastric tube feedings, and 1 (7%) with intraoperative thyroid storm. Although both series included very small numbers of patients, a comparison suggests that twice-irradiated patients are at a higher risk of poor wound healing.

As for outcome, the high rate of patients (83%) alive without disease suggests the potential effectiveness of the procedure in twice-irradiated patients. A larger prospective series can best assess the role of surgery in this group.

CONCLUSIONS

Given the small number of patients studied in our series, we hesitate to make definitive conclusions on the effectiveness of nasopharyngectomy in twice-irradiated patients. However, the results of this review suggest that in appropriately selected patients, the second course of radiation therapy does not contraindicate surgical resection, and, in fact, the long-term outcome can be excellent. In our patient population, it increased the morbidity of the procedure. Poor wound healing should be anticipated, and great emphasis should be placed on the reconstruction of the surgical bed, including the use of a forearm free flap.

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