



Treatment of the parotid gland in cutaneous melanoma

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Technique

Melanoma of the head and neck may be metastatic to nodes within the parotid gland. The pattern of spread of melanoma in the head and neck and the significance of this to salivary gland surgery is reviewed. The techniques of sentinel node biopsy for nodes within the parotid gland are detailed.

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More than 60,000 people in the United States will be diagnosed with melanoma this year, and more than 800 will die from their disease (Surveillance, Epidemiology and End Results).¹ The incidence is greater in Australia and continues to increase, likely related to ozone depletion and the location close to the equator. The most important prognostic indicator for melanoma is the Breslow thickness, which is measured in millimeters. The rate of regional metastasis increases greatly as the thickness of the primary melanoma increases. The regional metastasis may be clinical or occult and this carries important information in terms of prognosis.

The treatment of clinical metastasis to the parotid from cutaneous melanoma requires excision (Figure 1). A superficial parotidectomy is indicated for those lesions isolated to the superficial lobe and lesions involving the deep lobe or the facial nerve require a total parotidectomy. The neck should also be dissected for clinical parotid involvement, regardless of clinical involvement of the neck, because of the high rate (27%) of concurrent disease.²

The rate of occult nodal metastasis is 1% in lesions <0.75 mm in thickness, 10% to 20% in lesions 0.75 to 4 mm and 35% in lesions greater than 4 mm.³ The ability to identify lymph nodes when they are clinically occult may influence the patient's chance for survival as a result of the decrease in regional recurrence as well as aiding in the decision to use postoperative adjuvant therapy. Evaluation for occult metastasis is indicated for any patient with a tumor depth more than 1 mm.^{4,5} The determination of occult metastasis has evolved during the past 2 decades with the

use of sentinel node biopsy. Previously, patients with a cutaneous melanoma and a high likelihood of regional metastasis (based on tumor thickness and depending on location) were subjected to superficial parotidectomy and neck dissection. However, the incidence of parotid metastasis was too low (2.5%) to justify the inherent risks of parotidectomy.⁶

Sentinel node biopsy has emerged as an accurate method of determining the lymphatic drainage pattern of the cutaneous melanoma. Intraparotid lymph nodes may be the first echelon of drainage for cutaneous melanoma in the scalp or face. Sentinel node biopsy is the identification of the first echelon nodes through a combination of lymphoscintigraphy and blue dye injection. Lymphoscintigraphy involves the intradermal injection of a radioactive colloid tracer around the primary cutaneous melanoma. Dynamic imaging is performed to determine the direction of the drainage to the first echelon nodes. The first echelon nodal location is then mapped by lymphoscintigraphy. The imaging is done preoperatively to help plan the surgical approach, and a gamma probe can then be used intraoperatively to help identify the sentinel node. The shift to sentinel node biopsy as opposed to elective lymph node dissection has reduced the need for unnecessary parotidectomy and overall morbidity. The identification of occult metastasis is important to determine final staging. This is important for deciding the need for further surgery and well as planning postoperative adjuvant therapy.

Procedure

Before surgery, the patient should undergo a mapping lymphoscintigraphy. This will identify the location of the sentinel nodes. There can be more than one location for the

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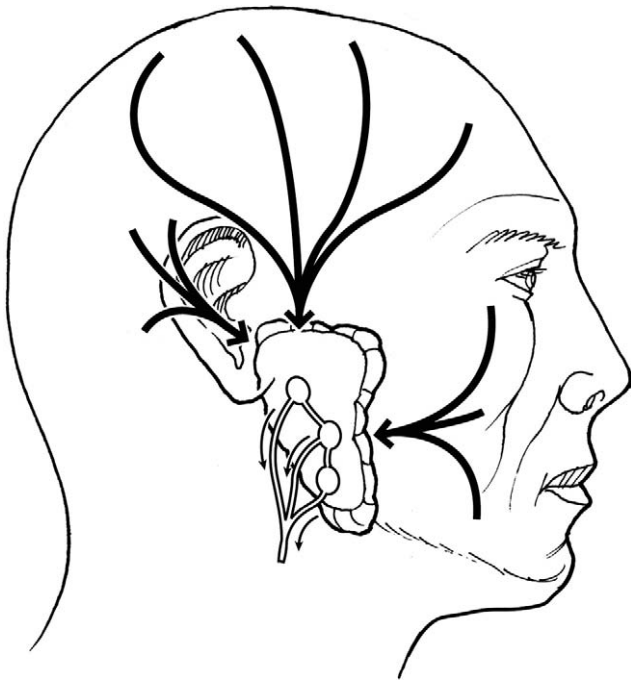


Figure 1 Drainage patterns of skin lesions that drain to the parotid.

sentinel nodes. The probable locations can be guessed based on the patterns of lymphatic drainage, including whether the sentinel node is likely to lie within the parotid, and can be used when explaining the risks to the patient. In order for the radiocolloid to be measurable in the operating room, the patient can either be injected on the day of surgery (the patient is injected with 0.4 mCi radiolabeled Tc99 colloid diluted to 1 mL) or the day before surgery (the patient is injected with 0.8 mCi radiolabeled Tc99 colloid diluted to 1 mL). The half life of the colloid is 6 hours, and the dose is determined based on the amount of time that will elapse before surgery. At the time of anesthesia induction, the cutaneous lesion is injected with 1 mL of isosulfan blue intradermally 1 to 2 mm around the cutaneous lesion (Figure 2). For lesions that have already been excised, the area immediately around the scar should be injected intradermally. Care should be taken if the wide excision has already been done since the injection of the isosulfan blue can cause



Figure 2 Injection of nasolabial melanoma with lymphozurin blue around the lesion. (Color version of figure is available online.)



Figure 3 Use of Gamma counter to identify location of possible sentinel node. (Color version of figure is available online.)

tattooing and this area should be resected to avoid this. Sentinel node biopsy may not be accurate if a local skin flap has previously been done on the primary lesion. It takes approximately 10 minutes for the dye to reach the first echelon nodes. The facial nerve monitor is inserted and used throughout the case to monitor the facial nerve. The anesthesiologist should be advised not to use paralyzing agents. The cutaneous lesion should be excised with 1 to 2 cm margins, based on the thickness of the primary melanoma and according to the guidelines. This size of margin may be limited by location of lesions on the face, and a 1 to 2 cm margin may not be possible.

The gamma counter should be used to measure the counts over the parotid area (Figure 3). If the cutaneous lesion is close to the parotid, the counts in the cutaneous lesion may give artificially high counts in the parotid. To prevent this, the gamma counter should be angled away from the cutaneous lesion. Alternatively, the primary lesion may be excised after injection of the blue dye but before the sentinel node biopsy. The gamma probe should be placed over the skin of the parotid and neck until areas of high counts are found.

There are 2 methods for excision of the intraparotid lymph node. The first method is a formal superficial parotidectomy. The superficial parotidectomy can be done along just the lower or upper division of the facial nerve depending on the location of the intraparotid node, to minimize the chance of facial nerve injury (Figure 4). Once the limited superficial parotidectomy has been completed, the node should be excised from the specimen. The gamma counter will help identify the sentinel node as well as the color of the node. A node that is both blue and has a high gamma count is more likely to be the actual sentinel node.⁷ The gamma probe should be used to take counts of the isolated node and the rest of the specimen to ensure that there is not a second sentinel node in the specimen, as well as the surgical bed to ensure complete removal. The counts at the surgical bed should drop to less than 10% of the initial counts. Both the surgical bed and the rest of the specimen should also be examined for any concentration of the isosulfan blue.⁸ A second sentinel node may be identified in the

Figure 4 Skin incision over parotid for superficial parotidectomy approach to sentinel node.

undissected parotid area, and this should also be carefully removed.

The latest and most commonly practiced alternative method for intraparotid sentinel node removal involves making a small 1 cm skin incision directly over the area of high gamma count (Figure 5). This method does not allow for identification of the facial nerve but relies on the high likelihood of nodal location in the superficial lobe rather than under the facial nerve in the deep lobe. Careful blunt dissection only is used to identify and remove the node (Figure 6). If a structure must be transected, the facial nerve monitor can be used to clarify that any structure is not the facial nerve before transec-

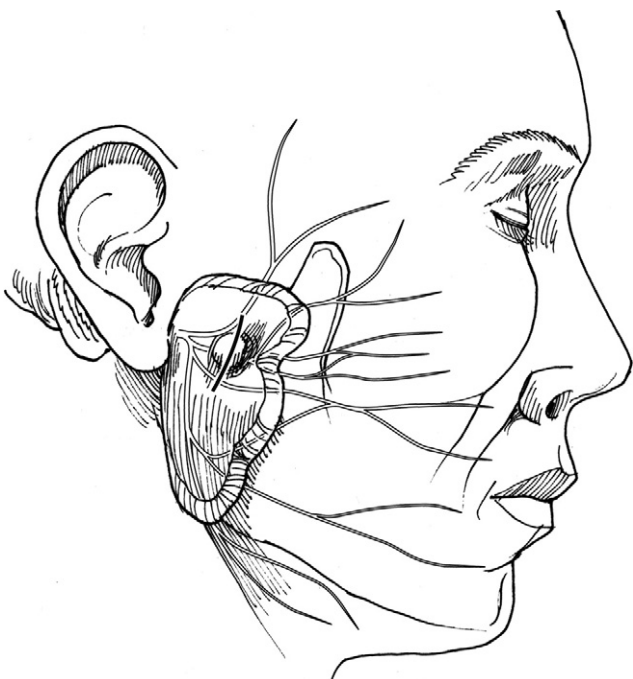


Figure 5 Skin incision over parotid for limited intraparotid lymph node biopsy.

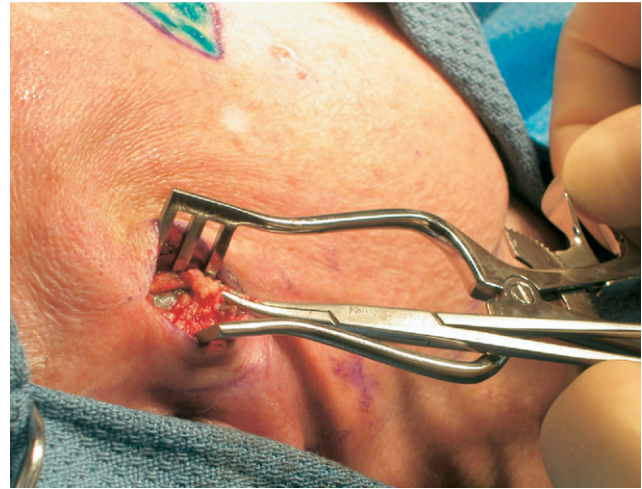


Figure 6 Identification of sentinel node through small incision over parotid gland. Note that incision could easily be incorporated into a full parotidectomy incision should superficial parotidectomy be indicated if the sentinel node is positive. The node is blue, though the color will fade as time passes. (Color version of figure is available online.)

tion. The gamma count of the excised node should be similar to in vivo levels, and the surgical bed count should decrease to background level. The wound is irrigated and closed. A search for other sentinel nodes should be made. Any node with greater than 10% of the activity of the highest radioactive count or that appears blue should be treated as an additional sentinel node and excised. This method may be preferable to a complete superficial parotidectomy as there is less risk of damage to the main trunk of the facial nerve as well as less chance of postoperative sialocele or Frey's syndrome.⁹

Contraindications to sentinel node biopsy

There are no contraindications for the sentinel node technique, but there may be surgical contraindications or medication allergies that prevent sentinel node biopsy. Patients with allergy to colloid or isosulfan blue may still undergo sentinel node biopsy, but the isosulfan blue injection should be omitted.

Pathological examination of the sentinel nodes

Pathological evaluation of the sentinel nodes differs from standard nodal examination, and is more labor intensive. The sentinel nodes are serially sectioned at 1 mm intervals. The sections are stained with both HMB45 and S100, 2 antibodies specific for the melanocyte. The surgeon should communicate with the pathologist before the operative day to ensure that the appropriate tests can be done, although this should be available in most sites.

Postoperative treatment

Patients with positive sentinel node biopsy should undergo completion parotidectomy and neck dissection. Some authors advocate radiation therapy for those who refuse com-

pletion parotidectomy or have medical contraindications to completion parotidectomy. After completion parotidectomy, postoperative external beam radiation therapy is indicated for patients with melanoma that has metastasized to multiple regional lymph nodes, including metastasis to the parotid gland. Although the postoperative treatment of a single small nodal metastasis is controversial, postoperative radiation for melanoma is clearly indicated for patients with multiple positive nodes, single node with extracapsular spread, single node greater than 3 cm, recurrent disease, incomplete surgical resection (including single nodal excision), or who are poor surgical candidates.^{10,11} Standard radiation may be used to both the neck and the site of the primary. Recent studies have shown good efficacy for hyperfractionated radiation for patients with melanoma. The total dose of radiation is lower (30 Gy), but higher doses per treatment (6Gy) are used. The treatments are given twice weekly as opposed to daily, for a total of 5 sessions. The primary cutaneous site should also be treated.¹² This unique radiation dosing and schedule has been proven to improve regional control rates, similar to standard radiation but over shorter time.^{11,13}

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