



A 35-year-old man asks your opinion regarding a lesion on the upper lip that has not improved after several weeks of observation.

Upper Lip Lesion

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1. The presence of a nonhealing lesion in an area of chronic sun exposure, such as the upper lip that has not gone away with observation should warrant concern for malignancy. Skin cancer affecting the lip is a relatively common site among head and neck tumors, accounting for 25% of all oral cavity cancers. Most are squamous cell cancers with the remainder being basal cell carcinomas and melanomas. It is important to begin to establish a diagnosis of either benign or malignant disease with a directed patient history.
 - **What is the patient's age and skin type?** Lip cancer is most common in patients with a fair complexion, such as those with Fitzpatrick I and II skin types. It is also more common in males, especially those older than 50 years of age who have a longer chronicity of sun exposure.
 - **Is the patient male or female?** There is roughly a 6:1 male to female ratio for the development of squamous cell carcinoma of the lip.
 - **Does the patient have a history of chronic or repeated sun exposure?** Sun exposure is perhaps the first, second, and third risk factors for the development of skin cancers. One-third of the patients either work outdoors or participate in avocations that are carried out outdoors. The highest rates of skin cancer are in Australia, Granada, and Spain, where exposure to intense UV rays is high. The lip is susceptible to metaplasia since it lacks a layer of pigmentation for protection. Cancers of the lip are also commonly seen in conjunction with other primary skin malignancies.
 - **How did the lesion present?** Patients typically report the presence of an initial lesion that crusts over and subsequently bleeds with removal of the scab. Continued problems warrant more extensive examination which often reveals a nontender infiltrative ulcer with metaplastic changes of the lip.
 - **How long has the lesion been present?** Long-standing lesions with little evidence of a change in character are less suspicious for carcinoma. Chronic wounds that fail to heal or recur over time predispose to the development of squamous cell carcinoma.
 - **How has the lesion changed?** Changes in appearance might be a hallmark for malignant degeneration.
2. A careful physical examination of the head and neck directed to the areas in and around the lips should be performed. This includes sites of possible spread in the oral cavity and draining lymphatic areas in the neck. Lymphatic drainage from the upper lip is mainly to the submental, submandibular, and parotid lymph nodes on the same side as the lesion. The submental nodes also secondarily drain to the submandibular nodes; and both the submandibular and parotid nodes secondarily drain to ipsilateral jugulodigastric lymph nodes. Midline lesions may have some cross-drainage to one or both sides of the neck.
 - **Does the patient have a history of skin cancers in the past?** Following an initial lesion, the presence of a separate, metachronous lesion is common.
 - **Does the patient have any comorbidities or take any medication?** The presence of significant medical conditions, such as hypertension/cardiovascular disease, diabetes, or immunologic compromise, should be noted. Diabetic patients or those continuing to use tobacco must be advised to begin more appropriate blood-glucose management or quit smoking, respectively, as immediate improvements in either status facilitates likely surgical efforts. Many patients take blood thinners that may cause difficult bleeding and may or may not be able to be discontinued for the perioperative period.
 - **Where on the lip is the lesion located?** It is important to catalog the component parts of any potential defect. Upper lip is composed of lateral and medial elements with the central portion called the philtral dimple, which is bound by two curvilinear philtral columns. Lesions involving the lip may also involve the skin, wet/dry vermilion, muscle and/or mucosal lining.
 - **Is the lesion mobile or does it feel fixed to underlying structures?** Most tumors remain localized and grow slowly for an extended period of time, while some rapidly infiltrate and invade, deeper structures such as periosteum or bone. They can involve the mandible by direct extension, perineural invasion, or lymphatic spread.
 - **Are there any local scars?** Scars around the face may indicate damage to available flaps useful for reconstruction.

- **Is there palpable adenopathy in the lymph nodes that drain the upper lip?** As opposed to basal cell tumors, squamous cell tumors can metastasize to lymph nodes of the face and neck area.
3. It is most important to know whether the lesion is benign or malignant. Most malignant neoplasms of the upper lip are basal cell carcinomas, whereas most malignancies of the lower lip are squamous cell carcinomas. The nature of the tumor plays a role in overall therapy. Basal cell carcinomas of the upper lip do not require as large an excisional margin as the lower lip tumors, which are usually squamous cell carcinomas.
 - Specimens sent for permanent section will more clearly show histopathologic detail at the borders of a lesion than frozen section specimens, and therefore are more heavily relied on.
 - A tissue **biopsy** may be excisional or incisional. An excisional biopsy is preferred, when the resultant defect is able to be closed primarily with little tension. In areas of difficult anatomy, such as the medial canthus of the eye, an incisional biopsy is preferable to identify the nature of the lesion. A small sample of the lesion is removed and the margins closed primarily knowing that the bulk of the lesion was left behind.
 - **Moh's surgery** is a technique that repeatedly provides a small amount of skin for diagnosis while excising the tumor cells to the margin of uninvolved tissue. Many believe it is not indicated for melanoma since the depth of the lesion is not able to be ascertained.
 - The extent of disease may be determined locally by directed physical examination and regionally/distantly by **CT scan** and/or **MRI**.
 - The entire upper lip may be anesthetized by bilateral infraorbital nerve blocks. A 25-gauge needle is passed transcutaneously or transmucosally. The infraorbital foramen faces downward and is located approximately 7 mm from the infraorbital rim. The foramen can be accurately located by tracing an imaginary line downward from the medial limbus.
 4. In preparation for excision and reconstruction, a preoperative evaluation of the patient's health status should be performed.
 - The presence of hypertension and diabetes should be noted and be well controlled.
 - The need for chemotherapy should be discussed with an oncologist based on the physical and diagnostic findings.
 - The following stages are used for nonmelanoma skin cancer:
 - Stage 0: Carcinoma in situ.
 - Stage I: Tumor is 2 cm or smaller.
 - Stage II: T is larger than 2 cm.
 - Stage III: Tumor has spread below the skin to underlying structures such as lymph nodes, cartilage, muscle, and/or bone, but not to other parts of the body.
 - Stage IV: Tumor has spread to distant sites in the body.
 - The following stages are used for melanomas:
 - Stage I: Lesion up to 1.5 mm with no lymphadenopathy.
 - Stage II: > Lesion 1.5 mm with no lymphadenopathy.
 - Stage III: Lymphadenopathy present.
 - Stage IV: Metastatic disease present.
 5. Treatment of lesions of the upper lip involves making a histologic diagnosis, resecting the lesion with tissue-specific margins (as outlined below), and reconstruction to achieve a lip that provides sensate tissue, a functional sphincter, adequate opening for food and dental care, and an esthetic appearance.
 - Prior to reconstruction, excision of the lesion with margins appropriate for the histologic type of tumor, including underlying muscle, if necessary, must be performed.
 - Standard nodular, basal cell carcinoma with translucent pearly borders can be removed by surgical excision with 2 mm margin and yield a 5-year cure rate of 90% to 95%. Radiation therapy, cryosurgery, or curettage yield similar results.
 - Recurrent, basal cell carcinoma is treated more aggressively and monitored by careful pathologic evaluation to ensure adequate excision.

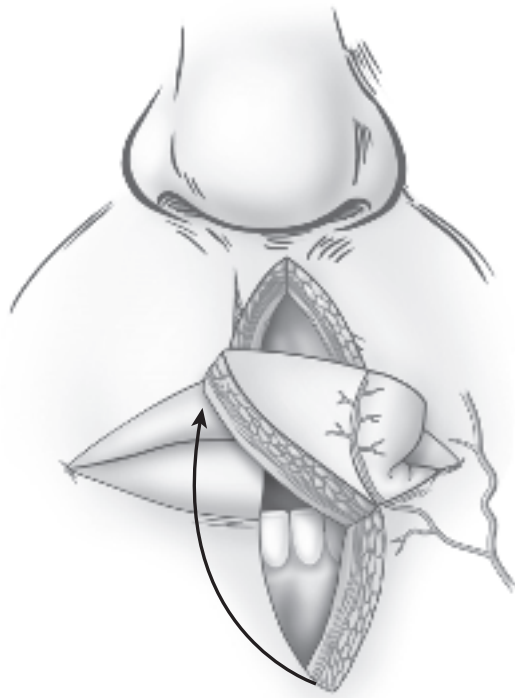
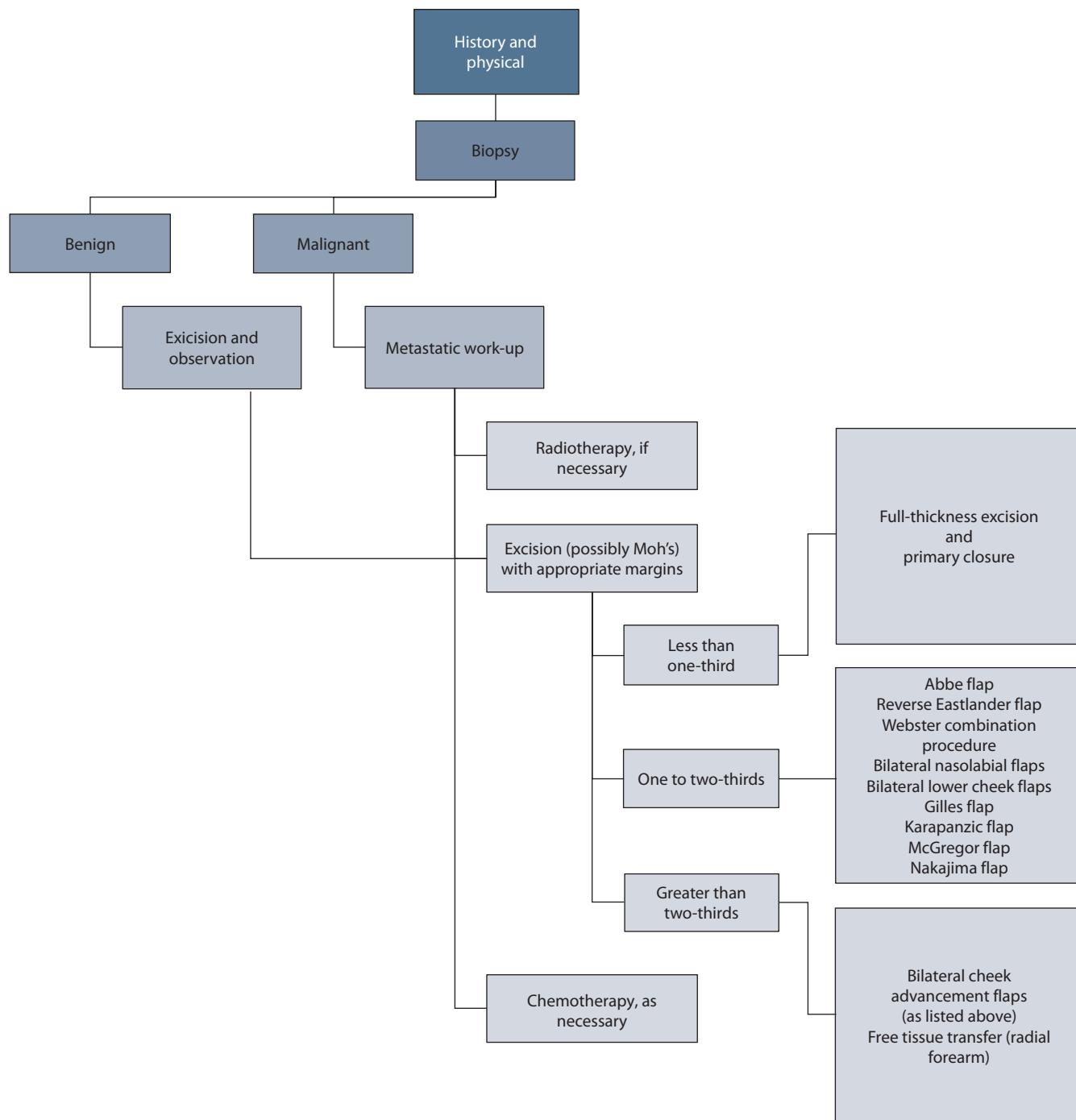


Figure 13-1 Cross-lip Abbe flap for upper lip reconstruction.

- Squamous cell carcinoma should be resected with a more aggressive margin, usually 1 to 2 cm, if possible.
- The resection margin for melanoma is based on the depth of the lesion:
 - a. In situ lesions: 5 mm margin.
 - b. Up to 1 mm: 1 cm margin.
 - c. 1 to 2 mm: 1 or 2 cm margins.
 - d. 2 to 4 mm: 2 cm margins.
 - e. >4 mm: >2 cm margins.
- The goals in upper lip reconstruction are a sensate lip, a functional sphincter, good apposition of lower vermilion to upper vermilion, a watertight seal, adequate opening for food and dental care, and an aesthetic appearance. Unfortunately, in subtotal and total resections, not all these criteria can be satisfied. Frequently, the closure results in a tight, inverted lower lip that disappears beneath the curtain of the upper lip. Postoperative microstomia may require a regimen of lip stretching by appliances and dentures designed to collapse during insertion or removal. The dentulous patient must be able to open his mouth sufficiently to provide access for dental manipulation. Lip surgery should have little long-term effect on speech.
- The final reconstruction should be delayed until after the final margins are known. If the lesion is located on the vermilion and excision of the white roll becomes necessary, the surgeon should mark it prior to injecting local anesthesia and make all incisions

perpendicular to the vermilion skin junction. Occasionally, a small V-Y advancement flap may be effective.

- Up to one-quarter of the upper lip may be resected and closed primarily. In older patients who have lax skin, as much as one-third of the upper lip can be closed, although philtral distortion may occur particularly in the case of a more central wedge excision.
- If the lesion extends across the mucocutaneous border, partial or full-thickness wedge excision and primary performed, with excellent results. Accurate repair must include correct alignment of the vermilion and the white roll, and reapproximation of the orbicularis oris muscle.
 - Defects that remove the philtrum may leave the lip without a Cupid's bow. In males, the defect may be concealed with a mustache. In females, however, primary closure gives the lip a flattened appearance. In this instance, an Abbe flap, full-thickness skin graft, or composite graft should be adequate.
- If the lower lip is to be used for reconstruction of the upper lip, it is essential that it be of sufficient volume to serve as a donor. Following transfer, cross-lip flaps are typically left attached for 14 to 21 days before division with the timing dependent upon the size of the flap, the size of the mucosal attachment, and maintenance of the axial vessel.
- For defects between one- and two-thirds of the upper lip, primary closure may result in a tight oral stoma. Numerous options exist that make use of more extensive flaps of neighboring tissue. Local tissue from the cheeks may be advanced with or without compensatory excisions of healthy skin and subcutaneous tissue. Most will require revision.
 - The **Abbe flap** is useful to reconstruct full-thickness defects up to one-half of the upper lip. The flap transfers lower lip tissue pedicled on the labial artery to the upper lip defect (figure).
 - The **Reverse Estlander flap** is based on the lateral elements of the lower lip which are rotated into the lateral upper lip. It may cause distortion of the commissure (figure).
 - The Webster flap was described as a **combination procedure** in which vermilion is advanced from the edges of the defect to reconstruct the mucosa while a flap of lower lip skin and muscle is rotated upward to reconstruct the remainder of the lip.
 - **Bilateral nasolabial flaps** are superiorly based and may borrow tissue from beneath the nasal sill, if available. Similarly, a superiorly based flap of the entire cheek may be advanced into the upper lip with the donor site in the lateral cheek closed with a skin graft.
 - **Bilateral lower cheeks flaps** are the inferiorly based counterparts of the nasolabial flap as described by Kazanjian and Converse.



Algorithm 13-1 Algorithm for management of lesions of the upper lip.

- The **Reverse Gilles fan flap** rotates lip tissue lateral to the defect and compensates the donor site, by placing a Z-plasty at the base of the rotation lateral to the lower lip and closing the donor site at the tip of the flap in a VY fashion at the alar base (figure). With better options listed, it is rarely used.
- The **Reverse Karapandzic flap** creates a circumoral incision of the remaining upper and lower lip, dividing the skin, muscle, and mucosa while leaving the facial nerve branches and vessels intact to preserve the functional elements of the lip (figure). Disadvantages of the technique are the extensive circumoral incisions and resultant microstomia.
- The **McGregor flap** incises full-thickness lateral cheek tissue which is then rotated around a fixed commissure. The lateral edge of the defect becomes the new vermilion edge and the donor site is closed primarily (figure). The **Nakajima flap** involves the same rotation and closure but, like the Karapandzic flap, attempts to spare the vessels and nerves traversing the incision (figure).
- **Upper lip defects greater than two-thirds** may require microvascular free tissue transfer.
 - A composite radial forearm palmaris longus free flaps may be used for reconstructing large upper lip defects as well as total lower lip and perioral reconstruction. Secondary commissuroplasty in these instances is often required.
- 6. Surgical reconstruction may leave the lips with reduced sensation and elasticity. Reconstructive techniques that use full-thickness nasolabial tissue may also denervate the upper lip muscle to a great degree.
 - Patients who have **anesthesia of lip**, in addition to **poor sulcus depth**, have a tendency to drool. Reduction in sensation, to a degree significant to cause this problem, occurs more often after lower lip reconstruction than after upper lip reconstruction. Deepening of the vestibular trough, repositioning of the frenum, and broadening of the zone of attached gingiva may be required.
 - **Infection** is possible but less likely around the oral cavity. Meticulous technique should be stressed when handling the remaining tissues.
 - **Flap loss** results from leaving an inadequate vascular supply to the flap. Following the general principles of plastic surgery, including early recognition of the vascular supply to either a random or axial flap,

avoidance of scar tissue as a base for the flap, avoidance of tension and gentle handling of tissues will minimize flap loss.

- When loss of both vermilion and muscle occur, local tissue reconstruction is best. Slight whistle or notching defects may be corrected by local flaps from either or both sides of the defect, mucomuscular advancement flaps, or simple V-Y advancement of the upper lip buccal mucosa. When larger areas of vermilion and muscle are required, unipedicle flaps from the lower lip, tongue flaps, and modified Abbe flaps may be used.

PRACTICAL PEARLS

1. The upper lip generally tolerates large excisions well.
2. When a deep laceration passes through the obicularis, muscle closure is mandatory.
3. Suture placement into the white roll should be avoided because the redness associated with healing has the potential for creating an indistinguishable mucocutaneous junction.
4. Do not underestimate the need for mucosal lining.
5. When dissecting an Abbe flap, the full-length incision on one side of the flap serves as an excellent anatomical map for the contralateral side. Since the artery is seen and divided on the side of complete division, its exact location may be known.
6. Avoid the lower lip as a donor source if there is insufficient bulk to avoid microstomia.

References

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