



Chapter 22

SKIN CANCER

KEY FIGURES:

Typical melanoma	Incisional biopsy
Basal cell carcinoma	Excisional biopsy
Squamous cell carcinoma	Shave biopsy
Punch equipment	Lazy S incision
Punch biopsy	

The most commonly performed plastic surgical procedures involve the removal of suspicious, possibly cancerous skin lesions. This undertaking usually is not highly technical and, particularly for lesions located on areas other than the face, often does not require special surgical expertise. In areas where few or no specialists are available, it is reasonable for a clinician with basic surgical skills to initiate treatment. However, you should have certain important background knowledge before removing a suspicious lesion. Lack of this knowledge may have negative consequences for your patient.

This chapter presents the basics concerning the most commonly encountered skin cancers and the proper techniques for excising a suspicious skin lesion. In addition, a brief explanation of what to do for the patient diagnosed with a specific type of skin cancer is included.

What Makes a Skin Lesion Suspicious

Several characteristics should make you suspect cancer may be present. An open wound that, despite proper care, just will not heal or one that temporarily heals and then opens again warrants further investigation. Red, raised lesions that do not go away, increase in size, or have small blood vessels at their base should raise suspicion. Skin cancer may develop at the site of a preexisting mole, but not all moles are precancerous.

When to be Concerned about a Mole

If a patient reports a change in what had been a stable mole (i.e., one that has not changed in appearance for many years), biopsy/excision should be done. These changes include but are not limited to:

- Increase in size
- Change in color
- Ulceration/bleeding
- Irritation

Commonly Encountered Skin Cancers

Melanoma



Appearance of a typical melanoma. (From Fitzpatrick JE, Aeling JL (eds): *Dermatology Secrets*. Philadelphia, Hanley & Belfus, 1996, with permission.)

Melanoma is potentially the most serious of all skin cancers because of its propensity for metastatic spread. There is still no successful adjuvant therapy (such as chemotherapy or radiation treatment); surgery remains the primary mode of treatment. The incidence of melanoma is increasing worldwide.

The thickness of the lesion and the depth of skin penetration determine the need for subsequent surgery as well as the patient's prognosis. This is why proper excision is important and should not be taken lightly.

Etiology

The risk for developing melanoma is related to the patient's history of sun exposure and genetic background. People with fair skin, who sunburn easily, have a higher incidence of melanoma than darker-skinned people, who rarely sunburn.

What It Looks Like

Although sun exposure is a causative factor for the development of melanoma, the lesions are not necessarily found on sun-exposed areas. Melanoma can occur anywhere on the body, including the palms of the hands, soles of the feet, perineal area, and under fingernails or toenails.

Most melanomas arise from preexisting moles. Classically, a melanoma is described as looking like a very dark brown or black mole, but color is not the only characteristic that should raise suspicion. Other characteristics of a pigmented mole that are considered to be worrisome (but *not* diagnostic) for melanoma include:

- Asymmetry
- Irregular shape
- Border irregularity—the edges of the mole are ragged instead of smooth
- Color variability—a benign mole tends to have a uniform color. A worrisome mole will have some portions lighter or darker than the predominant color. Also, a dark mole that has lost some of its pigmentation is worrisome.
- Diameter > 6 mm—moles > 6 mm are at a significant risk for melanoma and should be excised. (However, if a mole of this size has been present for years, is light brown in color, and has not changed at all in appearance, it probably does not have to be removed.)

Note: Many elderly people develop very dark brown/black moles that appear to be “stuck on” or glued to the skin surface. They do not look like typical moles, which are embedded in the skin. These lesions, known as **seborrheic keratoses**, are benign despite their dark pigmentation. However, if any of the above mentioned signs is associated with one of these lesions, it should be removed.

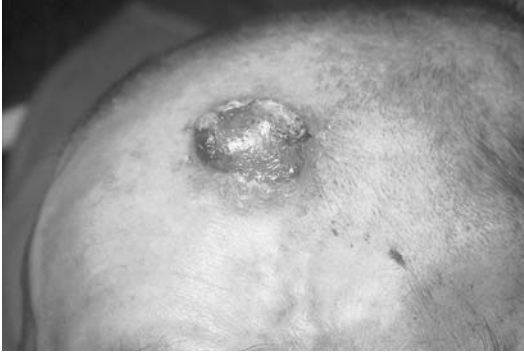
Basal Cell Carcinoma



Appearance of a typical basal cell carcinoma.

Basal cell carcinoma (BCC) is the most common type of skin cancer. It occurs primarily on sun-exposed skin and often looks like a small ulcer or nonhealing area with raised edges and a red base. BCCs usually do not metastasize, but they can recur if not adequately excised. They also have a propensity to burrow into deeper tissues, which can make complete excision difficult.

Squamous Cell Carcinoma



Appearance of a typical squamous cell carcinoma.

Squamous cell carcinoma (SCC) is less common than BCC but more common than melanoma. SCC almost always arises on sun-exposed areas, often in an area with previous skin damage. It usually appears as an ulcerative lesion with crusting, but it can be a raised, solid, reddish lesion. SCC can metastasize to lymph nodes, but metastasis is not as common as with melanoma.

SCC can develop in a chronic wound (i.e., a longstanding pressure sore or a burn that never achieved a stable scar). Such lesions involve a higher incidence of metastatic spread than usually is associated with SCC. They are more aggressive tumors.

What to Do When Someone Presents with a Suspicious Lesion

Start with a Good History

History of skin cancer, either personally or in the family. Melanoma and even some forms of BCC may run in families. Patients with a personal history of skin cancer are at a higher-than-normal risk for developing another similar skin cancer.

History of sun exposure. This question is not aimed only at finding out whether the patient spends hours in the sun trying to tan, but also applies to patients whose work or hobbies keeps them outdoors in the sun. As noted above, sun exposure is a causative factor for most primary skin cancers.

History of the lesion. How long has the lesion been present? Has it changed recently? A longstanding, stable lesion (i.e., one that has not changed for several years) is less worrisome than a lesion of short duration that has changed in appearance.

Weight change or other change in overall medical status. Weight loss, general fatigue, or simply not feeling well can be signs of metastatic spread if no other reasons can be found.

Physical Examination

Note the specific characteristics of the lesion, such as size, color, and ulceration.

Examine the entire patient for other suspicious lesions. It is vital to do a thorough examination so that other lesions are not missed. With melanoma on an extremity, you should be particularly concerned about lesions proximal to the one under suspicion. Proximal lesions indicate a more aggressive stage of disease.

Check for enlargement of lymph nodes in the area where the lesion would drain. Enlargement may imply lymphatic spread of cancer.

Table 1. Lymph Node Drainage Areas

Location of Suspicious Lesion	Area to Check for Enlargement of Draining Lymph Nodes
Hand/arm	Axilla (armpit)
Foot/leg	Groin/inguinal area
Face	Cervical (neck) area
Trunk	Axilla and inguinal areas; these lesions have multiple drainage sites

Check for enlargement of the liver, which also can be a sign of metastatic spread.

How to Make the Diagnosis: Biopsy

A definitive diagnosis requires removing the entire lesion (or just a representative portion) and sending it to a pathologist for formal evaluation.

Biopsy Techniques

Incisional Biopsy

An incisional biopsy removes a small, representative sample of the lesion, not the entire lesion. It should include the full thickness of skin into the underlying subcutaneous tissue.

Excisional Biopsy

The entire lesion with a rim of surrounding, normal-appearing tissue is removed with an excisional biopsy. Again, the full thickness of the involved skin is removed. The resultant defect is larger than with an incisional biopsy and usually is closed primarily. However, depending on the size of the lesion, other choices for wound closure may be more appropriate.

Shave Biopsy/Excision

A shave biopsy removes the lesion with only the top layers of skin, which seem to be grossly involved with the lesion. This is more correctly called a shave excision. Because only the top layers of skin are removed rather than the full thickness of skin, the defect will heal well with local wound care alone.

When to Do Which Biopsy Technique

Table 2. Indications for Each Type of Biopsy Technique

Technique	Lesion Characteristics	Reasoning Behind Biopsy Choice
Excisional biopsy	< 1–2 cm	Wounds of this size usually are easy to close and may allow treatment with one procedure.
Incisional biopsy	Large lesions: > 3 cm on body or > 2 cm on face	Large wounds may be difficult to close. Incisional biopsy allows you to make the diagnosis and plan further treatment. It is often good to make the diagnosis before making a large wound, especially on the face.
Shave biopsy/ excision	Only for obviously benign lesions, seborrheic keratitis	Unless you are well trained in recognizing skin cancers, you probably should not perform shave excisions. Especially on a pigmented lesion with any chance of being melanoma, shave excision is not recommended because it makes thickness measurements (important for staging and treatment decisions) impossible.

How to Do the Biopsy

General procedures common to all techniques:

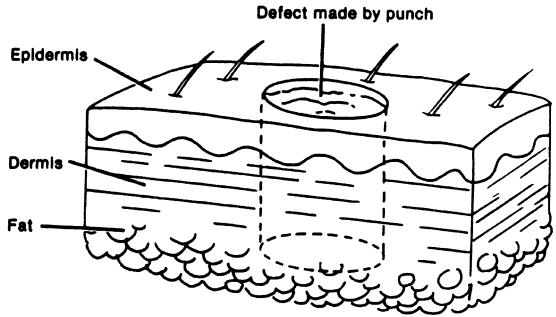
- The excision can be done using **clean technique** for gloves and gauze, but the instruments and suture material should be **sterile**.
- Place the patient in **as comfortable a position as possible**, sitting or reclining as appropriate. Because some patients faint or feel light-headed during the procedure, it is best for them to be reclining.
- Administer **local anesthetic** (usually lidocaine; see chapter 3, “Local Anesthesia”). Use as small a needle as possible, and inject slowly. Injection of local anesthetics hurts. If bicarbonate is available, add it to the solution before injection.
- Do not inject directly into the lesion; inject into the **surrounding normal tissues**.
- “Paint” the area, i.e., apply an **antimicrobial solution** to the lesion and surrounding skin before making any incisions.
- The biopsy specimen should be taken to the pathologist in a **small container with formalin**. There should be at least enough formalin in the container to cover the lesion.

Incisional Biopsy

An incisional biopsy needs to be only a few mm in width and should be taken from an area representative of the entire lesion. Stay away from areas with a lot of crusting. It is usually best to take the biopsy toward the periphery of the lesion, because the center of a large lesion is often necrotic tissue, which may not yield a diagnosis on pathologic evaluation. It is useful to include a rim of normal-appearing skin at the margin to aid the pathologist. The biopsy specimen should be full-thickness skin, including the upper portion of the underlying subcutaneous tissue.

Punch biopsy procedure. If you have access to a punch biopsy instrument, use it. This instrument has a sharp, hollow, circular end that easily takes the biopsy for you.

1. The skin around the lesion should be held under some tension.
2. Hold the instrument perpendicular to the lesion.
3. Push the sharp end gently into the lesion; then twist 180°.
4. Remove the instrument.
5. The specimen can be removed by gently grasping the skin surface with a forceps, pulling it upwards, and cutting the subcutaneous tissue attachment on the undersurface of the specimen.



Left, Punch biopsy instrument. (Photo courtesy of Moore Medical Corporation.)

Above, Punch biopsy procedure. The punch should be introduced through the dermis and into the fat. (From Habib TB (ed): *Clinical Dermatology*, 3rd ed. St. Louis, Mosby, 1996, with permission.)

If you do not have access to punch biopsy instruments, use a scalpel and forceps. Excise a piece of tissue that is a few mm wide by 1 cm (or longer if the lesion is large) in an elliptical fashion (see figure below). An ellipse is the easiest shape to suture closed, but other shapes may be chosen, depending on the characteristics of the lesion. Because the biopsy site is small, the defect can be allowed to heal on its own (with antibiotic ointment and a dry dressing daily) or closed primarily with 1 or 2 sutures.



Incisional biopsy. The white ellipse is an example of how to orient an incisional biopsy to include abnormal skin as well as a normal-appearing skin margin. The pathology report showed this lesion to be a BCC.

Excisional Biopsy

Whenever possible, primary closure of the excision site is usually best. However, on some areas (e.g., the calf), even small 1–2-cm excisions can result in a wound that is difficult to close because little redundant surrounding skin is available. If such is the case, you often can treat the wound with local dressings and allow it to heal secondarily. This

approach is especially useful on the forehead or lateral cheek (in front of the ear), behind the ear, and on the calf.

If you believe that primary closure is possible, remove the lesion as an ellipse to facilitate closure (see figure below). If you have a marking pen, it is helpful to draw the ellipse or whatever shape you intend to use before making the incision. Usually you should draw the ellipse in the direction of the lesion if one dimension is larger than the other or in the direction of the most redundant skin. If you cannot determine the best direction, excise the lesion as it appears. Once the lesion is removed, the surrounding skin tension will open the wound and show you the best way to finish the ellipse to facilitate closure.

Remember: you want to include a 1–2-mm rim of normal-appearing tissue around the lesion. In general, the length of the ellipse should be 3 times its width.



Excisional biopsy. The most common way to excise a lesion is in the form of an ellipse. The long axis should be approximately 2–3 times the diameter of the lesion so that the closure will be smooth. Undermining may be required to obtain wound closure.

Make the incision. If the markings have one limb of the ellipse above the other, do the bottom limb first. This will prevent any bleeding from the top limb from dripping down and obscuring your ability to easily make the lower incision (a lesson learned the hard way by many).

Cut through the skin and dermis and into the subcutaneous tissue. This should be a full-thickness skin biopsy. The thickness of the skin varies over different areas of the body. The back has very thick skin

(which is often a surprise to the inexperienced surgeon), whereas the skin of the dorsum of the hand or face is much thinner.

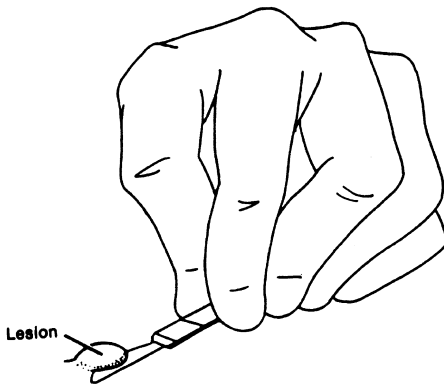
If you have access to an electrodesiccator, use it to treat the resultant wound. This technique stops the bleeding and also treats any remaining abnormal cells if the lesion is a BCC.

If you can almost but not quite suture the wound closed, you can try undermining the surrounding skin (see chapter 2, “Surgical Skills”). I do not recommend more than a few centimeters of undermining.

If you choose primary closure, follow the instructions in the chapter 11, “Primary Wound Closure.” Wash the excision site and the surrounding skin with saline. Apply antibiotic ointment and cover with a dry gauze. The gauze can be removed after 24 hours; the suture line should be cleaned and dressed daily. After 2–3 days the suture line can be left open.

If you choose secondary closure, apply antibiotic ointment to the wound and cover with dry gauze. The wound should be dressed and cleansed daily. Wet-to-dry dressings also may be used. Once the wound has formed an eschar (dry scab), no dressings are required. Reassure the patient that leaving the wound open to heal secondarily will *not* necessarily lead to an increased risk of infection, but it may leave a somewhat larger scar than primary closure. However, because closing a wound under tension involves far higher risks for infection and wound-healing problems, secondary closure is more appropriate.

Shave Excision



Shave excision. The curved surgical blade is laid flat on the skin surface and drawn smoothly through the base of the lesion. (From Habif TP: Clinical Dermatology, 3rd ed. St. Louis, Mosby, 1996, with permission.)

Performing a shave excision requires a scalpel and forceps. Place the scalpel so that it is flat against the skin with the sharp edge parallel to the skin. Using a back-and-forth sawing motion, pass the knife under the lesion, taking only the top layers of skin. Dermis should remain at the excision site when the lesion is removed.

The resultant defect should be treated with an electrodesiccator if possible. The electrodesiccator heats the tissues and kills superficial cancer cells if the lesion is BCC. Apply antibiotic ointment to the wound and cover with a dry gauze. Repeat daily until a dry scab forms. The wound can then be left open.

Marking the Tissue Specimen

For all excisions, it is helpful to mark the specimen so that the pathologist can orient the lesion. Place a nonabsorbable stitch at the superior edge of the specimen, and tie it in place. Cut the ends, and note on the specimen slip what the marking stitch represents (i.e., superior margin). Another stitch can be placed along the medial or lateral margin. Cut the suture ends longer than the stitch on the superior margin. Again, be sure to explain what you have done on the pathology slip (i.e., long stitch = lateral margin).

If the lesion is malignant and goes to the edge of the specimen, the pathologist can report which edge of the specimen is involved. This information simplifies the repeat excision.

What the Pathology Report Means in Terms of Further Treatment

If the lesion is benign:

You are done. Remove the sutures when appropriate. If you did an incisional biopsy and part of the lesion remains, you can remove the remainder by using the shave biopsy technique, if the patient so desires.

If the lesion is fully excised BCC or SCC:

You are done. Remove the sutures when appropriate. The patient should be seen again in 3–6 months and then yearly. Look for new lesions, and check the excision site for recurrence.

If the lesion is BCC that was not fully excised:

If you have a close margin (< 0.1 mm) and treated the area with the electrodesiccator at the time of the excision, you can either watch closely (see the patient every 3 months for the first year and then semi-annually) or re-excite. Repeat excision is recommended if you expect

follow-up to be difficult or impossible or if you did not have access to an electrodesiccator.

If the lesion is SCC that has not been fully excised:

Re-excise. You should take a bit more grossly “normal” tissue with re-excision of SCC than with re-excision of BCC.

Re-excision of BCC or SCC

The re-excision can be done at the time of diagnosis or after a few weeks when the tissues have begun to heal.

If the defect was closed primarily, the portion of the suture line containing the positive margin should be excised as an ellipse. Remember to take a few mm margin around the suture line to ensure a clear margin (i.e., no residual tumor).

If the biopsy site is healing secondarily, excise the involved margin, making sure to take at least a few mm of grossly normal surrounding skin.

If the positive margin is the deep margin: make sure that you go deeper into the subcutaneous tissues than on the first excision.

If Melanoma is Diagnosed

Patients diagnosed with melanoma should see a specialist. However, if no specialist is accessible, further excision is required. The extent of the re-excision is determined by the depth of the primary lesion. The following is a basic guide to further treatment.

A **lesion < 1.0 mm** is considered a very thin melanoma, but it still needs to be re-excised with a 1-cm margin all the way around the scar. Often such re-excision is curative.

A **lesion of 1.0–4.0 mm** is considered an intermediate-thickness melanoma. Re-excision is required with 1.5–2-cm margins. Often you will not be able to close the resultant defect primarily. A split-thickness skin graft or a local flap may be the best option for closure. In the presence of clinically palpable lymph nodes, lymphadenectomy is recommended. This procedure is beyond the abilities of a nonsurgeon; refer the patient to a specialist.

A **lesion > 4 mm** is considered a thick melanoma and is associated with a high likelihood of metastatic spread at the time of diagnosis. To control local disease, re-excision with 2–3-cm margins is recommended. Split-thickness skin grafting or a local flap often is required. In the presence of clinically palpable lymph nodes, lymphadenectomy is recommended.

Re-excision for Melanoma

A re-excision for melanoma is a more extensive procedure than re-excision for BCC or SCC. It is also more extensive than the initial biopsy. The melanoma re-excision includes skin and subcutaneous tissue down to, but not including, the fascia of the underlying muscle group. This is a much larger chunk of tissue than the initial biopsy. Unless the lesion is in an area with a great deal of redundant tissue (e.g., on the abdomen), a split-thickness skin graft or local flap may be required for closure.

One technique that may facilitate primary wound closure is to perform the re-excision making a “lazy S” incision instead of the usual ellipse (see figure below). With limited undermining of the surrounding skin edges, the lazy S incision often can be closed primarily.



To perform a wide excision for melanoma, it is often useful to use the lazy S technique instead of the usual ellipse.

Reasons for Specialist Intervention

In an attempt to improve overall survival rates, a new technique called **sentinel lymph node biopsy** is recommended for patients with thin and intermediate-thickness melanoma and no clinically palpable draining lymph nodes in an attempt to identify microscopic metastatic lymph node spread. It is hoped that removal of diseased lymph nodes before they become clinically palpable can prevent melanoma cells from metastasizing to a distant site.

Essentially the surgeon injects dye or a radioactive isotope into the area of the primary lesion. The draining lymph node basin is then surgically explored, and the specific lymph node that first takes up the dye/isotope is identified. If a radioactive isotope is used, a Geiger

counter-like device is used to find the lymph node; if dye is used, the surgeon looks for a blue lymph node. The lymph node is then removed, and the pathologist examines it thoroughly for melanoma. If no cancer is found, no further treatment is performed. If cancer is present, a formal lymph node dissection is performed. So far this approach shows promise for catching the cancer at the earliest possible stage with the least amount of patient morbidity.

For All Patients with Melanoma

Check for enlargement of draining lymph nodes, and order a chest radiograph to look for signs of metastases. The patient should be followed every 3–6 months for several years to look for recurrence at the excision site, new satellite lesions in the skin heading toward the draining lymph area, enlargement of draining lymph nodes, and enlargement of the liver.

Important Postexcision Instructions for All Patients

Remind all patients that sun exposure is a causative factor in most primary skin cancers. All patients who have been seen for a suspicious skin lesion should be counseled about the importance of staying out of the sun as much as possible. The regular use of a good sunscreen (SPF > 15) must be emphasized.

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