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MELANOMA

The most dangerous form of skin cancer, these cancerous growths develop when unrepaired DNA damage to skin cells (most often caused by ultraviolet radiation from sunshine or tanning beds) triggers mutations (genetic defects) that lead the skin cells to multiply rapidly and form malignant tumors. These tumors originate in the pigment-producing melanocytes in the basal layer of the epidermis. Melanomas often resemble moles; some develop from moles. Most melanomas are black or brown, but they can also be skin-colored, pink, red, purple, blue or white. Melanoma is caused mainly by intense, occasional UV exposure (frequently leading to sunburn), especially in those who are genetically predisposed to the disease.

If melanoma is recognized and treated early, it is almost always curable, but if it is not, the cancer can advance and spread to other parts of the body, where it becomes hard to treat and can be fatal.

The first step in treatment is the removal of the melanoma, and the standard method of doing this is by surgical excision (cutting it out). Surgery has made great advances in the past decade, and much less tissue is removed than was customary in the past. Patients do just as well after the lesser surgery, which is easier to tolerate and produces a smaller scar.

Surgical excision is also called resection, and the borders of the entire area excised are known as the margins.

AMBULATORY SURGERY

In most cases, the surgery for thin melanomas can be done in the ambulatory care at TBRHSC under local anesthesia. Stitches (sutures) remain in place for one to two weeks, and most patients are advised to avoid heavy exercise during this time. Scars are usually small and improve over time.

Discolorations and areas that are depressed or raised following the surgery can be concealed with cosmetics specially formulated to provide camouflage. If the melanoma is larger and requires more extensive surgery, a better cosmetic appearance can be obtained with flaps made from skin near the tumor, or with grafts of skin taken from another part of the body. For grafting, the skin is removed from areas that are normally or easily covered with clothing.

There is now a trend towards performing sentinel node biopsy and tumor removal surgery at the same time, provided the tumor is 1 mm or more thick. When the procedures are combined in this way, the patient is spared an extra visit.

Surgical excision is also called resection, and the borders of the entire area excised are known as the margins. Surgical excision is used to treat all types of skin cancer. At its best - given an experienced surgeon and a small, well-placed tumor - it offers results that are both medically and cosmetically excellent.

The physician begins by outlining the tumor with a marking pen. A "safety margin" of healthy-looking tissue will be included, because it is not possible to determine with the naked eye how far microscopic strands of tumor may have extended. The extended line of





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excision is drawn, so the skin may be sewn back together.

The physician will administer a local anesthetic, and then cut along the lines that were drawn. The entire procedure takes about thirty minutes for smaller lesions.

Wounds heal rapidly, usually in a week or two. Scarring depends on many factors, including the placement of the tumor and the patient's care of the wound after the procedure.

The tissue sample will be sent to a lab, to see if any of the "safety margins" has been invaded by skin cancer. If this is the case, it is assumed that the cancer is still present, and additional surgery is required. Sometimes, [Mohs micrographic surgery](#) is a good option at this point.

SURGICAL MARGINS

In the new approach to surgery, much less of the normal skin around the tumor is removed and the margins, therefore, are much narrower than they ever were before. This spares significant amounts of tissue and reduces the need for postoperative cosmetic reconstructive surgery.

- When there is an in-situ melanoma, the surgeon excises 0.5-1 centimeter of the normal skin surrounding the tumor and takes off the skin layers down to fat.
- In removing an invasive melanoma that is 1 mm or less in Breslow's thickness, the margins of surrounding skin are extended to 1 cm and the excision goes through all skin layers and down to the fascia (the layer of tissue covering the muscles).
- If the melanoma is 1.01 to 2 mm thick, a margin of 1-2 cm is taken.
- If the melanoma is 2.01 mm thick or greater, a margin of 2 cm is taken.

These margins all fall within the range of what is called "narrow" excision. When you consider that until recently, margins of 3 to 5 cm (wide excision) were standard, even for comparatively thin tumors, you can see how dramatically surgery has changed for the better. Physicians now know that even when melanomas have reached a thickness of 4 mm or more, increasing the margins beyond 2 cm does not increase survival.

Mohs Surgery

In recent years, Mohs Micrographic Surgery, which many physicians consider the most effective technique for removing basal cell and squamous cell carcinomas (the two most common skin cancers), is being increasingly used as an alternative to standard excision for certain melanomas. In this technique, one thin layer of tissue is removed at a time, and as each layer is removed, its margins are studied under the microscope for the presence of cancer cells. If the margins are cancer-free, the surgery is ended.

If not, more tissue is removed, and this procedure is repeated until the margins of the final tissue examined are clear of cancer. Mohs surgery thus can eliminate the guesswork in the removal of skin cancers and pinpoint the cancer's location when it is invisible to the naked eye.

Mohs surgery differs from other techniques since the microscopic examination of all excised tissues during the surgery eliminates the need to "estimate" how far out or deep the roots of





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the skin cancer go. This allows the Mohs surgeon to remove all the cancer cells while sparing as much normal tissue as possible. In the past, Mohs was rarely chosen for melanoma surgery for fear that some microscopic melanoma cells might be missing and end up metastasizing.

In recent years, however, efforts to improve and refine the Mohs surgeon's ability to identify melanoma cells have resulted in the development of special stains that highlight these cells. These special stains are known as immunocytochemistry or immunohistochemistry (IHC) stains and use substances that preferentially stick to pigment cells (melanocytes), where melanoma occurs, making them much easier to see with the microscope.

For example, staining excised frozen tissue sections with a melanoma antigen recognized by T cells (MART-1) effectively labels/locates the melanocytes, helping to home in on melanomas. The MART-1-stained sections are processed and evaluated for the presence of tumor in the margins; certain signs such as nests of atypical melanocytes show that the margins are positive for melanoma and that further surgery must be done. If none of these signs are present, the surgery is concluded. Thanks to such advances, more surgeons are now using the Mohs procedure with certain melanomas.

Prevention

It is recommended to use a sunscreen with an SPF 15 or higher as one important part of a complete sun protection regimen. Sunscreen alone is not enough, however. Read our full list of skin cancer prevention tips.

- **Seek the shade**, especially between 10 AM and 4 PM.
- **Do not burn.**
- **Avoid tanning and never use UV tanning beds.**
- **Cover up** with clothing, including a broad-brimmed hat and UV-blocking sunglasses.
- **Use a broad spectrum (UVA/UVB) sunscreen** with an SPF of 15 or higher every day. For extended outdoor activity, use a water-resistant, broad spectrum (UVA/UVB) sunscreen with an SPF of 30 or higher.
- **Apply 1 ounce** (2 tablespoons) of sunscreen to your entire body 30 minutes before going outside. Reapply every two hours or immediately after swimming or excessive sweating.
- **Keep newborns out of the sun.** Sunscreen should be used on babies over the age of six months.
- **Examine your skin** head-to-toe every month.

See your physician every year for a professional skin exam.

