Procedures in Family Practice

Electrodesiccation and Fulguration of Lesions of the Skin

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Electrosurgery—electrodesiccation, fulguration, and electrocoagulation—is a simple and relatively inexpensive modality for treatment of small skin lesions, whether benign or malignant. The technique is easily mastered, and the results, with proper selection of patients, compare favorably with the results of scalpel-and-suture surgery.

Electrosurgery does *not* mean "burning off" lesions and biopsy of the lesion is an integral part of the technique.

Alternating current of extremely high frequency (500 to 2,500 kilocycles per second) can be passed through living tissue with no other effect than the production of heat near the electrode. The effect of this current is the dehydration of the cells in contact with the electrical current, resulting in histological cell death and thrombosis of the smaller blood vessels. Hemorrhaging is usually absent or minimal, and the degree of dehydration of the cells may be so severe as to result in charring (Figure 1).

When electrosurgery is employed in treating skin lesions, it generally falls into one of three categories:

1. *Electrocoagulation* utilizes biterminal spark-gap current, with a small electrode at the treatment site, and a large "indifferent" electrode as a ground elsewhere on the patient's body. The tissue destruction with this technique is deeper than that of the following two techniques, and results in the destruction of those cells to which the current is applied. A heavy, white coagulum will slough in a few days, leaving a healthy base of granular tissue behind.

2. *Electrodesiccation* consists of the application of a point electrode to the surface of the tissue, without the use of an "indifferent" electrode. The capacitance of the patient is sufficient to obviate the necessity for a separate ground. Electrodesiccation results in drying and cell death in a more superficial manner than electrocoagulation, but the biological results are the same: a white coagulum develops which sloughs, leaving healthy granular tissue behind.

3. *Fulguration* is the term for electrosurgical treatment with the electrode held at a millimeter or two distance from the tissue, allowing the current to spark to the surface being treated. Variations in the intensity and duration of the electrical current applied are of least effect in fulguration, because the char which develops acts as an effective layer of insulation protecting the structures beneath.

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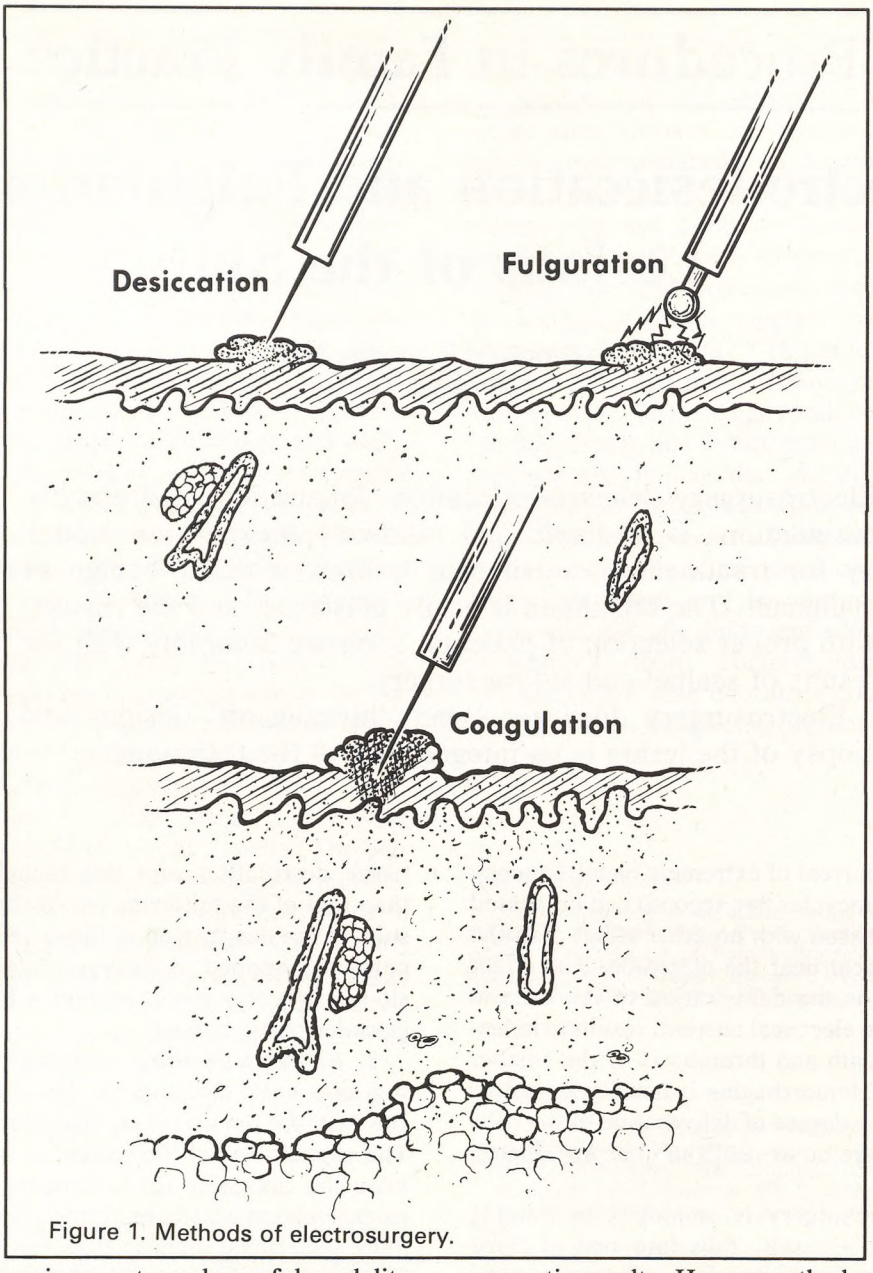


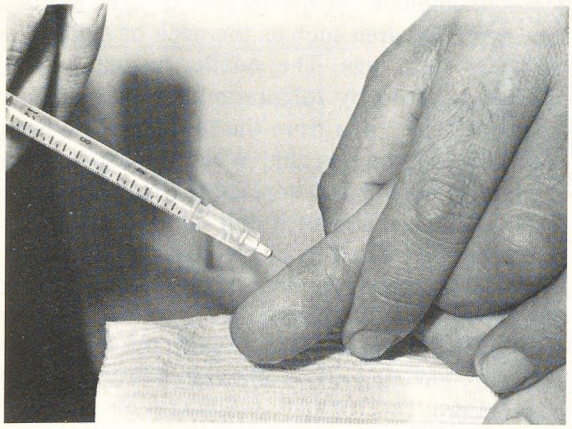
Figure 1. Methods of electrosurgery.

Electrosurgery is an extremely useful modality for treatment of small and medium-sized tumors of the skin, because scarring, even on the face, is minimal and tends to improve with the passage of time. Best results occur when the bulk of the tumor is removed first with a sharp blade or curette. Electrosurgery should be used for hemostasis and the final "touch up." The scar is usually soft and does not contract; use of the smallest current, in an interrupted fashion so as to prevent overheating of the tissue, will give the best cosmetic results. However, the beginner tends always to overtreat the lesion; this will result in maximizing the scar. A good maxim to bear in mind is that it is better to treat it over than to overtreat.

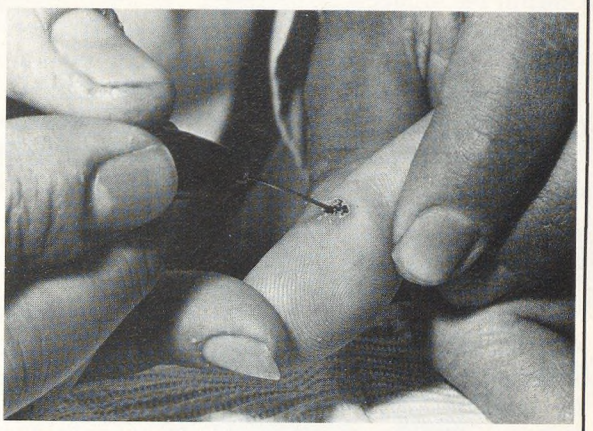
The most common uses of electrodesiccation and coagulation are:

1. Destructive treatment of benign superficial lesions, such as seborrheic keratoses, warts, molluscum contagiosum, and some nevi.
2. Destruction of small skin tags such as those

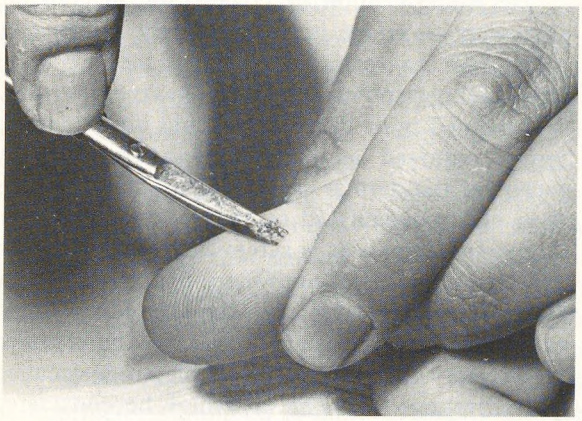
Figure 2. Electrodesiccation of a wart:



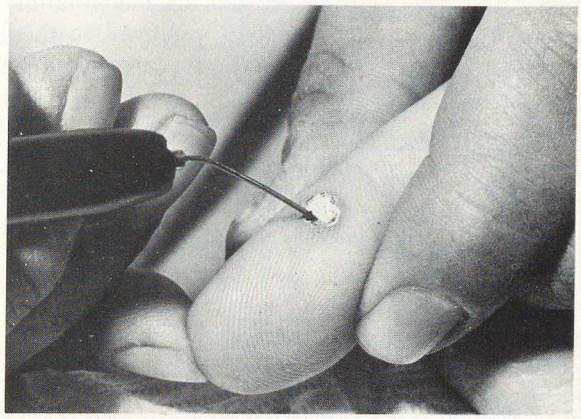
A. Injection of local anesthetic.



B. The needle electrode is inserted into the body of the wart, and current applied until an incandescent glow appears within the lesion.



C. The coagulated lesion is snipped off with a curved scissors, and the edges beveled (also with the scissors).



D. The remaining lesion and 1 mm of surrounding tissue are desiccated or fulgurated until a white char remains.

seen about the neck and axillae of obese, middle-aged, and older patients.

3. Destruction of the mucosal lesions of the lip and buccal mucosa, such as mucous cysts and oral fibromata.

4. Treatment of angiomata, telangiectasias, and particularly the spider angiomata seen in pregnancy.

CAUTION:

Lesions should not be "burned off." The bulk of the tumor must be removed with a cutting tool, both because of the better cosmetic result and because a specimen is then obtained for pathologic confirmation of the diagnosis.

CAUTION:

Indwelling cardiac pacemakers may be sensitive to the high frequency electrical current and ventricular fibrillation may be precipitated; thus, this modality is contraindicated in patients with pacemakers.

Local Treatment, Pre- and Postoperative

The area to be treated is usually cleansed with alcohol. The alcohol must be removed with solution of benzalkonium (Zephiran) or some other antiseptic, since the alcohol may be ignited by the spark. Although some authors state it is unnecessary to use anesthesia for treatment of small lesions, I have found it is kinder to use some small

quantity of 1 to 2 percent lidocaine in the skin beneath the lesion.

After-care consists of isopropyl alcohol or Zephiran solution dabbed on the area several times daily until a crust has formed. Triple antibiotic ointment may then be prescribed to be rubbed well into the affected area keeping the crust as soft as possible.

Seborrheic Keratoses, Actinic Keratoses, and Nevi

These lesions should be superficially removed as a shave biopsy with either a scalpel blade, or a single edge razor blade. A dermal curette may also be used to remove the seborrheic or actinic keratosis. The remaining tissue is then very lightly fulgurated or desiccated until hemostasis is achieved. This treatment is curative and results in minimal, if any, scarring. Results are much better when the bulk of the lesion is removed in this fashion for biopsy. The lesion is not "burned off."

Molluscum Contagiosum and Warts

Numerous approaches are effective in the treatment of these two viral lesions. To treat mollusca, the simplest method is to insert a sharp electrode 1 or 2 mm into the tissue and apply sufficient current to dehydrate the center of the lesion. The remaining tissue may be quickly curetted away and the desiccating current again applied for hemostasis, if needed.

Warts may also be treated effectively with electrosurgery (Figure 2A-D). The needle electrode is inserted into the lesion and the lesion is desiccated to the point of bubbling or glowing. The resulting char is removed by curettage or snipped off with a fine scissors, and the base lightly desiccated for hemostasis.

Plantar warts should *not* be treated routinely by this method, because of the possibility of painful scarring.

Angiomata and Telangiectasias

With the use of a very fine epilating needle and the bipolar current, anesthesia may be avoided. The fine needle is placed against the blood vessel to be epilated, and with the machine on its lowest setting, a brief current is passed through the lesion. This approach results in the destruction of the vessel so treated, with no scarring.

Skin Tags

Regional block anesthesia may be used to anesthetize a large area such as the neck or axilla with numerous skin tags. The smaller lesions may be easily destroyed by fulguration, holding a sharp electrode 1 to 2 mm from the lesion and allowing the spark to jump this gap. When the entire lesion is white, it may be left in place to drop off later or simply rubbed off with a dull curette. Larger lesions may be treated by electrodesiccation, inserting the electrode at the base of the lesion, allowing current to flow through the lesion until the entire stalk of the lesion is white. Again, the lesion may be lightly curetted off or allowed to drop off of its own accord.

Basal Cell Carcinomas

Electrodesiccation or coagulation in conjunction with curettage is an extremely satisfactory method for the treatment of small to medium-sized basal cell carcinomas. A small shave biopsy may be obtained prior to treatment and the remaining lesion removed as completely as possible by means of the dermal curette. The entire lesion is then electrocoagulated or electrodesiccated until complete hemostasis is achieved. The area is then curetted once again, until there is no soft, cheesy tissue remaining, and again the entire area of the tumor is electrodesiccated. This may be repeated to as many as three cycles of electrodesiccation plus curettage until the area may be considered free of tumor. In experienced hands, cure rates equal to those of any other modality have been achieved.

Conclusion

No surgical technique should be employed without some practice by the surgeon. In the case of electrosurgery, one may practice on an inexpensive cut of beefsteak, utilizing different electrode shapes and sizes, and various settings on the machine. Once mastered, electrosurgery is an extremely satisfactory method for removing small skin lesions with minimal scarring.

Acknowledgement

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