Cauterization

Cauterize redirects here. For the band, see Cauterize (band)

The medical practice or technique of **cauterization** is a medical term describing the burning of part of a body to remove or close off a part of it in a process called **cautery**, which destroys some tissue[1] , in an attempt to mitigate damage, remove an undesired growth, or minimize other potential medical harmful possibilities such as infections, when antibiotics are not available. The practice was once widespread and is still used in remote regions of the world such as central Australia for treatment of wounds. Its utility before the advent of antibiotics was effective on several levels:

- useful in stopping severe blood-loss,
- to close amputations,
- useful in preventing infections, including complications from septicaemia.

Actual cautery is a term referring to the white-hot iron—a metal generally heated only up to a dull red glow—that is applied to produce blisters, to stop bleeding of a blood vessel, and other similar purposes.[2]

The main forms of cauterization used today in the first world are **electrocautery** and **chemical cautery**—where both are, for example, prevalent in the removal of unsightly warts. Cautery can also mean the branding of a human, either recreational or forced. Accidental burns can be considered cauterization as well.

History

Cauterization was used to stop heavy bleeding, especially during amputations. The procedure was simple: a piece of metal was heated over fire and applied to the wound. This would cause tissues and blood to heat rapidly to extreme temperatures in turn causing coagulation of the blood thus controlling the bleeding, at the cost of extensive tissue damage.

Hot cauters were applied to tissues or arteries to stop them from bleeding.

Cautery is described in the Hippocratic Corpus.[3] The cautery was employed for almost every possible purpose in ancient times: as a 'counter-irritant', as a haemostatic, as a bloodless knife, as a means of destroying tumours, etc.[4] Later, special medical instruments called **cauters** were used to cauterize arteries. These were first described by Abu al-Qasim al-Zahrawi (Abulcasis) in his *Kitab al-Tasrif*.[5] Abu al-Qasim al-Zahrawi also introduced the technique of ligature of the arteries as an alternative to cauterization. This method was later improved and used more effectively by Ambroise Paré.

Electrocautery

Electrocauterization is the process of destroying tissue using heat conduction from a metal probe heated by electric current (much like a soldering iron). The procedure is used to stop bleeding from small vessels (larger vessels being ligated) or for cutting through soft tissue. Unlike electrocautery, electrosurgery is based on generation of heat inside tissue, using electric current passing through the tissue itself. Electrocautery is used in the treatment of skin cancers via electrodessication and curettage.

Electrocauterization is preferable to chemical cauterization because chemicals can leach into neighbouring tissue and cauterize outside of the intended boundaries.[6]

Ultrasonic coagulation and ablation systems are also available.

Chemical cautery

Many chemical reactions can destroy tissue and some are used routinely in medicine, most commonly for the removal of small skin lesions (i.e. warts or necrotized tissue) or hemostasis. The disadvantages are that chemicals can leach into areas where cauterization was not intended. For this reason, laser and electrical methods are preferable, where practical. Some cauterizing agents are:

- Silver nitrate: Active ingredient of the lunar caustic, a stick that traditionally looks like a large match-stick. It is dipped into water and pressed onto the lesion to be cauterized for a few moments.
- Trichloroacetic acid
- Cantharidin: An extract of the blister beetle that causes epidermal necrosis and blistering; used to treat warts.

Nasal cauterization

If a person has been having frequent nose bleeds, it is most likely caused by an exposed blood vessel in their nose. Even if the nose is not bleeding at the time, it is cauterized to prevent future bleeding. The different methods of cauterization include burning the affected area with acid, hot metal, lasers, or silver nitrate. Such a procedure is naturally quite painful. Sometimes liquid nitrogen is used as a less painful alternative, though it is less effective. In the few countries that permit the use of cocaine for medicinal purposes, it is occasionally used topically to make this procedure less uncomfortable, cocaine being the only local anesthetic which also produces vasoconstriction, making it ideal for controlling nosebleeds.

See also

- Cryosurgery
- Diathermy
- Singe

External links

- Valleylab division of Tyco Healthcare, explaining the basics of electrosurgery [7]
- Examples of Cauterizing the Wound in Cinema - Daily Film Dose [8]

References

[1] "Dictionary definition, retrieved: 2009-03-07." (http://dictionary.reference.com/browse/cautery?qsrc=2888). .
[2] Robinson, Victor, Ph.C., M.D. (editor) (1939). "Actual cautery". *The Modern Home Physician, A New Encyclopedia of Medical Knowledge*. WM. H. Wise & Company (New York)., page 16.
[3] The Presocratic Influence upon Hippocratic Medicine (http://www.perseus.tufts.edu/GreekScience/Students/Chad/pre-soc.html)
[4] Surgical Instruments from Ancient Rome (http://www.hsl.virginia.edu/historical/artifacts/roman_surgical/)
[5] Mohamed Kamel Hussein (1978), *The Concise History of Medicine and Pharmacy* (cf. Mostafa Shehata, "The Father Of Islamic Medicine: An International Questionnaire", *Journal of the International Society for the History of Islamic Medicine*, 2002 (2): 58-59 [58])
[6] See Mr R McElroy for details of various operations and the unintended effects of chemical cauterization
[7] http://www.valleylab.com/education/poes/index.html
[8] http://www.dailyfilmdose.com/2009/04/cauterizing-wound-and-other-scenes-of.html

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