

the positive towards the negative pole. The resultant cicatrices also differ, that at the positive puncture being firm, hard, retracted, leaving often a permanent deformity; it also shows much fibrous tissue and amorphous matter, while the negative is soft, pliable, non-adherent to subjacent tissue, not retracted, and will gradually become pale and generally fade away entirely.

In practice, the process of electrolysis is not always carried to the extent of causing destruction of tissue. With mild currents absorption is promoted by electro-osmosis, with stronger we decompose, while with still stronger destruction, and even sloughing, may take place.

With this rather imperfect description of the process before us, we will be in a better position to understand its application in practice.

Dr. Robert Newman has said that "the art in applying electrolysis successfully in surgery consists in:

- (1) "Using the correct strength of the electric current.
- (2) "Applying the respective poles in the right place.
- (3) "Selecting the size, shape, and material of the electrode.
- (4) "Regulating the duration and intervals of seances." To which we may add:
- (5) The selection of suitable cases.

When electrolysis is mentioned nowadays, one's thoughts are very apt to turn to the gynecological field, for in this have its successes—and failures—been most marked recently.

In *uterine fibroids*, I have confined myself to the use of various intra-uterine sounds, for I have been rather too conservative to try galvanopuncture in these cases yet; but even in this way good results have been met with, notably, diminution of hemorrhage, lessening of pain, and the disagreeable pressure symptoms, reduction in the size of the tumor, or retarding of its growth. This treatment is most applicable to the small interstitial variety, though it is frequently of benefit in quite large tumors. The positive electrode is usually a large flexible metal plate covered with sponge well wet with a solution of carbonate of soda in hot water, and placed low down over the abdomen. When the tumor is situated in the posterior portion of the uterus this electrode may with advantage

be placed low down on the back, first protecting the spinal column by a strip of oiled silk or gutta percha tissue. Apostoli and others use an electrode of potter's clay covering a metal plate and contained in a porous cloth; when wet it is moulded to the shape of the abdomen, but it is dirty in application. The smaller the size of the external electrode, the greater the pain and burning from concentration of current; hence with the stronger currents our indifferent electrode must be large, or we shall blister the skin below it. The negative pole in these cases is a flexible metallic sound insulated to within an inch or an inch and a half from its tip, and this latter portion nickel-plated. It is introduced through the os, as high up into the uterine canal as it is possible to go, the current is slowly turned on till the meter shows about ten milliamperes; this is kept up for ten or fifteen minutes, the current then gradually turned off, the sound withdrawn, and the patient kept quiet for an hour or two. It is better to begin with low currents, for the susceptibility of patients varies very much, and the skin under the positive electrode can stand more at subsequent seances when this is done. In a couple of days, if the patient is none the worse for the treatment, a stronger current may be used, fifteen to twenty milliamperes for ten to fifteen minutes. At each seance the sound is introduced from an inch to an inch and a half lower down than at the previous seance, till all the endometrium has been acted on; then you start from the upper portion again. I prefer the milder currents at short intervals instead of the currents of two hundred to two hundred and fifty milliamperes so often mentioned, though I do not hesitate to use the latter when I consider it necessary. I rarely go above one hundred milliamperes. Treatment should be continued for several months before giving up a case as hopeless.

In *stenosis of the cervix* the same or a smaller negative electrode may be used with the greatest benefit, commencing with five milliamperes for fifteen or twenty minutes, and gradually using stronger currents till the condition yields.

In *menorrhagia* and *metrorrhagia* the polarity is reversed, the positive being internal; hence the former active electrode will not do, as we must have a non-oxidizable one. For this