

Electroacupuncture

Today's Topic

- Introduction
- History of EA
- Benefits of EA
- Procedure
- Wave pattern
- Precautions
- Indications

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Purpose

- The procedure for electro-acupuncture is to insert the acupuncture needle as would normally be done, attain the qi reaction by hand manipulation, and then attach an electrode to the needle to provide continued stimulation.

History

- Electro-acupuncture, the application of a pulsating electrical current to acupuncture needles as a means of stimulating the acupoints, was developed in China as an extension of hand manipulation of acupuncture needles around 1934.

Benefits

- EA can help physicians to provide the amount of stimulation needed, without tiring the physicians.
- EA may also help reduce total treatment time by providing the continued stimulus each session.
- EA may also reduce the total number of visits since it offers stronger and longer stimulation.
- EA set free some busy physicians who can attend to other patients while one patient is in session

Benefits

- EA can produce a stronger stimulation, if desired, without causing tissue damage associated with twirling and lifting and thrusting the needle.
- EA is easier to control the frequency of the stimulus and the amount of stimulus than with hand manipulation of the needles.
- EA quantifies TCM as a scientific medical modality.
- EA is financially practical since some insurance companies pay more to this procedure.

Procedures

- Duration of standard treatment with electro-acupuncture is usually 10-20 minutes and rarely exceeds 30 minutes.
- The electrical pulsing stimulus is used in a few cases for an hour or more, especially for difficult to treat neurological disorders or anesthesia.
- Volume: Normally < 40 volt, 1mA

Procedures

- Examination of electrical stimulator before treatment.
- Insert the needle (with metal handle) and get Qi sensation
- Turn all the knobs to zero
- Connect the electrical stimulator with needles.
- Turn power on.
- Adjust the stimulating waveforms and frequency
- Adjust the intensity to appropriate degree.

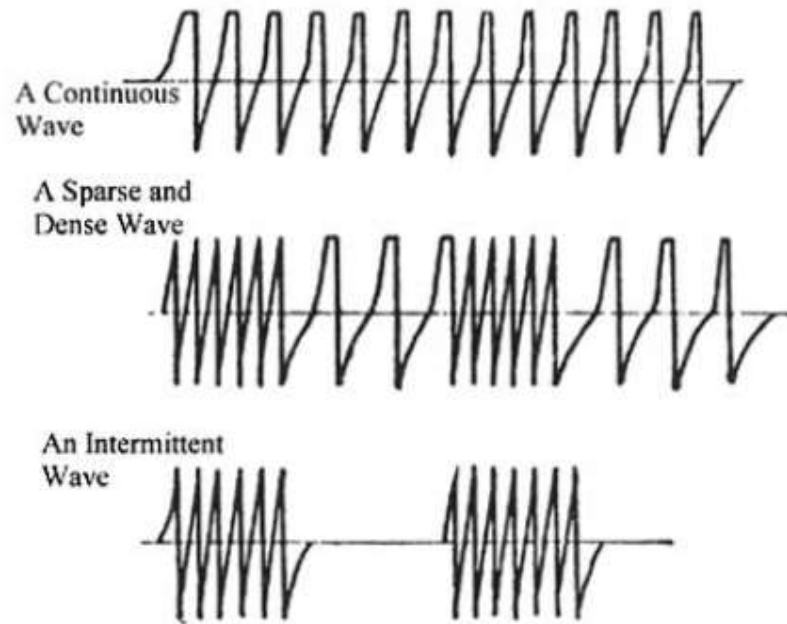
Procedures

- During the stimulation period, the patient may become adapted to the stimulus (this will typically happen after the first minute or two), with a gradual decline in response.
- The electrical output should then be adjusted in frequency and/or intensity to resume the sensation. Variable frequency output of the electro-acupuncture device is sometimes utilized in an attempt to circumvent this adaptation.

Wave patterns

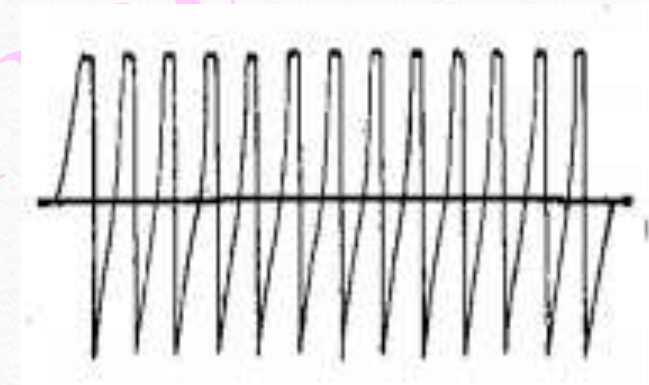
- squared off or sharp: anesthesia to circumvent adaptation-Burst mode
- Mixed dense and sparse: antiinflammation, good for pain, local swollen or edema.
- Interrupted: pain management and muscle atrophy- often combined with Burst mode
- Modulate Mode

Wave patterns



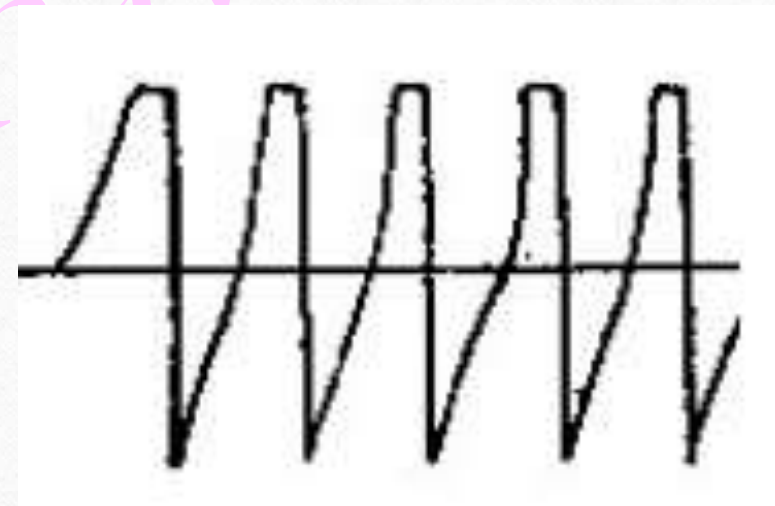
Dense wave (continuous)

- High frequency: 50-100 pulses per second
- Function and indications:
 - Inhibit sensory nerves and motor nerves
 - Relieve pain, tranquilizing the mind, relieve spasm of the muscles and blood vessels



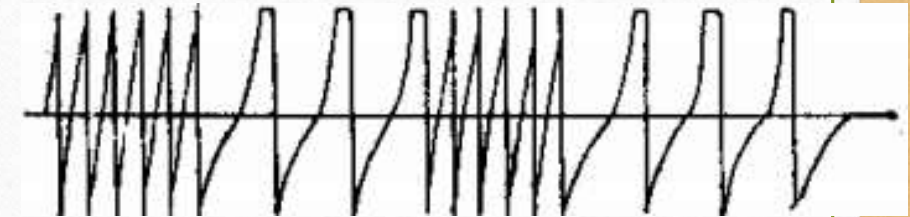
Disperse / Sparse wave (continuous)

- Low frequency: 2-5 pulses per second
- Function: Induce the contraction of muscles, and enhance the tension of muscle and ligament.
- Indication: paralysis, injury of muscle, ligament and joints.



Dense-disperse/sparse wave

- Disperse wave and dense wave appear alternately, each last about 1.5 s. Prevent the body's adaptation
- Function: Relieve pain, improve metabolism, improve blood circulation, improve nourishment of tissues, eliminate inflammation
- Indication: Pain, trauma, sprain, arthritis, sciatica, facial paralysis, weakness of muscles, etc



Discontinuous /Intermittent wave

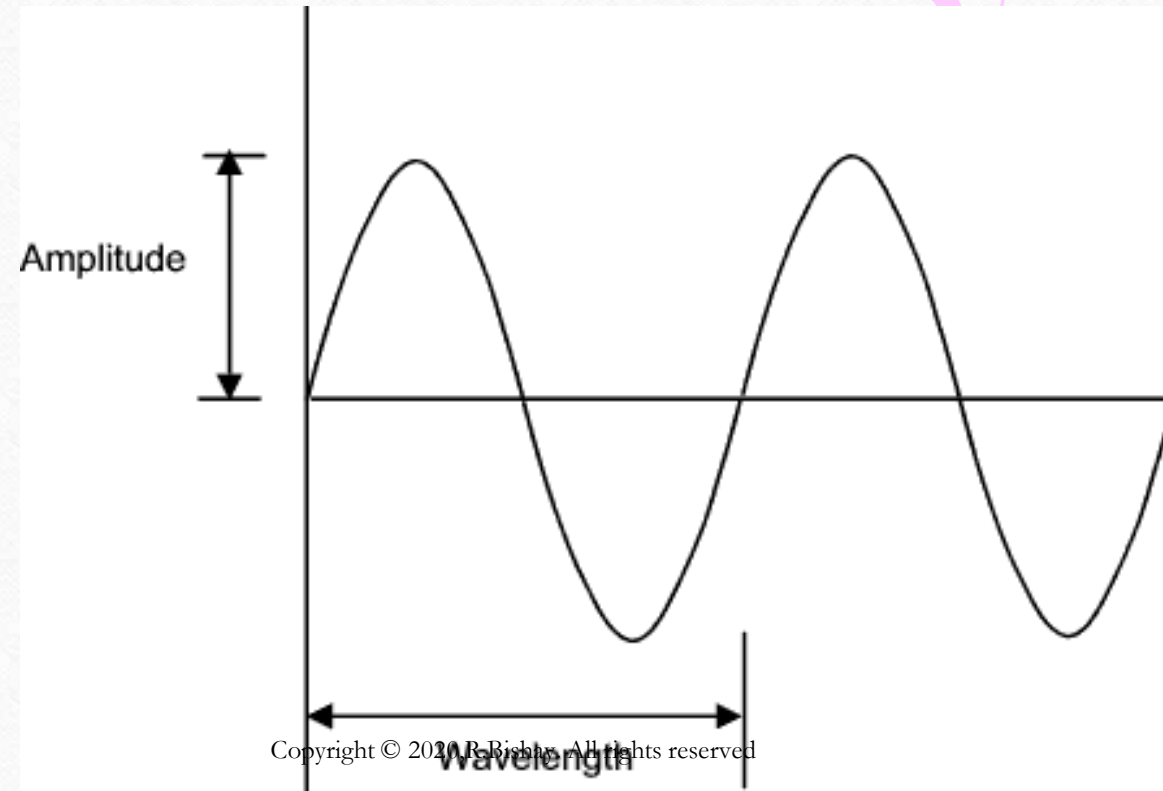
- A wave appears on and off rhythmically.
- Interval: 1.5s
- Function: Stimulate the muscles
- Indication: Paralysis.



Wave Forms

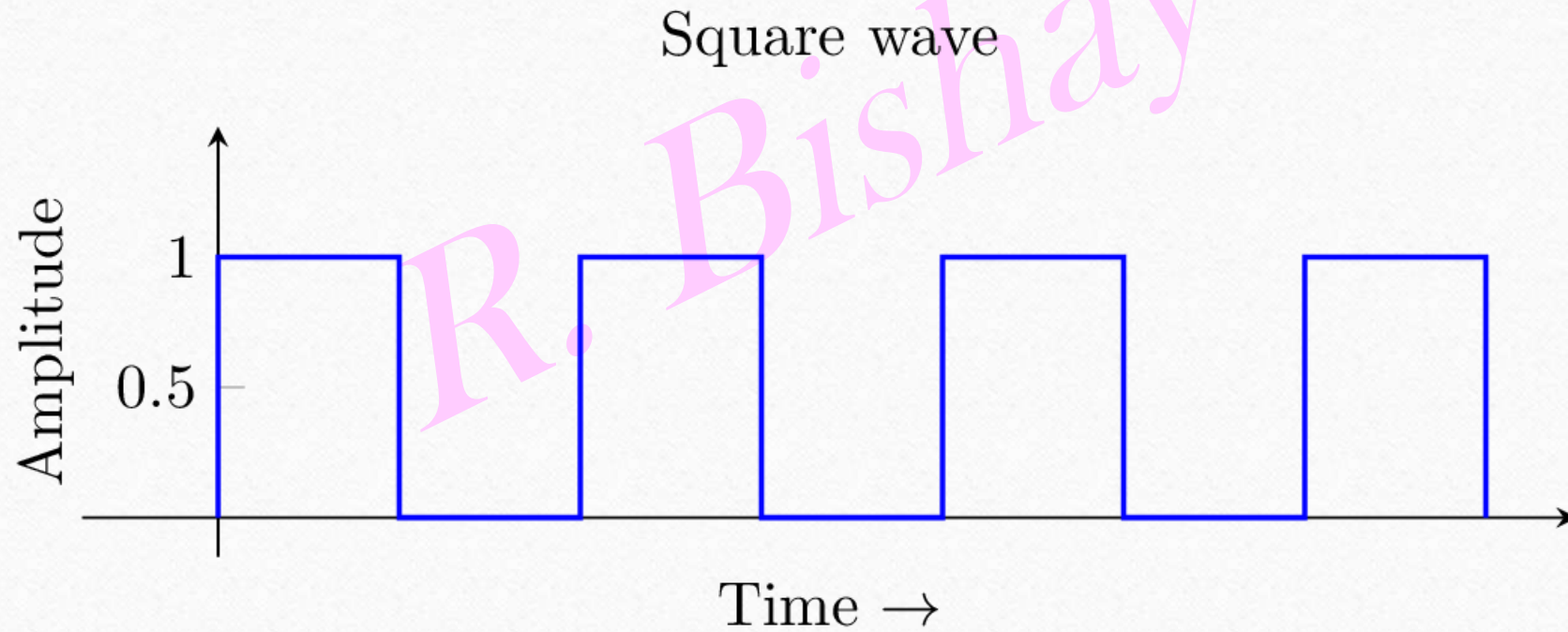
- sin wave, square wave, with combinations such as continuous waves, sparse-dense waves, intermittent waves, sawtooth waves.

Sin Wave

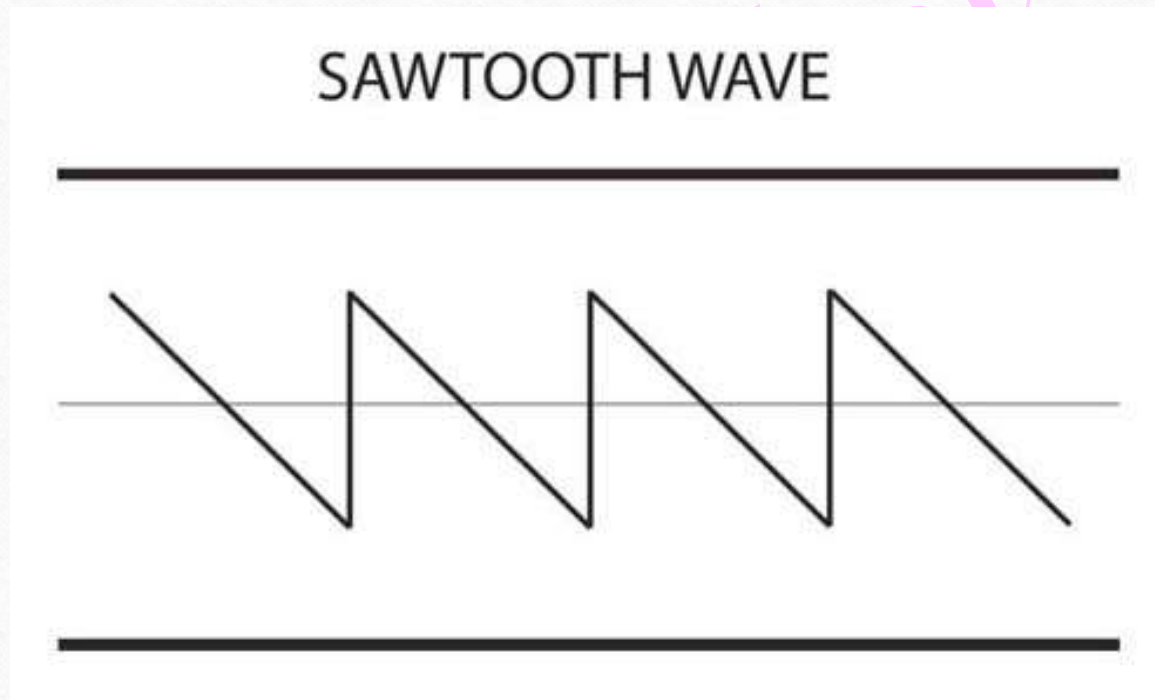


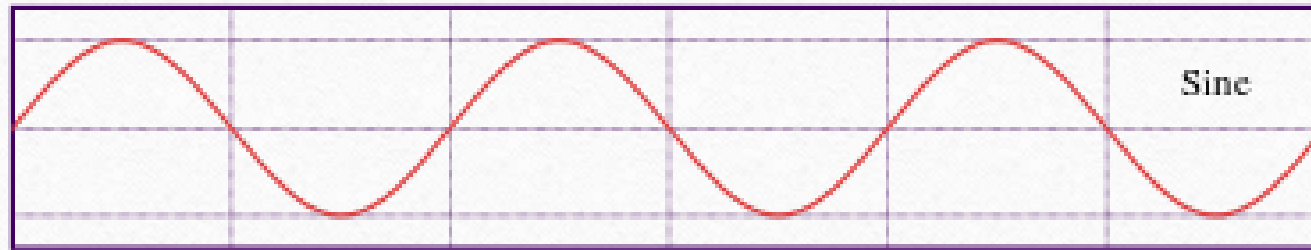
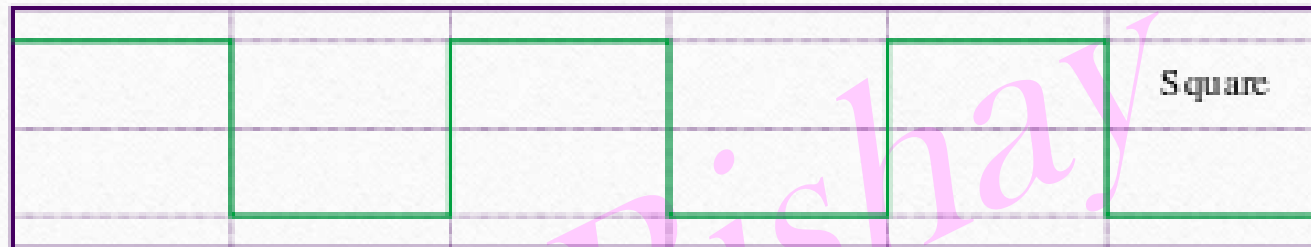
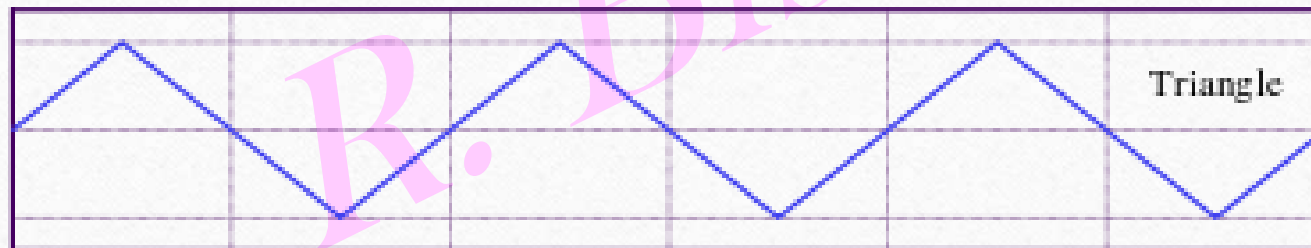
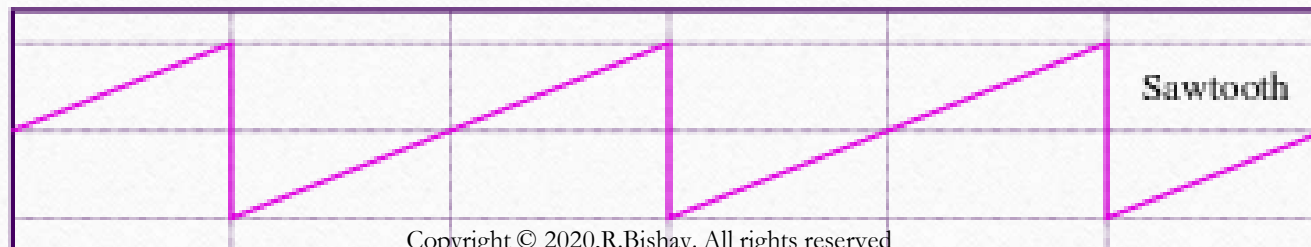
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Square Wave



Sawtooth Wave





Clinical

- Usually, the patient feels comfortable with continuous waves, spares – dense waves do not easily cause electricity adaptation, but the patient often feels local discomfort; intermittent waves do not cause electricity adaptation more and has a stronger stimulating effect; undulatory and sawtooth waves are middle and easy to tolerate.

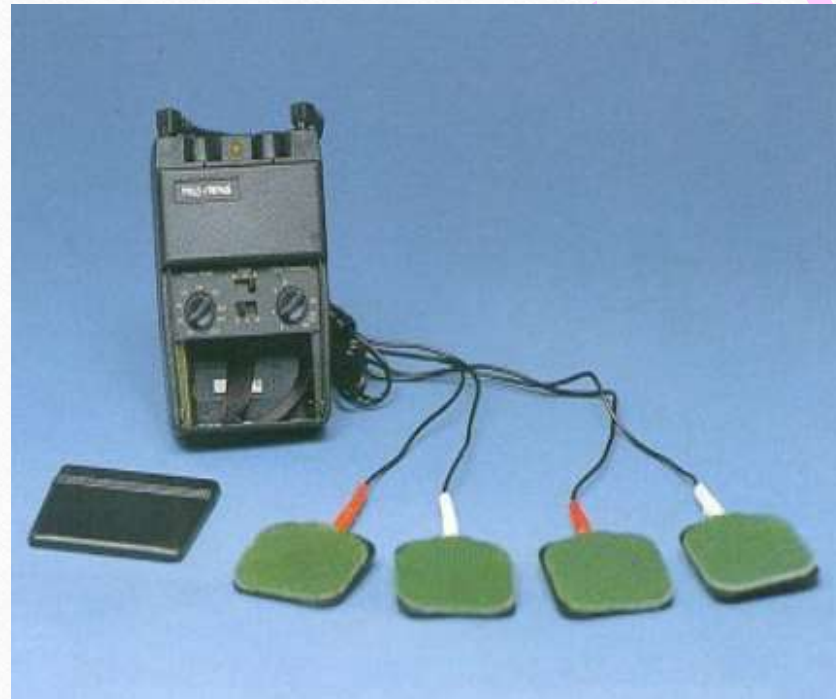
Constant

- High frequency 50-100 Hz (mostly about 30 Hz), decrease vessel or muscle contraction, good for muscle spasm, organ pain.
- Low frequency 2-5 Hz, strong stimulation, can cause muscle spasm, increase muscle tone, good for muscle atrophy, swollen, sports injury (muscle, joint, ligament and tendon injuries, etc) and chronic pain.

Positive and Negative

- Positive electrode increases vessel dilation, thus more blood circulation around positive electrode. Pain and numbness due to blockage.
- Negative electrode decrease vessel dilation, thus less blood circulation around negative electrode. Swelling and edema due to bleeding.
- This rule applies only to devices that use direct current (DC).

EA Adapted from TENS



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Sample of EA machine



Precautions

- The device should not be turned on until the acupuncture needles are in place and the electrodes are connected.
- Start of EA: Switch should be at 'off' before stimulation begins, then increase the volume.
- Completion of EA: turn intensity to '0' first, then switch the unit off
- All changes in the electrical stimulus should be carried out gradually
- Be cautious to use EA for particularly sensitive areas such as the face.

Precautions

- No EA for at any stage of pregnancy
- No EA across heart, brain or spinal cord
- No EA near the body part with metal pacemaker or other electronic implants.
- No EA for patients with mental illness
- No EA for the initial visit unless patient feels comfortable with it

Indications

- Pain-organ or muscular
- Numbness
- Fractures
- Muscular atrophy
- Paralysis
- Edema

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Locations

- Local: ashi points
- Distal: by muscle channel pathways
- Local and distal: beware of the polarity

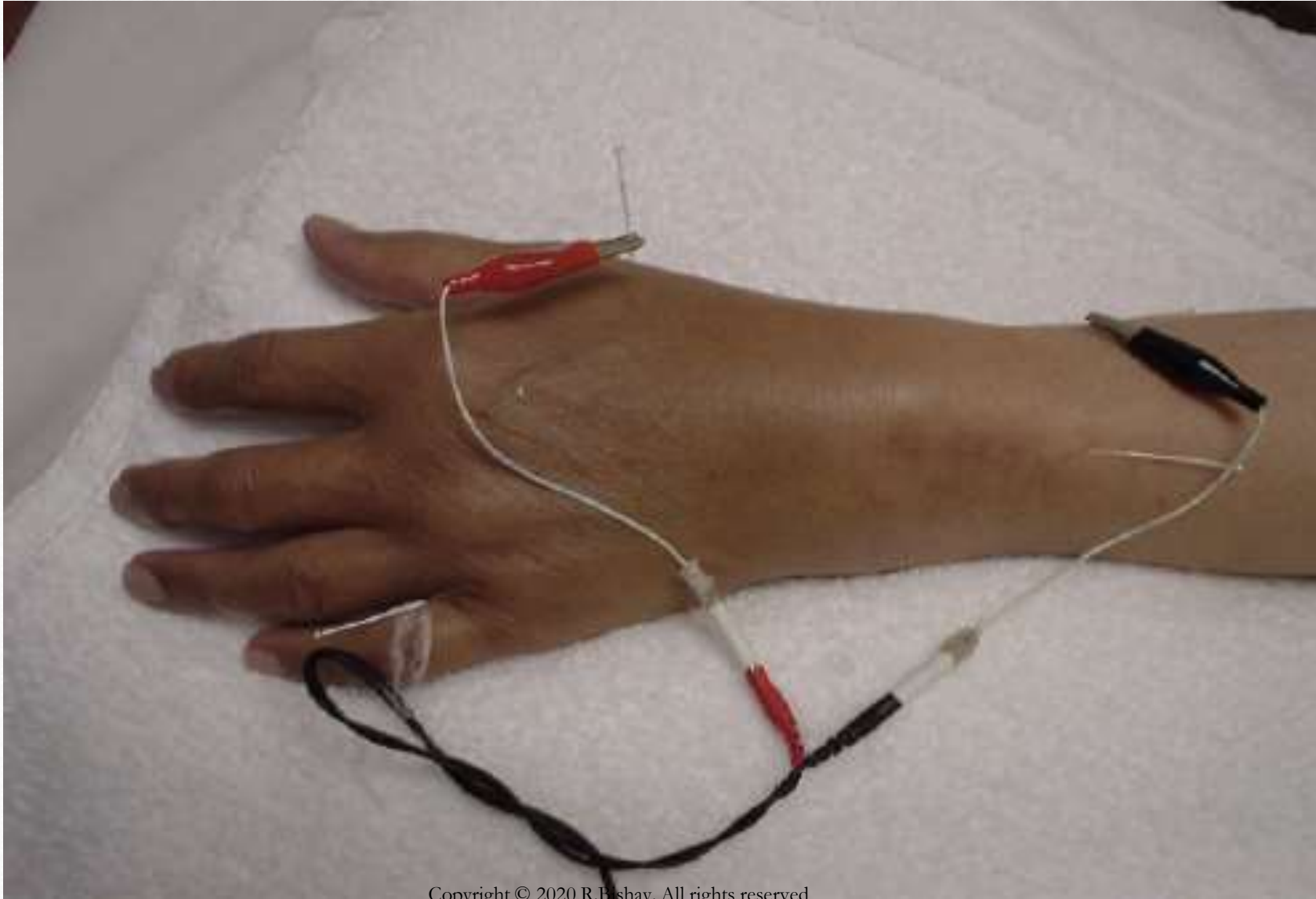
Stolen By Western Medicine

- PENS/ Percutaneous Electrical Nerve Stimulation, using acupuncture needles with electrical stimulation to stimulate different dermatome for pain relief. Research demonstrated PENS superior to TENS in pain relief.
- TENS/ Transcutaneous Electrical Nerve Stimulation.
- EA: Electrical stimulation enhanced acupuncture.









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