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The Application Of Electrical Stimulation Has A Constructive Influence On Wound Healing, Speeding Up The Recovery Period

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Abstract:
Electrical stimulation is one of the physical therapy treatments used to assist wounded individuals. It can also be used by those who have pain, weakness, or spasms in their muscles. One of several forms of electrical stimulation may be used by your physical therapist. An wounded region might be closed or open. Open wounds disclose body tissue at the base of the wound. Closed wounds sustain damage without revealing the underlying bodily tissue.

During the procedure, the physical therapist will place electrodes on the part of your body that requires treatment. You will experience a tingling sensation during the therapy. The operation is not intended to cause pain. If you experience any discomfort, let your physical therapist know right away so they can adjust or discontinue the therapy as needed. High-voltage galvanic stimulation (HVGC) uses low-frequency and high-voltage electricity to penetrate deeply into tissues. It is used to improve blood flow, reduce pain, reduce muscle spasms, and improve joint mobility.

Key words: physical therapist, tingling, muscular spasm, electrical stimulationt.

1. Introduction

Homeostasis, inflammation, proliferation, and maturation are the four phases of wound healing, however there is much more to understanding wound healing today. The process of wound healing involves a number of intricate reactions and interactions between mediators and cells. Every year, new mediators are found, and our knowledge of cellular connections and inflammatory mediators expands. Wound healing is influenced by numerous internal and environmental variables. This article will give the reader a broad summary of electrical stimulation's effects on wound healing. treatment for wounds.

2. Background

From prehistoric times to contemporary medicine, wound care has a long history. Although wounds heal on their own, hunter-gatherers would have observed a number of circumstances, and certain herbal medicines might help or expedite the healing process, particularly if the wound was severe. This was followed in antiquity by the recognition of the need of cleanliness and stopping the bleeding, which led to the development of surgical methods and wound dressing techniques. In the end, the germ hypothesis of illness helped to improve wound care as well.

3. Wound :-

A wound is a rupture in the continuity of any body tissue caused by violence, which is defined as any external agency activity, such as trauma or surgery. A wound is a very rapid damage that occurs when blunt force trauma results in a contusion (a closed wound) or when skin is ripped, sliced, or pierced (an open wound). It particularly refers to a sharp injury that harms the skin's epidermis in pathology. Trauma or skin deterioration are the causes of wounds. If a wound is new, it is classified as acute. If a wound is older than three to four weeks, it is deemed chronic.

4. wound types:-

Wounds can be open or closed. Open wounds have exposed body tissue in the base of the wound. Closed wounds have damage that occurs without exposing the underlying body tissue.

i] Open Wound Types: -

Penetrating wounds: An open wound is the result of an item piercing the skin and entering a bodily tissue. The following are a few piercing wounds:

1. An instrument that pierces and enters the skin, such as a knife, splinter, needle, or nail, can result in puncture wounds.
2. Surgical wounds and incisions are injuries brought on by sharp, clean objects like a knife, razor, or shard of glass.
3.Thermal, chemical, or electrical burns.
4.Stings and bites
5. Gunshot wounds or other high velocity projectile which penetrates the body (this may have one wound at site of entry and another at site of exit).

Blunt trauma wounds:

More specialized forms, such abrasions, lacerations, and/or bone fractures, arise from the original trauma, which may involve an impact but does not always result in broken skin.

1. Abrasions: superficial wounds caused by traumatic removal of the skin's outermost layer (e.g. fall or slide on a rough surface).
2. Lacerations: linear, uniform wounds, ranging from severe cuts to irregularly shaped tears brought on by trauma.
3. Skin rips can be acute as a result of friction and trauma, or persistent as a wound at the base of a skin fissure.

ii] Closed Wound Types

A. Contusions: A direct physical trauma can harm internal organs, muscles, underlying tissue, tiny blood arteries and capillaries, and, in some situations, bone. Contusions are a common kind of sports injury. A painful bruise with a reddish-blue discoloration that covers the affected region
of skin is the first sign of a contusion.

B. Blister :- Pocket of fluid beneath the skin.

C. Seroma: Following surgery, the body may produce a pocket of transparent serous fluid. This fluid is made up of inflammatory fluid created by the damaged and dying cells as well as blood plasma that has leaked out of tiny blood vessels that have burst.

D. Hematomas: These comprise any damage to capillaries and tiny blood vessels that causes blood to accumulate and pool in a small area. Usually, hematomas appear as a painful, rubbery, spongy lump-like lesion. Depending on the extent and location of the injury, hematomas may be minor or massive, either just under the skin or deep into the body.

E. Crush injuries: These are typically brought on by an external, high-pressure force that presses a bodily part between two surfaces. Depending on the location, size, length, and force of the trauma, the extent of damage and suffering can vary from a little bruise to total annihilation of the crushed portion of the body.

iii] Ulcers

Lesions that erode the skin or mucous membrane are called ulcers, and depending on where they occur, they can have a variety of reasons. Anything that lowers the availability of blood, oxygen, and nutrients—all of which are necessary for cells to function—can cause ulcers. Diabetic foot ulcers, venous leg ulcers, and pressure ulcers are the most prevalent forms of internally originated skin ulcers.

.5. Electrical Stimulation Wound Therapy

Definition: - A novel approach to treating wounds, electrical stimulation may help cure chronic wounds, lower infection, improve blood flow, and hasten the healing process. The body's normal electrical current is disturbed when the skin's epithelial layers are damaged. It is believed that by mimicking the body's electrical current, electrical stimulation can speed up the healing of a wound.

Indications: -

Conditions in which electrical stimulation is used may include:

- Low back pain
- Post-surgical pain
- For muscle weakness or poor motor control
- Tendonitis
- Bursitis
- build strength in patients with injuries

If you are experiencing pain, spasm, inflammation, or muscular weakness, your PT may use this versatile modality as part of your treatment.

Contraindications: - Electrical stimulation should never be used in certain situations. Your physical therapist should be aware of these E-stimulation usage contraindications.

The following are contraindications to electrical stimulation:

• Modified perception of tissue

• Mental impairment

• The existence of an implanted electrical device (the e-stimulation may interact with implanted pain stimulators or pacemakers).

• Over cancerous tissue

• Over very wet wounds

• In close proximity to the eyes, carotid sinus, anterior neck, or reproductive organs

Types of Electrical Stimulation

Your physical therapist will use different types of electrical stimulation to accomplish different tasks. These may include:

TENS: One physical therapy technique used to treat both acute and chronic pain is transcutaneous electrical neuromuscular stimulation (TENS). By placing electrodes on your body over sore locations, your PT will utilize TENS to reduce your discomfort. The electricity's strength will be changed to prevent pain signals from reaching your brain from your body.

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Interferential current: Interferential current (IFC) is often used by physical therapists to decrease pain, decrease muscular spasm, or improve localized blood flow to various muscles or tissues. It is often used to decrease low back pain and muscular spasm. Interferential current typically uses 4 electrodes in a crisscross pattern. This causes the currents running between the electrodes to "interfere" with one another, and allows your PT to use a higher intensity current while still maintaining maximum comfort for you.

High voltage galvanic current (HVGC): High volt galvanic stimulation uses high voltage and low-frequency electricity to penetrate deep into tissues. It is used to relieve pain, improve blood flow, relieve muscle spasm, and improve joint mobility.

Process of E-Stimulation

The E-Stimulation Process

If your physical therapist decides to utilize electrical stimulation during your rehabilitation, they should describe the process to you, along with any potential dangers and advantages. The following is an example of a common e-stim application:

1. Make the part of your body that is being treated visible.
2. Electrodes will be applied to your skin by your PT. An e-stim device is connected to these electrodes.
3. There will be a faint tingling feeling.
4. The feeling will be intensified until it is both powerful and cozy.
5. You will unwind while receiving therapy if the e-stim is utilized to relieve pain or muscular spasms.
6. If the electricity is used to improve muscular strength or function, you may be required to contract your muscle as the machine is working.

Electrical Stimulation In wound healing

In order to promote wound healing, certain physical therapists who specialize in wound care may employ electrical stimulation. It has been demonstrated that high voltage electrical stimulation can help cure wounds that are challenging to treat. In order to promote healing, the electricity helps to increase circulation around the wound's margins.

As a movement specialist, your physical therapist can provide workouts and at-home regimens to improve your mobility and well-being.

6. Conclusion:

Understanding the introduction and definition of wound. There are three phases – Hemostasis, inflammation, proliferation and maturation. Understand Wound that it is a break in the continuity of any bodily tissue due to violence, where violence is understood to encompass any action of external agency, including, for example, surgery, trauma. There are three types of wounds-open , closed and ulcer. Understand the electrical stimulation therapy with their all aspect like definition, indication, contraindication and its types and process.

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