INTERRUPTED GALVANIC CURRENT (IGC)
Effect on Muscles & Technique of Application

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4. Effect of Interrupted Galvanic Current (IGC) on Muscle

4.1 Effect on Innervated Muscle

Mechanism:

IGC stimulates the **motor nerves**, causing muscle contraction.

Contraction Quality:

Produces **smooth and strong contractions**.

Results in **less muscle fatigue** compared to Faradic current.

Therapeutic Benefits:

Effective in **muscle strengthening**.

Useful for **muscle re-education** after injury or surgery.

Helps to **relieve muscle spasms**.

Improves **local blood circulation** due to pumping action.

4.2 Effect on Denervated Muscle

Stimulation Parameters:

Requires **longer pulse duration** (10–300 ms) and **higher intensity**.

This is because stimulation bypasses nerves and directly activates **muscle fibers**.

Therapeutic Effects:

Produces **direct muscle fiber contraction**.

Prevents **muscle atrophy** during periods of denervation.

Precautions:

Intense stimulation may cause **discomfort or tissue damage**.

Clinical Use:

Mainly for **maintaining muscle bulk** until nerve function returns (reinnervation).

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5. Technique of Application of IGC

5.1 Motor Point

Definition:

The motor point is the **specific area on the muscle surface** where minimal electrical stimulation produces maximal contraction.

It corresponds to where the **motor nerve enters the muscle**.

Identification:

Use **motor point charts** as a reference.

Alternatively, locate by gradually increasing intensity and moving the electrode until the **strongest contraction with least stimulation** is found.

5.2 Preparation of Apparatus

i. Assembling

Connect the **IDC machine** to the power source.

Attach **electrode leads** correctly:

Active electrode (smaller)

Dispersive electrode (larger)

Select desired parameters:

Pulse duration

Frequency

Intensity

Interruption time

Ensure all knobs, switches, and safety features are functional.

ii. Testing

Turn on the device.

Adjust parameters and test current output using:

A **test resistor**, or

Self-testing with low intensity.

Confirm the current pulses are **smooth and properly interrupted**.

Check for **safety and absence of electrical faults**.

5.3 Preparation of Patient
Positioning

Patient should be in a **comfortable, relaxed position**.

Treatment area should be **adequately exposed**.

Skin Preparation

Clean the skin with **soap and water** or **alcohol wipes** to remove oils/dirt.

Apply **conductive gel** or moisten sponge electrodes.

Inspect the skin for **cuts, infections, or irritation**.

Contraindications and Precautions

Absolute contraindications:

Pacemakers or cardiac arrhythmias.

Pregnant abdomen or lumbar region.

Areas with impaired sensation or malignancies.

Open wounds or skin infections.

5.4 Stimulation of Motor Point
Electrode Placement

Place the **active (smaller) electrode** over the motor point.

Place the **dispersive (larger) electrode** on a nearby non-sensitive area.

Application Steps

Start with **zero or very low intensity**.

Gradually increase intensity until a **visible muscle contraction** is observed.

Adjust **pulse duration**:

Shorter pulses for **innervated muscles**.

Longer pulses for **denervated muscles**.

Set **interruption frequency** to allow comfortable contraction-relaxation cycles.

Treatment duration typically lasts **10–20 minutes**.

Continuously monitor:

Muscle response

Patient comfort

Skin condition

5.5 Post-treatment Care

Gradually **turn off** the device.

Remove electrodes carefully.

Clean the skin to remove conductive gel and sweat.

Inspect for **any skin reactions or irritation**.

Document:

Treatment parameters used (intensity, pulse duration, frequency, time).

Patient’s response and tolerance.