



Effectiveness Of Muscle Energy Technique With Phonophoresis Versus Phonophoresis Alone In Postpartum Females With Coccydynia

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Abstract

Background: Postpartum coccydynia is a painful and disabling condition that affects women following childbirth.

Objective: To compare the effectiveness of Muscle Energy Technique (MET) with phonophoresis versus phonophoresis alone in managing postpartum coccydynia.

Methods: A comparative experimental study was conducted on 46 postpartum women clinically diagnosed with coccydynia. Participants were randomly allocated into two groups: Group A (n=23) received MET with phonophoresis and a home exercise program, and Group B (n=23) received phonophoresis only. Pain intensity (NPRS) and disability (ODI) were assessed before and after 4 weeks of intervention. Statistical analysis included paired and unpaired t-tests.

Results: Both groups showed significant improvements ($p < 0.0001$). Group A demonstrated greater reduction in pain intensity, while Group B showed greater improvement in disability. Between-group differences were statistically significant.

Conclusion: Both interventions are effective in managing postpartum coccydynia. Combining MET with phonophoresis yields superior pain reduction, while phonophoresis alone showed slightly greater disability improvement. A multimodal approach may provide optimal benefits.

Keywords: Coccydynia; Postpartum; Muscle Energy Technique; Phonophoresis; Physiotherapy

Introduction

Coccydynia refers to pain and inflammation around the coccyx or tailbone, without radiation or associated low back pain. The term was first introduced by Simpson in 1859. The condition is more prevalent in women (5:1 ratio), often associated with trauma, elevated BMI, or childbirth-related coccygeal injury.

Trauma (direct or indirect) is the most common cause, with symptoms aggravated by prolonged sitting, standing, or stair climbing. Hormonal changes during pregnancy increase mobility at the sacrococcygeal junction, predisposing women to persistent pain postpartum.

Conservative management includes cushions, NSAIDs, corticosteroid injections, and physiotherapy modalities such as ultrasound, TENS, and manual techniques. Phonophoresis, a method of enhancing drug absorption using ultrasound, offers localized anti-inflammatory effects. MET, developed in the 1950s, involves gentle isometric contractions to lengthen muscles, mobilize joints, and reduce pain.

Despite evidence of MET's benefits in low back pain, its effect in postpartum coccydynia is underexplored. Hence, this study investigates the combined effect of MET and phonophoresis compared to phonophoresis alone.

Need of the Study

Postpartum coccydynia significantly impacts maternal quality of life, limiting caregiving ability and daily function. Evidence supporting combined interventions is limited. This study addresses the gap by evaluating whether MET with phonophoresis enhances outcomes compared to phonophoresis alone.

Methodology

Study Design and Participants

A comparative experimental study was conducted on 46 postpartum women (18–35 years) with coccydynia. Participants were randomly assigned:

- **Group A (n=23):** MET + phonophoresis + home exercise program
- **Group B (n=23):** Phonophoresis only

Ethical Approval and Consent

The study was approved by the Institutional Ethics Committee. Written informed consent was obtained from all participants.

Inclusion Criteria

- Multiparous women ≥ 6 weeks postpartum with coccydynia
- Age 18–35 years
- BMI < 35 kg/m²

Exclusion Criteria

- Musculoskeletal or neuromusculoskeletal disorders (e.g., sciatica, disc prolapse)
- History of spinal surgery
- Pelvic malignancy/cysts or gynecological disorders (e.g., prolapse)

Intervention Protocol

Group A:

- **Phonophoresis:** Diclofenac gel, ultrasound 1 MHz, 1.5 W/cm², 5 min, 3 sessions/week × 4 weeks.
- **MET:** Supine position, resisted isometric contractions (5 reps × 5 sec, 5 sec rest), thrice weekly × 4 weeks.
- **HEP:** Stretch-based MET components, 3 reps/side × 3 times/day (except session days).

Group B:

- **Phonophoresis only:** Same parameters, 10 minutes/session, thrice weekly × 4 weeks.

Outcome Measures

- **NPRS** (pain)
- **ODI** (disability)

Data Analysis

Data analyzed using **InStat 3.05 software**.

- Paired t-test: within-group analysis
- Unpaired t-test: between-group comparison
- Significance: $p \leq 0.05$

Results

- Both groups improved significantly in NPRS and ODI ($p < 0.0001$).
- **Pain (NPRS):** Group A reduced from 6.8 ± 1.18 to 2.5 ± 1.20 ; Group B reduced from 6.9 ± 1.35 to 3.6 ± 1.64 . Greater reduction in Group A ($p < 0.0001$).
- **Disability (ODI):** Group A improved from 73.91 ± 10.79 to 58.00 ± 8.16 ; Group B improved from 72.00 ± 13.42 to 45.91 ± 10.26 . Greater improvement in Group B ($p < 0.0001$).

Summary: MET with phonophoresis was superior in pain reduction, while phonophoresis alone yielded slightly greater functional improvement.

Discussion

Both interventions effectively reduced pain and disability in postpartum coccydynia. MET provided superior pain relief, likely due to neuromuscular and proprioceptive mechanisms, while phonophoresis enhanced drug delivery and anti-inflammatory effects.

The findings align with literature on MET's benefits in lumbopelvic dysfunctions and phonophoresis in soft tissue conditions. The combination demonstrated synergistic effects, supporting multimodal physiotherapy approaches.

Limitations

- Small sample size
- Lack of long-term follow-up
- Effect of MET alone could not be isolated

Recommendations

- Larger trials with longer follow-up
- Inclusion of additional parameters (tenderness, radiating pain)
- Exploration of MET as a standalone intervention
- Studies on immediate vs. long-term effects

Conclusion

Both MET and phonophoresis are effective for managing postpartum coccydynia. Combining MET with phonophoresis provided superior pain reduction compared to phonophoresis alone, while phonophoresis alone offered slightly greater disability improvement. This suggests that integrating manual and electrotherapy techniques may optimize recovery and quality of life in postpartum women.

Abbreviations

- **MET:** Muscle Energy Technique
- **HEP:** Home Exercise Program
- **PP:** Phonophoresis
- **NPRS:** Numerical Pain Rating Scale
- **ODI:** Oswestry Disability Index

Conflict of Interest

The authors declare no conflict of interest.

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