



A Comparative Study Between Lidocaine and Methyl Salicylate Patches in Treatment of Myofascial Pain

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Abstract: Objectives the aim of this study was to to compare lidocaine versus methyl salicylate patches in treatment of myofascial pain. Materials and methods: thirty patients suffered from myofascial pain in head and neck muscles were divided randomly into three groups: Group one (10 patients): was treated with methyl salicylate patch. Group two (10 patients): was treated through lidocaine patch. Group three (10 patients): was acted as a controlled group through the application of plain patches without any active ingredient. Each patient has received one patch that had replaced by the patient every 12 hours; the patient informed to remove the last patch 12 hours before the visit on day five. All evaluations (pain intensity, degree of mouth opening, range of motion, disability) repeated on day five (12 hours after removal of the last patch) and on day nine (after four days of follow up). Results significant reduction in pain intensity, significant increase in mouth opening and lateral movement and significant improvement in quality of life with methyl salicylate and lidocaine patches. Conclusions Methyl salicylate and Lidocaine patches are effective in treatment of Myofascial pain.

Keywords: Myofascial Pain, Methyl Salicylate Patches, Lidocaine Patches

1. Introduction

Myofascial pain syndromes (MPS) are a large group of muscular disorders, such a syndrome is a regional disorder concerning the muscle, its fascia or both, and is accompanied by pain in an affected area and/or a zone of reference, autonomous phenomena and malfunction of the affected muscle. The presence of MPS in the maxillofacial area mainly concerns the masseter, temporalis, lateral and medial pterygoid muscles.(1) Myofascial pain syndrome is a complex of sensory, motor and autonomic symptoms that are caused by myofascial trigger points.(2)

Active TPs cause specific pain during muscle movement, impeding full extension of the muscle and decreasing the range of motion. Latent TPs are pressure sensitive and become painful only during palpation. They can be a predisposing factor for muscular malfunction.(3)

MPS typically presents as a deep somatic pain, that is, tensile, constrictive or cramp like, fairly well discriminated, varying in intensity, with sudden or gradual onset, continuous or intermittent, present at rest or occurring only on movement.(4) musculoskeletal pains affect approximately 85%

of the population at some point during their lives. The MPS represents the major cause of this pain and the mean prevalence of this condition among middle-aged adults (30–60 years) is reported to be 37% in men and 65% in women, respectively.(5,6)

Traditional approaches to treating MPS have included medications such as muscle relaxants as Cyclobenzaprine and Thiocolchicoside which is considered as a muscle relaxant with anti-inflammatory and analgesic effects, in addition to the thermal modalities, and massage.(7)

2. Material and Methods

2.1. Patients Sampling

Thirty patients were randomly chosen from those presenting to the out patient clinic of Oral and Maxillofacial Surgery dept. Faculty of Dentistry, Suez Canal University and Sinai University. Aged from 20 to 45 of either sex. Diagnosis was made on basis of clinical and subjective criteria.

2.2. Patients were Divided Randomly into Three Groups Ten in Each

Group one was considered for treatment with methyl salicylate patch. Group two was treated through lidocaine patch and group three was acted as a control through the application of plain patches without any active ingredient. Each patient has received one patch that has been replaced by the patient every 12 hours; the patient was informed to remove the last patch 12 hours before the visit on day five.

All evaluations (pain intensity, degree of mouth opening, range of motion, disability) was repeated on day five (12 hours after removal of the last patch) and on day nine (after four days of follow up).

2.3. Drugs Used

Methyl salicylate (SALONPAS).
10% methyl salicylate and 3% 1-menthol.
Hisamitsu Company.
Lidocaine (VERSATIS).
5% lidocaine.
Grunenthal company
Placebo (IWAKIM)
Free of any active ingredients.
BM Company.

Statistical analysis was performed with IBM® SPSS® (SPSS Inc., IBM Corporation, NY, USA) Statistics Version 21 for Windows.

3. Results

3.1. Pain Intensity Level

Difference between treated groups within each time:

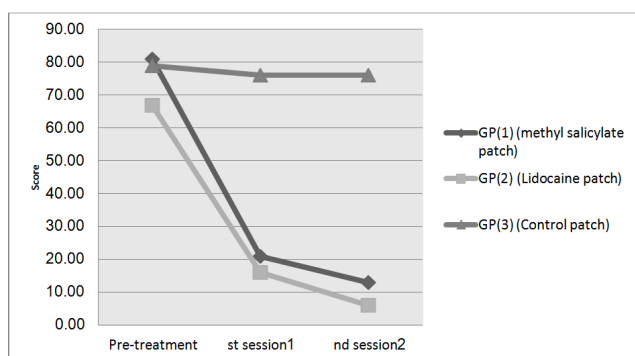


Figure 1. Histogram showing the mean pain intensity scores for different follow-up periods.

A non-parametric one-way ANOVA (Kruskal–Wallis) test showed a significant differences in pain intensity level scores (at $p = 0.049$, ≤ 0.001 and ≤ 0.001) between different tested groups for each follow-up periods. Mann Whitney U test reported that group 2 showed the lowest pain intensity scores at pre-treatment follow up period. There were insignificant difference between group 1 and group 2 after 5 days and 9 days follow-up. Both groups showed a significant reduction

in pain intensity level compared to group 3 for both follow-up periods (Fig. 1)

3.2. Degree of Mouth Opening

Difference between treated groups within each time:

Mean and standard deviation (SD) for the degree of mouth opening (mm) for different treated groups for each follow-up period presented in (Fig. 2). An insignificant difference between group 1, Group 2 and group 3 on mean degree of mouth opening at $p = 0.676$ before the start of treatment. A significant increase in the degree of mouth opening for group 1 and group 2 after 5 days and 9 days follow-up periods compared to group 3.

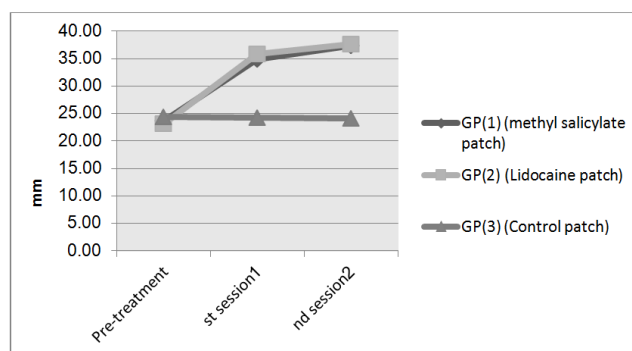


Figure 2. Histogram showing the mean degree of mouth opening (mm) for different follow-up period for each treated groups.

3.3. Range of Motion (Lateral Movement)

Difference between treated groups within each time:

Mean and standard deviation (SD) for the Range of motion (lateral movement) (mm) for different treated groups regarding each follow-up period presented (Fig. 3). Insignificant difference between group 1, Group 2 and group 3 on mean Range of motion (lateral movement) (mm) at $p = 0.508$ before the start of treatment. Highly significant increase in Range of motion (lateral movement) (mm) for group 1 and group 2 after 5 days and 9 days follow-up periods compared to group 1.

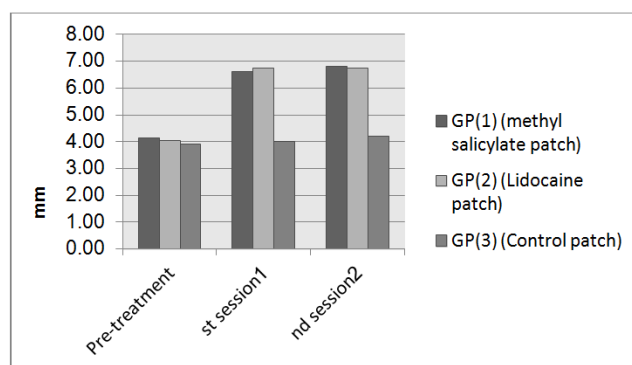


Figure 3. Histogram showing the mean Range of motion (lateral movement) (mm) for different follow-up period for each treated groups.

3.4. Daily Activity

Difference between treated groups within each time:

A non-parametric one-way ANOVA (Kruskal–Wallis) test showed a significant differences in pain intensity level scores (at $p = 0.973$, ≤ 0.001 and ≤ 0.001) between different tested groups for each follow-up periods. An insignificant difference resulted between group 1 and group 2 after 5 days and 9 days follow-up. Both groups showed slightly more reduction in Daily activity level compared to group 3 for both follow-up periods. (Fig.4)

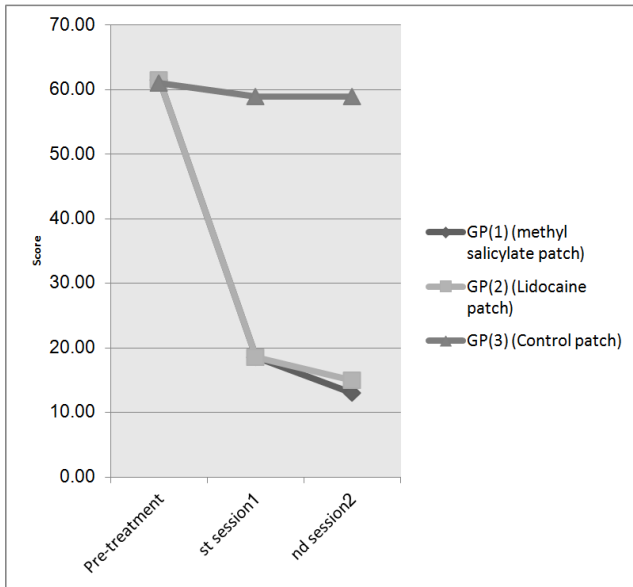


Figure 4. Histogram showing the mean Daily activity scores for different follow-up periods.



Figure 5. photo of application of a patch (methyl salicylate) on masseter muscle.

4. Discussion

In the current study, the efficacy of methyl salicylate and lidocaine patches used for management of myofascial pain was investigated and compared.

Results from previous studies by Wetzel *et al.*, and Lobo *et al.* studies suggested that salicylate containing topical agents may be effective in the treatment of a number of painful

conditions, including lower back pain, temporomandibular joint with masseter muscle pain, dental pain, and ankle sprains. However, most of these trials were limited by small treatment group size, use of different preparations, with lack of validity, and inconsistency in outcome measures.(8-10). In the present study we used a well-controlled clinical trial model and validated pain-assessment methods to examine the efficacy and tolerability of the patch in these patients with mild to moderate muscle pain.

In the current study, pain intensity level after using methyl salicylate patches, was significantly reduced. A significant increase in degree of mouth opening after first session , followed by slight more increase in degree of mouth opening after second session ($P < 0.05$).

Both quality of life and degree of lateral movement were also investigated in the present study. It was found that methyl salicylate patches showed a significant increase in degree of lateral movements and significant reduction in pain intensity scores for daily activity assessment ($P < 0.05$) after the first session followed by a slightly more reduction on daily activity after the second session.

The results in the current study were in agreement with Higashi *et al.*(11) According to the present study, pain intensity level after using lidocaine patches showed significant reduction on pain intensity score after first session (fifth day) followed by slight more reduction in the second session (ninth day). Concerning the degree of mouth opening , lateral movement and quality of life in the present study, there was a significant increase in both degrees of mouth opening and lateral movement with improvement of quality of life ($P < 0.05$).

These results were in agreement with Affaitati *et al.*, who reported that lidocaine-patch treatment of active trigger points performed on sixty patients produced significant relief of pain symptoms of Myofascial pain and the associated disability. In addition, desensitization of somatic tissue hypersensitivity in the painful areas (trigger points and target areas) was significantly greater with the lidocaine patch than with placebo. All of the patients who received lidocaine patch experienced reductions at both the number of acute pain episodes and mean pain intensity at rest and on movement. The pain- related interference with daily activity, work activity, mood, and quality of life were also investigated by Affaitati *et al.*

They found that patients who received lidocaine patch did not request any additional analgesic therapy at the 4th days after suspension of treatment. However on choosing lidocaine patch versus local anesthetic injection at the same study has its disadvantage of inconveniency study. As injecting a drug for a treatment cannot be compared with topical application of the same drug ever or another one.(12)

As there was no previous comparison between methyl salicylate and lidocaine patches in management of myofascial pain according to the available literature it was noticed according to the current study that lidocaine patches decrease the intensity of pain slightly more than methyl salicylate patches, Assessment of degree of mouth opening

showed slightly more increase with lidocaine than methyl salicylate patches. On the other hand lateral movement records showed slightly increase with methyl salicylate than lidocaine patches and Quality of life showed slightly more improvement with lidocaine than methyl salicylate patches.

Therefore, it is concluded that the use of topical application of methyl salicylate or lidocaine patches can be effective in decreasing myofascial pain. Therefore it can be concluded that methyl salicylate or lidocaine patches are effective in treating myofascial pain but lidocaine patches showed slightly more reduction in intensity of pain with slightly increase in degree of mouth opening and slightly improvement in quality of life than methyl salicylate patches. On the other hand methyl salicylate patches showed slightly increase in lateral movement than lidocaine patches.

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