

# The Efficacy of Topical Hyaluronic Acid 0.2% in the Management of Symptomatic Oral Lichen Planus

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## ABSTRACT

This study aimed to evaluate the efficacy of 0.2% topical hyaluronic acid in the management of symptomatic oral lichen planus (OLP). This prospective interventional study was conducted at the Department of Dermatology, Services Institute of Medical Sciences / Services Hospital, Lahore, Pakistan. Fourteen patients with symptomatic OLP lesions applied hyaluronic acid in orabase gel for 28 days. Patients were followed up weekly, and the final assessment was performed at the end of four weeks. The baseline mean modified oral mucositis index (MOMI) score decreased from  $2.06 \pm 0.41$  to  $0.27 \pm 0.34$  for cheek lesions and from  $1.50 \pm 0.00$  to  $0.25 \pm 0.25$  for lip lesions. The mean change in MOMI score for cheek was  $1.79 \pm 0.40$  and for lips was  $1.25 \pm 0.25$ . These findings suggest that topical hyaluronic acid 0.2% is effective in the treatment of symptomatic OLP and can be easily and safely used as an adjuvant treatment alongside other topical and systemic treatments.

**Key Words:** Oral lichen planus, Topical hyaluronic acid, Modified oral mucositis index, Oral ulcers.

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Oral lichen planus (OLP) is a chronic mucocutaneous disease with a worldwide prevalence of 1.01%. It can be both asymptomatic and symptomatic. Common symptoms included pain and soreness, which make swallowing and chewing difficult and significantly disturb the quality of life.<sup>1</sup> It is a chronic inflammatory autoimmune condition where T-lymphocytes damage the basal cell layer of the oral epithelium, leading to characteristics such as white striations and lesions, as well as potential pain. Although the exact triggers remain unclear, factors such as stress and viral infections may contribute. OLP carries a variable risk of progressing to squamous cell carcinoma and is also commonly seen in patients with graft-versus-host disease (GVHD). Traditional treatments, including steroids and immunomodulators, often have significant side effects, prompting the search for safer alternatives.<sup>1</sup> Topical hyaluronic acid aids healing by enhancing hydration and reducing inflammation.<sup>2</sup> A study was conducted to evaluate its effects on the local population, as no previous research had been carried out on the local population.

The study, conducted at the Department of Dermatology, Services Institute of Medical Sciences / Services Hospital, Lahore, Pakistan, from November 2022 to April 2023, was a prospective interventional design with single blinding, involving 14 patients aged 18-60 years with OLP lasting over three months. Patients were assessed for clinical findings, and diagnoses were confirmed *via* histopathology. Exclusion criteria included allergy to hyaluronic acid and recent use of certain medications. Participants applied 0.2% hyaluronic acid gel three times daily for 28 days, with efficacy measured by the modified oral mucositis index (MOMI) and pain severity using a visual analogue scale (VAS). Follow-ups were conducted weekly, and the treatment was considered effective when more than 50% improvement in MOMI scores was achieved. Data were analysed using SPSS software, with paired t-test and Chi-squared test. Statistical significance was set at  $p < 0.05$ .

The study included 14 patients, comprising 5 males and 9 females. The mean age of male patients was  $51.20 \pm 3.89$  years, and female patients was  $42.33 \pm 16.69$  years. All 14 patients had lesions on their cheeks, with 5 also presenting lesions on their lips. At baseline, the mean MOMI score was  $2.16 \pm 0.41$  for lesions on cheek and  $1.35 \pm 0.65$  for lesions on the lip. On Day-28 post-treatment, the mean MOMI score for both cheek and lip lesions showed a significant reduction, with a p-value of  $< 0.001$  for cheek and  $0.014$  for lip. The mean change in MOMI score from baseline till Day-28 for cheek and lip lesions was  $1.80 \pm 0.46$  and  $1.20 \pm 0.64$ , respectively. The mean percentage change from baseline to Day-28 post-treatment was  $84.84 \pm 18.89\%$  for cheek lesions and  $90.00 \pm$

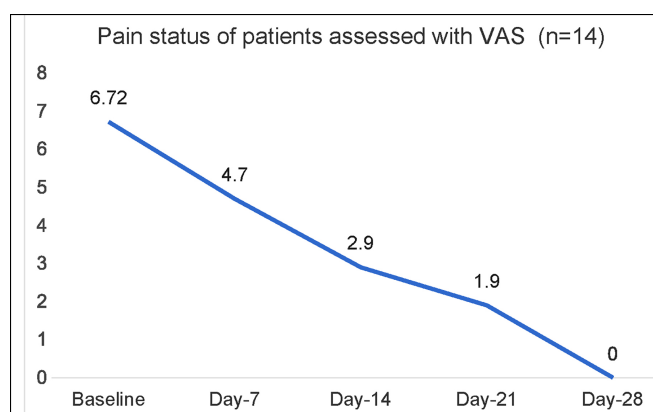
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14.90% for lip lesions. A paired sample t-test showed significant results, with values of 14.61 ( $p < 0.001$ ) for cheek lesions and 4.14 ( $p < 0.014$ ) for lip lesion (Table I). For cheek lesions, 6 patients (42.9%) achieved an excellent treatment outcome (MOMI score reduction  $>90\%$ ), 5 patients (35.7%) achieved a good outcome (70-90% reduction), and 3 patients (21.4%) achieved a fair outcome (40-70% reduction). For lip lesions, 3 patients (60%) achieved an excellent outcome, 1 patient (20%) achieved a good outcome, and 1 patient (20%) had a fair outcome (Figure 1). For lip lesions, 20% of male patients and 55.6% of female patients achieved an excellent treatment outcome, with no significant difference between genders. For lip lesions, 2 female patients (100%) had excellent outcomes, while male patients had varying results (1 good and 1 fair). There were no significant differences in treatment outcomes between male and female patients for lip lesions. By Day 28, all patients reported no pain based on the VAS. Patients were followed up for one month after treatment, and none exhibited any recurrence of lesions.

**Table I: Modified oral mucositis index (MOMI).**

| Parameters           | Cheek                             | Lip                               |
|----------------------|-----------------------------------|-----------------------------------|
| n                    | 14                                | 5                                 |
| Baseline             | 2.16 $\pm$ 0.41                   | 1.35 $\pm$ 0.65                   |
| Day-7                | 1.87 $\pm$ 0.58                   | 1.10 $\pm$ 0.51                   |
| Day-14               | 1.26 $\pm$ 0.74                   | 0.50 $\pm$ 0.35                   |
| Day-21               | 0.82 $\pm$ 0.66                   | 0.20 $\pm$ 0.20                   |
| Day-28               | 0.35 $\pm$ 0.45                   | 0.15 $\pm$ 0.22                   |
| Mean change          | <b>1.80 <math>\pm</math> 0.46</b> | <b>1.20 <math>\pm</math> 0.64</b> |
| Percentage change    | 84.84 $\pm$ 18.89                 | 90.00 $\pm$ 14.90                 |
| Paired sample t-test | <b>14.61</b>                      | <b>4.14</b>                       |
| p-value*             | <b>&lt;0.001</b>                  | <b>0.014</b>                      |



**Figure 1: Improvement in the visual analogue scale (VAS).**

Previous studies have investigated the effect of hyaluronic acid in various forms of OLP. Nolan *et al.* found that 0.2% hyaluronic acid gel effectively relieved pain and soreness in 124 patients with erosive OLP for up to four hours, but did not significantly reduce lesion size.<sup>3</sup> Similarly, Shetty *et al.* found that 0.2% topical hyaluronic acid significantly improved symptoms in 50 patients with OLP compared to placebo, showing reduction in both pain and lesion size. In their study, patients applied the treatment for two weeks, with follow-up for recurrence over the subsequent two weeks.<sup>4</sup> Youssef *et al.* compared hyaluronic acid gel with

triamcinolone in 20 patients with ulcerative OLP, noting improvements in both lesion size and symptoms. Their results indicated that while hyaluronic acid was more effective in controlling pain, corticosteroids were better at reducing lesion size.<sup>5</sup> Hashem *et al.* compared 0.2% topical hyaluronic acid with 0.1% topical triamcinolone in 40 patients with OLP over a four-week period, assessing improvements in pain, erythema, and lesion size. They concluded that hyaluronic acid is an effective alternative to topical corticosteroids in the management of OLP.<sup>6</sup>

While topical hyaluronic acid showed promising results in treating OLP, the limitations of this study include small sample size and short treatment duration due to the limited number of patients. Future research should adopt a multi-disciplinary, multicentre approach to better evaluate its efficacy. It was concluded that 0.2% topical hyaluronic acid is effective in the treatment of symptomatic OLP and can be safely used as an adjuvant alongside other topical and systemic therapies.

### ETHICAL APPROVAL:

Ethical approval was obtained from the Ethical Review Board of Services Institute of Medical Sciences, Lahore, Pakistan.

### PATIENTS' CONSENT:

Written informed consent was obtained from study patients.

### COMPETING INTEREST:

The authors declared no conflict of interest.

### AUTHORS' CONTRIBUTION:

SS, AC: Conception, design, analysis, interpretation of the data, drafting, and revision of the manuscript.

FA: Critical review of the manuscript.

All authors approved the final version of the manuscript to be published.

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