



COMPARATIVE EFFICACY BETWEEN INTRALESIONAL INJ.TRIAMCINOLONE WITH HYALURONIDASE, INJ.PLACENTREX, AND INJ.PLATELET-RICH PLASMA IN ORAL SUBMUCOUS FIBROSIS

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ABSTRACT **Objective:** This study compares the efficacy of intralesional injections of Inj.Triamcinolone with Hyaluronidase, Inj. Placentrex and Inj.Platelet-Rich Plasma (PRP) in reducing symptoms of OSMF particularly mouth opening, fibrotic bands, and burning sensation. **Methods:** A randomized controlled study was conducted on 30 OSMF patients, divided into three groups (n=10 each). Group A received 1 mL of Inj.Triamcinolone with Hyaluronidase. Group B received 1 mL of Inj.Platelet-Rich Plasma (PRP) and Group C received 1 mL of Inj.Placentrex. Injections were administered intralesionally in the submucosal plane over both sides of buccal mucosa and retromolar trigone once a week for a period of four weeks. Treatment efficacy was evaluated based on improvement in mouth opening (inter-incisor distance) using measuring scale and burning sensation assessed using visual analogue scale, and fibrotic bands before and after treatment. **Results:** Among 30 study participants, most of our participants (93.3%) were males and only (6.7%) were females and their median age is 30.5 (22.75, 38). Outcome with respect to improvement in mouth opening and decrease in fibrotic bands differs significantly ($p=0.005$ & $p=0.001$ respectively) across treatment categories and desired improvement (>1 cm) is seen mostly with PRP treatment group. **Conclusion:** We concluded in our study that intralesional Inj.Platelet rich plasma was found to be the most effective treatment among the three, demonstrating significant improvement in mouth opening and reduction of fibrotic bands so it can be proposed as a primary line of management in OSMF patients.

KEYWORDS : Oral Submucous Fibrosis, Platelet-Rich Plasma, Triamcinolone, Hyaluronidase, Placentrex, Intralesional Injection

INTRODUCTION

Oral submucous fibrosis (OSMF) is an insidious chronic progressive premalignant condition affecting the oral cavity and also pharynx sometimes, sushruta described a condition named "Vidari" with symptoms like progressive narrowing of mouth, depigmentation of oral mucosa and pain on taking food. Schwartz in 1952 described oral submucosal fibrosis as "atrophica idiopathica mucosae oris"[1] It's a condition often seen in people basically adolescent to middle age group consuming areca nut, gutkha/tobacco with a higher percentage in South East asian subcontinent[2].

It is also seen in Hyderabad- karnataka among the people who consume hard rotis and red chillies. Malignant transformation rates have been as high as 7.6% in Indian subcontinent. [3]

OBJECTIVE

This study compares the efficacy of intralesional injections of Inj. Triamcinolone with Hyaluronidase, Inj.Placentrex, and Inj. Platelet-Rich Plasma (PRP) in reducing symptoms of OSMF, particularly inability of mouth opening, fibrotic bands on palpation, and burning sensation and inability to take spicy food secondary to burning sensation.

MATERIALS AND METHODS

Study Design:

A randomized controlled trial was conducted on 30 OSMF patients over a period of 6 months in tertiary care hospital.

Participants:

A total of 30 patients aged 21–55 years presenting with symptoms like difficulty in mouth opening, inability to take spicy food secondary to burning sensation in mouth and signs like fibrotic bands on palpation were included. Exclusion criteria included patients suffering from carcinoma and leukoplakia, erythroplakia, lichen planus and patients having Restricted Mouth Opening <15 mm or more than grade III Trismus.

Methodology:

Participants were randomly assigned and A randomized controlled study was conducted on 30 OSMF patients, divided into three groups (n=10 each).

Group A received 1 mL of Inj.Triamcinolone with Hyaluronidase.

Group B received 1 mL of Inj.Platelet-Rich Plasma (PRP)

Group C received 1 mL of Inj.Placentrex. Injections were administered intralesionally in the submucosal plane in both sides of buccal mucosa and retromolar trigone once a week for a period of four weeks. Treatment efficacy was evaluated based on improvements in mouth opening (inter-incisor distance), burning sensation, and fibrotic bands on palpation before and after treatment.

Table 1-Trismus Grading

Grade I	Normal	Upto 35 mm	3+ Fingers
Grade II	Mild	25-35 mm	2-3 Fingers
Grade III	Moderate	15-25 mm	1-2 Fingers
Grade IV	Severe	<15 mm	<1 Finger

Statistical Analysis:

Data were analyzed using SPSS software. Chi-square tests were used for comparison. A p -value < 0.05 was considered statistically significant.

RESULTS

-Among 30 study participants, most of our participants (93.3%) were males and only (6.7%) were females and their median age is 30.5 (22.75, 38).

-Outcome with respect to improvement in mouth opening and decrease in fibrotic bands differs significantly ($p=0.005$ & $p=0.001$

respectively) across treatment categories and desired improvement (>1cm) is seen mostly with PRP treatment group

Table 2-Age Incidence (n=30)

Age categories(yrs)	Frequency	Percent
20-29	15	50.0
30-39	11	36.7
40-49	4	13.3
Total	30	100.0

Table 3- Gender Difference (n=30)

Gender	Frequency	Percent
Male	28	93.3
Female	2	6.7
Total	30	100.0

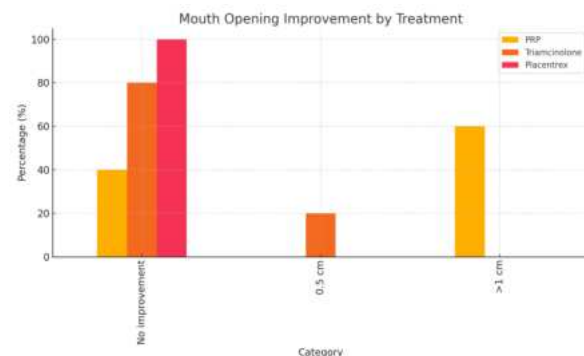


Figure 1: Comparison of mouth opening improvement across treatment groups.



Figure 2: Platelet rich plasma prepared in our hospital lab

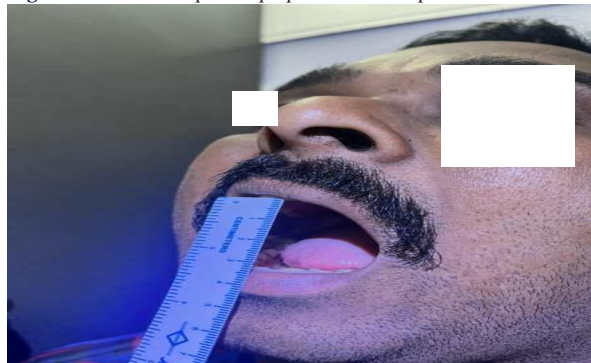


Figure 3: Improvement in mouth opening in our patient.

DISCUSSION

OSMF is a collagen metabolic disorder which results from the excess production of extensively interconnected insoluble collagen type I[4]. It is a potential premalignant condition highly prevalent in Indian subcontinent. Over the last 2-3 decades there has been an exponential increase in the manufacturing of attractive areca nut products, guthka or paan Masala with an escalating consumption in the younger generation, ultimately leading to an increased incidence of OSMF. Though exact pathogenesis of oral submucosal fibrosis is obscure, Arecoline component of areca nut is mostly attributable causative factor as pan and tobacco are available in many different combinations all over India. It is characterised by juxta-epithelial inflammatory response and fibrosis in the lamina propria, due to increased cross-linking of collagen by upregulation of lysyl oxidase activity. Fibrosis mostly results from the property of areca nut, that it increases collagen assembly and decreases collagen deprivation [5]. In the early stages patients will have burning sensation, blanching oral mucosa, limitation of mouth opening. Later, the oral mucosa becomes stiff and opaque due to chronicity of the condition by formation of fibrous bands on the buccal mucosa, soft palate, lips, and tongue thereby leading to an advanced limitation in mouth opening, intricacy in mastication, speech and swallowing and also patient will be unable to brush teeth which hinders oral hygiene as well. OSMF remains active even after cessation of the chewing habits such that components of arecanut initiate submucosal fibrosis which gradually and progressively affects gene expression in fibroblasts by production of excessive quantities of collagen. Chewing areca quid activates NF-kappa-B expression finally which stimulates fibroblasts and further leading to OSMF[6]. It is clinically divided into three stages. In stage 1 there is stomatitis, erythematous mucosa, vesicles, mucosal ulcers, melanotic mucosal pigmentation and mucosal petechiae. In stage 2, fibrosis occurs in ruptured vesicles, ulcers when they heal and blanching of oral mucosa. Vertical and circular palpable fibrotic bands are seen in buccal mucosa. Specific findings include trismus, stiff and small tongue, rubbery soft palate with decreased mobility, blanched and atrophic tonsils, shrunken band-like uvula and sinking of cheek not commensurate with age or nutritional status. In stage 3, there are sequelae in the form of leukoplakia in about 25% of cases, speech and hearing deficits because of involvement of tongue, palate and eustachian tubes. Treatment protocol for OSMF all over worldwide is not standardized yet. Most important aspect of medical treatment is to quit chewing habits, other local mucosal irritants, hot and spicy food, alcohol consumption, habitual and chronic smoking. It was observed that all patients included in this study had the chewing habits of locally available areca nut and tobacco products. In our study mainly inability of mouth opening and inability to take spicy food secondary to burning sensation of mouth, palpable fibrotic bands were emphasised upon. As looking upon our treatment strategy triamcinolone acetate acts by reducing activity and volume of lymphatic system and inflammatory action. Decreases inflammation by suppressing the migration of polymorphonuclear leukocytes and by reversing capillary permeability. It considered efficient corticosteroid intralesionally as it has better local potency, longer duration of action and lesser systemic absorption. Hyaluronidase is an enzyme which reduces the viscosity of ground substance and makes tissues more permeable to injected triamcinolone acetate it acts as an adjuvant.

There is hydrolysis of hyaluronic acid, which offers resistance to diffusion of liquids through tissues and promotes resorption of excess fluids and extravasated blood in the tissues[6]. The action of placenta extract is essentially biogenic stimulation and use is based on the tissue therapy method. Placental extract contains growth factors and anti-inflammatory agents[7] and also antiplatelet activity. Platelet rich plasma is preferred due to its anti-inflammatory and angiogenesis factors. Platelets have a key role in inflammation and tissue healing mainly via regenerative and angiogenic effects of their products. The net outcome of the therapeutic Platelet Component (PC) application is to improve angiogenesis and tissue healing. Angiogenesis is vital to accelerate healing via carrying nutrients and modulating immune reaction. Furthermore, PCs contain cannabinoid receptors, which could modulate pain perception. Platelet activation allows the release of GFs from granules. These bioactive GFs and cytokines include VEGF, platelet-derived growth factors AB (PDGF-AB, PDGFBB), transforming growth factor-beta (TGF- β), fibroblast growth factors (FGF), insulin like growth factor (IGF), and brain-derived neurotrophic factor (BDNF). These GF have been reported to enhance chemotaxis, cellular differentiation, angiogenesis, and tissue regeneration. PRP contains matrix metalloproteinases (MMPs), which are those enzymes which degrade abnormal collagen[8].

CONCLUSION:

In our study patients who received inj.Platelet rich plasma reported desired improvement in mouth opening (>1cm) as compared to the other 2 treatment groups and decrease in fibrotic bands post treatment differs significantly across treatment groups and improvement was seen in Inj.platelet rich plasma group thereby considering Inj.platelet rich plasma as an efficient modality of treatment in the upcoming days as a day care procedure would be feasible to OSMF patients.

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