Abstract

Introduction  Oral submucous fibrosis (OSMF) in later stages invariably leads to trismus due to retromolar fibrosis and buccal mucosa involvement. Medical treatment has limited role once trismus is established. Various surgical methods have been used with varying success to relieve trismus. We used diode laser to relieve trismus. All patients were diagnosed to have OSMF with trismus. The results are quite encouraging.

Study design  Prospective clinical study. This study involved 8 patients between the years 2002 and 2006.

Objective  To evaluate the efficacy of laser to reduce trismus in OSMF

Methods  Laser with follow-up physiotherapy

Conclusion  Diode laser gave good result in all our patients. Diode laser is a less expensive and alternative method in group III and group IVA cases in whom bilateral temporalis myotomy and coronoidectomy are considered to be the only solution.

This technique has less morbidity and is suitable for Asian population as it requires less hospital stay and less follow-up as compared to other surgical methods.

Keywords  Oral submucous fibrosis · Trismus · Diode laser

Introduction

Oral submucous fibrosis (OSMF) is a collagen disorder usually involving oral mucosa. It is prevalent in people of the Indian subcontinent, commonly seen in those consuming betel nut. Its incidence in India has been reported to be 0.5% of the population with a 7.6% potential for development of malignancy [1].

In later stages, OSMF causes trismus leading to increased morbidity. Various surgical methods have been tried to relieve trismus but the use of diode laser with endoscope appears to be the easiest one for ENT surgeons and the procedure has good results. Diode laser emits through fiber-optic cable and has reasonable cutting efficacy.

Classification for management of trismus

The condition is staged into four categories as listed below [2]:

Group I  Interincisal distance greater than 35 mm
Group II  Interincisal distance of 26–35 mm
Group II  Interincisal distance of 15–25 mm. Fibrotic bands are visible at the soft palate, pterygomandibular raphe and anterior pillars of fauces
Group IVA  Interincisal distance of less than 15 mm with extensive fibrosis of oral mucosa all over
Group IVB  Premalignant and malignant changes throughout the mucosa (histologically)

Early cases, i.e. Group I and Group II cases, are usually treated by long-term antioxidant therapy with local injection of placentrex, triamcinolone acetonide or hyalase [4],
while advanced cases, i.e. Group III, Group IV A and Group IV B cases, are treated by surgical intervention.

### Selection criteria

Inclusion criteria: Patient belonging to Group III and Group IV A were selected for the prospective clinical study.

Exclusion criteria: As there were no patient of Group I, Group II having trismus therefore been managed by medical methods.

Group IV B cases labeled histologically having premalignant and malignant changes were excluded [2, 4, 10].

Group IV B, where zero-degree endoscope can’t be introduced for visualization of retromolar fibrotic bands, were not taken for study.

### Materials and methods

In the past, advanced cases of OSMF, characterized by trismus due to retromolar fibrosis and buccal mucosa involvement, were managed by various medical and surgical modalities

Medical treatment has limited role once trismus is established. Various surgical methods have been used with varying success to relieve trismus.

Of the numerous properties, penetration and absorption of rays are the two most relevant parameter for selection of diode laser, Diode laser is a portable device which delivers rays through a fiber-optic cable. Its cutting depth is less than 0.01 mm, and thus preserves tissues beyond this depth. It give a precise line of controlled cutting without damaging the muscles and deeper structures. Hence, laser therapy eliminates the use of grafts, to close defect in spite of extensive resection. It yields excellent cosmetic and functional results [11].

The operation is done under general anesthesia. Of the 8 patients, 4 with group IV A underwent preoperative tracheostomy and in remaining 4 patients, flexible fiber-optic laryngoscope was used.

Zero-degree endoscope was introduced to visualize buccal mucosa and retromolar fibrotic bands with CCTV monitor. The bands were cut from anterior tonsillar pillar, retromolar area extending to the buccal mucosa using the diode laser so that there is resistance-free movement of the mandible.

The patients were started on a liquid diet on the same day and were allowed semisolid food from the next day and they were discharged in two to three days with analgesic and antibiotic. The surgery is followed by oral hygiene and aggressive physiotherapy with ice cream sticks. The patients were given dental clips. They were regularly followed-up initially once a week for one month and thereafter once every 3 months. The longest follow-up being 3 years.

### Results

The patients were relieved of trismus in all cases. All of them had opening of the mouth with mean post-op interincisal distance about 33.25 mm. Laser causes average mouth opening of about 15 mm. The relief in trismus helped in improving the nutritional status, maintenance of proper oral hygiene and it also improves psychological well-being.