Effective Trismus Management After Facial Nerve Reconstruction

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Introduction

Facial nerve reconstruction is a surgical treatment for facial nerve paralysis, aiming to restore facial symmetry and function. This can result in improvements in speech, appearance and oral competence. Complications include restricted mouth opening (trismus) which with a prevalence of 96% of patients undergoing facial nerve reanimation [1]. This can significantly impact health related quality of life, dental care, mastication, and cancer surveillance [2,3]. It was previously hypothesised that trismus was a result of surgical techniques used [4,5], however a recent study demonstrated that post-operative soft tissue swelling and placement of slings are the primary risk factors [1]. While trismus management in head and neck cancer patients is well documented, there remains a lack of a defined treatment pathway for those with trismus resulting from facial nerve reconstruction [1]. Restorabite™ is a device used to treat trismus and delivers regulated, measurable, and individualised incremental forces.

Materials & Methods

Aims:

This study aims to evaluate the efficacy of trismus rehabilitation following facial nerve reconstruction using Restorabite™

Design:

Secondary analysis of a wider cohort recruited from consecutively run pilot and phase II trials from 2021-2023.

Participants:

Inclusion criteria required participants to be: a) ≥ 18 years of age b) have a diagnosis of trismus, defined as an interincisal distance (IID) <35 mm, following facial nerve reconstruction, c) medical clearance from their surgeon for participation in a trismus rehabilitation program.

Treatment:

Participants engaged in a 10-week individualised trismus rehabilitation program lead by a Speech Pathologist. They completed 10 minutes of rehabilitation per day with a combination of warm up, passive and active range of motion exercises using the Restorabite™. After completing the initial rehabilitation phase, participants transitioned to a maintenance program.

All outcome measures were collected at baseline, 10 weeks, 6 and 12 months.Primary outcome measures included IID (assessed in mm as the distance between the upper and lower incisors), the Gothenburg Trismus Questionnaire (GTQ), a patient-reported outcome measure which measures the impact of trismus on the patient's daily life.

Figure 1. Patient using Restorabite™ following faical nerve reconstruction.

Results

Participant Characteristics:

A total of 27 patients met inclusion criteria, the average age was 60.3 years (SD 16) 21 Males, 6 Females. All patients underwent reconstruction due to iatrogenic FNP. The majority of patients had undergone parotidectomies for SCC (n=16), other aetiologies included acoustic neuroma (n = 3), perineural FN (n = 2), facial nerve schwannoma (n = 1), ear (n = 2), cheek (n = 2), maxillectomy and orbital exenteration (n = 1). Adjuvant radiotherapy was completed for 19 patients (22%). Rehab commenced a mean of 1.3 (SD 1.2) weeks post-operatively.

Outcomes:

IID measurements were noted to increase on average 13mm (SD) from baseline to 10 weeks, this was sustained at 6 and 12 month follow up. There was also a decrease in Gothenberg Trismus scores from an average of 46 to 28 at 10 weeks which was also sustained at 6 and 12 month follow up, this demonstrates improved functional and quality of life outcomes.

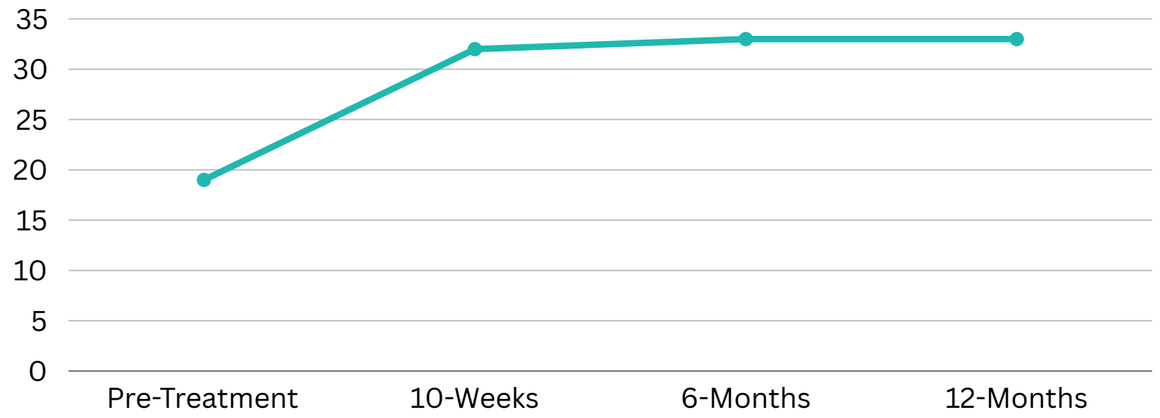

Figure 2. IID Measurements

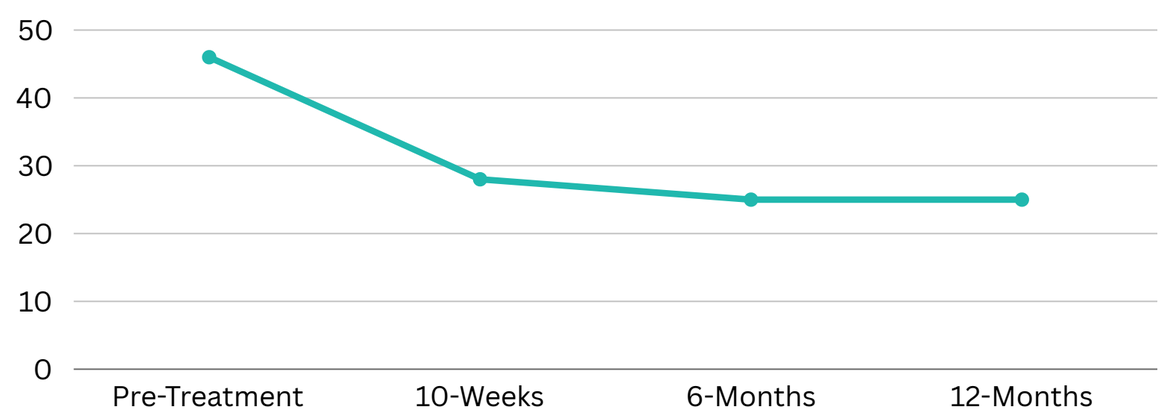

Figure 3. Gothenburg Trismus Questionnaire Scores.

Conclusion

Restorabite™ is feasible safe to use for trismus rehabilitation for patients with trismus following facial nerve reconstruction and can be commenced within 7 days post-surgery without complication. Improvements were noted in measurements for mouth opening, functional and quality of life outcomes from baseline to 10 weeks are were sustained at 6 and 12 months. Trismus rehab should be considered for patients experiencing trismus following facial nerve reconstruction.

References

1. Jackson, L., Charters, E., Clark, J., Dunn, M. and Low, T.H.H., 2024. Trismus following facial nerve sacrifice and reanimation surgery: incidence and management. Oral Oncology Reports, p.
2. Lee, L. Y., Chen, S. C., Chen, W. C., Huang, B. S., & Lin, C. Y. (2015). Postradiation trismus and its impact on quality of life in patients with head and neck cancer. Oral surgery, oral medicine, oral pathology and oral radiology 119 (2), 187 195.
3. Vissink , A., Jansma , J., Spijkervet , F. K. L., Burlage , F. R., & Coppes , R. P. (2003). Oral sequelae of head and neck Critical Reviews in Oral Biology & Medicine 14 (3), 199 212.
4. Abboud WA, Hassin Baer S, Alon EE, et al. Restricted Mouth Opening in Head and Neck Cancer: Etiology , Prevention, and Treatment. JCO Oncol Pract . Oct 2020;16(10):643 653.
5. Labbé , D., & Huault , M. (2000). Lengthening temporalis myoplasty and lip reanimation. Plastic and reconstructive surgery 105 (4), 1289 1297.