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OROFACIAL MYOFUNCTIONAL THERAPY AND PREVENTIVE DENTISTRY

Orofacial myofunctional disorders influence occlusion, periodontal health and airway development but are frequently overlooked during routine dental assessment. Orofacial myofunctional therapy (OMT) aims to address dysfunctional breathing, swallowing and oral resting posture patterns that may contribute to malocclusion and treatment instability. Evidence suggests a potential role in the management of obstructive sleep apnoea, temporomandibular disorders and orthodontic relapse.[1-5]

This article outlines the relevance of OMT in primary dental care and presents a paediatric case demonstrating how early functional intervention may positively influence craniofacial development and oral health risk.

Introduction

Dentistry has traditionally prioritised structural management of disease; however, tooth position and stability are influenced by the surrounding neuromuscular environment, including breathing patterns, tongue posture and swallowing function.[4,5]

Orofacial myofunctional disorders are associated with malocclusion, temporomandibular dysfunction and sleep-disordered breathing.[1,6] As such, assessment of functional patterns may complement conventional structural examination within preventive dental care.

Early identification by dental hygienists and therapists may allow intervention before orthodontic or restorative treatment becomes more complex, supporting a more comprehensive preventive approach.

Clinical Implications and Therapeutic Benefits

Abnormal oral resting posture and swallowing patterns can alter dental arch development, particularly during childhood.[4] OMT has been associated with improvements in airway function in obstructive sleep apnoea and reduced pain in temporomandibular disorders.[1,2]

In practice, anatomical restriction often needs to be addressed alongside functional training; combining frenuloplasty with OMT improves tongue mobility, breathing and resting posture compared with therapy alone.[2,4] Unresolved functional factors may contribute to orthodontic relapse and prosthodontic instability.[4]

Case Report

History and Examination

An eight-year-old female presented with a thumb sucking habit, mouth breathing and a speech lisp. At that time, she was under the care of a speech and language therapist

She was medically fit and well. Birth was via caesarean section and breastfeeding lasted for 10.5 months, with early feeding difficulties reported. The digit-sucking habit persisted at sleep onset. Sleep was fragmented with occasional daytime tiredness. She had forward head posture and thoracic kyphosis.

Extra-oral examination revealed a convex Class II profile, lip incompetence and mentalis over-activity. The patient was a habitual mouth breather.

Intra-Oral Assessment

Intra-oral assessment was undertaken within a therapy setting using visual inspection with illumination, a disposable dental mirror and Level 2 personal protective equipment. No periodontal probing or radiographic examination was performed.

The parent reported gingival bleeding during brushing and flossing. Visual inspection suggested suboptimal oral hygiene and tailored oral hygiene instruction was provided.

The patient was in the mixed dentition stage, with partially erupted lower canines and upper premolars. The patient reported a previous fall resulting in trauma to the upper primary incisors; the upper left central incisor (UL1) was erupting with a mild distal inclination, consistent with the reported history.

A unilateral anterior open bite was observed, more pronounced on the left side extending from the midline to the upper left lateral incisor region. The presentation was consistent with a habitual digit-sucking pattern reported at sleep onset. Mild to moderate anterior crowding was evident in the maxillary arch, with reduced transverse dimension contributing to limited space for alignment.

A small brown pit and fissure area was visually noted on the distal occlusal aspect of the lower left first permanent molar

(LL6), and the patient was referred to her regular dentist for assessment and monitoring.

A tongue thrust swallow was observed on functional assessment.

Airway screening demonstrated a high, narrow palate with an intermolar width of approximately 25 mm, a long soft palate and a Mallampati score of 3. According to the Functional Airway Evaluation Screening Tool (FAirEST-6), the estimated maxillary intermolar width in paediatric patients may be approximated as age plus 24 mm as a screening guide; for this eight-year-old patient this would correspond to approximately 32 mm.[7] The baseline measurement therefore suggested a reduced transverse dimension relative to age-based screening guidance.

All linear measurements were recorded clinically using a calibrated paper measuring guide and should be interpreted as approximate.

Functional assessment identified a Level 2 mid-tongue restriction using the Tongue Range of Motion Ratio (TRMR), a validated percentage-based assessment of tongue mobility relative to maximal interincisal opening.[8] Tongue to interdental papilla (TTIP), which measures active anterior tongue elevation towards the maxillary incisive papilla, was 51%, and linguo-palatal suction (LPS), which assesses the ability to achieve and maintain functional palatal suction, was 35%. Within the TRMR framework, anterior mobility below approximately 50% of expected normal values and posterior mobility below approximately 30%, particularly in the presence of compensatory patterns, may indicate clinically significant restriction and support referral for further surgical evaluation.[8]

The findings indicated a risk of developing malocclusion and sleep-disordered breathing associated with an orofacial myofunctional disorder.

Treatment Planning

A preventive interdisciplinary approach was discussed with the parent. Objectives were elimination of oral habits, establishment of nasal breathing and improvement of tongue resting posture.

Pre-operative therapy was planned prior to potential frenuloplasty to reduce compensatory muscle patterns. Referrals were recommended to a dentist with orthodontic interest, an oral surgeon and a breathing practitioner. Given the postural findings observed at assessment, collaboration with a bodyworker was also advised; the patient was concurrently supported by her mother, a physiotherapist.

Radiographic assessment was not undertaken within the therapy setting, and the patient was referred to her regular dentist for comprehensive dental evaluation and monitoring.

Management

Treatment was delivered over approximately nine months using staged behavioural and functional rehabilitation. Initial sessions focused on education and elimination of the digit-sucking habit. Exercises were introduced progressively to develop tongue elevation, palatal suction and coordinated swallowing. Therapy incorporated structured exercises supported by a proprietary clinical device designed to assist treatment of orofacial myofunctional disorders and facilitate tongue–palate contact and neuromuscular re-education. Postural guidance and breathing awareness were incorporated.

After nine months of OMT, direct care was transitioned to a colleague within the same clinic who is also a registered dental therapist trained in orofacial myofunctional therapy. Ongoing functional monitoring continued alongside anticipated dental arch development and potential tethered oral tissue (TOT) surgical planning. A structured handover was completed, including review of clinical findings, behavioural compliance, home exercise records and interdisciplinary recommendations to ensure continuity of care. Clinical oversight and supervisory support were maintained by the lead therapist.

Comprehensive contemporaneous clinical records were maintained at each appointment in accordance with professional standards and governance requirements.

Outcomes (9-month review)

Changes observed at the 9-month review are shown in Figures 1–5.

The digit-sucking habit had ceased by the end of the nine months following behavioural intervention and parental support.

Palatal width increased from approximately 25 mm to approximately 27 mm at review. Although still below the age-referenced estimate, an increase in transverse dimension was observed. Tongue mobility improved, with TTIP increasing from approximately 22 mm to 24 mm and LPS from approximately 17 mm to 27 mm.

The unilateral anterior open bite demonstrated marked improvement, particularly on the left side where the central incisor achieved contact with its mandibular counterpart and the lateral incisor descended into close proximity with the lower arch. Overjet was eliminated and lip competence at rest was achieved.

The mandible adopted a more anterior resting posture, reducing the retruded chin appearance. Orofacial symmetry improved, perioral tension reduced and nasal breathing was observed at rest. Speech clarity improved, and oral dryness and halitosis risk decreased. Posture improved with reduced forward head posture.

Following reassessment by the dentist, the patient was considered suitable to commence orthodontic treatment

Figure 1: **Frontal facial comparison at baseline (left) and 9-month review (right)**

Figure 2: **Lateral profile comparison demonstrating mandibular resting posture change**

Figure 3: **Whole-body posture comparison showing reduction in forward head posture**

Figure 4: **Occlusal comparison showing reduction of anterior open bite**

Figure 5: **Palatal and airway comparison**

following functional stabilisation. Changes observed may reflect a combination of growth, habit cessation and functional intervention, and causation cannot be established in a single case report.

Clinical Significance for Dental Practice

Mouth breathing is associated with changes to the intra-oral environment and may increase oral dryness, which clinically can be associated with plaque accumulation, gingival inflammation, halitosis and increased risk of dental caries.

Low tongue posture and lip incompetence alter equilibrium forces on developing dentition and may contribute to maxillary narrowing, anterior open bite and crowding. [4,5] Restricted tongue mobility may alter swallowing mechanics and increase perioral muscle pressure on dentition.[9] Sleep disturbance and oral breathing have been associated with fatigue, bruxism and reduced oral hygiene compliance.[1,3]

These observations suggest that altered oral function may represent modifiable risk factors influencing oral disease development, craniofacial growth and long-term treatment stability. During childhood, identification of dysfunctional patterns may provide an opportunity for preventive intervention.

Dental hygienists and therapists are well positioned to observe breathing patterns, oral posture and behavioural habits during routine maintenance appointments. Recognising these indicators may support timely referral and more comprehensive preventive care.

Reflection

This case emphasised the importance of recognising functional risk factors during routine dental assessment before structural changes become established.

Improvement in resting posture and breathing preceded changes in occlusion, suggesting that muscular balance may influence treatment stability. Without early recognition, management may have focused solely on orthodontic correction without addressing underlying functional drivers.

Management required collaboration across dentistry, surgery, breathing re-education and physiotherapy. Clear communication and respect for professional scope were essential to ensure coordinated care.

Dental care professionals occupy a distinctive position within healthcare. Routine attendance allows repeated review of patients across the lifespan, placing hygienists and therapists in a privileged position to observe developmental patterns and functional changes over time. When recognised early, these observations may influence not only dental outcomes but also airway health, sleep quality and general wellbeing.

Conclusion

Orofacial myofunctional therapy may contribute to preventive dental care by addressing dysfunctional breathing, oral posture and swallowing patterns that influence the oral environment and craniofacial development.

This case illustrates how functional screening within primary dental care may identify modifiable risk factors during growth.

Early recognition does not replace orthodontic or surgical management but may enhance treatment stability.

Incorporating functional observations into routine dental assessment supports a broader preventive model that acknowledges the interaction between structure and function.

Patient Consent

Written informed consent was obtained from the patient's parent for publication of anonymised clinical information and images.

Disclosure

The author is the inventor and owner of the YTM® Tool, a clinical device used in the treatment of orofacial myofunctional disorders which was employed during the therapeutic intervention in this case.

Author: Yulli is a dental therapist and orofacial myofunctional therapist with over two decades of clinical experience. She is the Founding President of the British Society of Myofunctional Therapy and Founder and Director of the British Institute of Orofacial Myology. Since 2021 she has delivered annual teaching at Imperial College London on orofacial myology as a non-invasive therapeutic option in the management of obstructive and positional obstructive sleep apnoea.

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