



SMART DENTAL UPDATES

Vol 2 | Issue 29 | 2021

Dear Doctor,

Greetings from Micro Labs Limited. We are happy to bring you “**SMART DENTAL UPDATES**” which contain latest and interesting news in the field of Dentistry.

This issue contain

- Palatal vault morphometric analysis of the effects of two early orthodontic treatments in anterior open bite growing patients
 - Diagnosis of inflammatory peri-implant diseases using an immunochromatographic assay
 - Oro-Facial Manifestations of Hunter Syndrome with Generalised Primary Tooth Hypomineralisation and its Palliative Management Using Protective Stabilisation
- free to contact us at medicalservices@microlabs.in

Looking forward to your valuable feedback

Best Regards,
Medical Team, Micro Labs Limited



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Palatal vault morphometric analysis of the effects of two early orthodontic treatments in anterior open bite growing subjects

The anterior open bite (AOB) is the alteration in the vertical relationship between the maxillary and mandibular dental arches which is characterized by a negative overbite that is a lack of contact between the upper and lower incisal edges in occlusion. The objective of this study was to evaluate

the palatal morphological changes in AOB pre-pubertal subjects after Rapid Maxillary Expansion and Bite-Block (RME/BB) and Quad Helix

RME/BBg showed significant changes in the transversal and vertical dimensions with a clear maxillary expansion and a decrease of the palatal depth when compared with QH/Cg and CG.

with crib (QH/C) when compared with a Control Group (CG) by using Geometric Morphometric Analysis (GMM).

In this retrospective study a 30 subjects with AOB were included. According to the treatment strategy the initial AOBG was divided in two subgroups. Skeletal open bite subjects treated by the RME in association with a posterior BB (RME/BBg), while dentoalveolar open bite subjects were treated using the QH/C. The AOBG was compared with a CG of 15 untreated AOB subjects. The Control Group matched with AOBG for chronologic age, presence of negative overbite, skeletal vertical dysplasia skeletal maturation at T1 and observation period. Each RME/BBg patient underwent the same treatment protocol with a "Butterfly" Rapid Maxillary Expander soldered to bands placed on the second deciduous molars or on the first permanent molars. Once a day expansion screw was activated until the palatal cusps of the upper posterior teeth approached the buccal cusps of the lower posterior teeth, in overcorrection. To make stable the expansion achieved the RME was left in place for 8 months at the end of the active phase. With resin splints of 5 mm thickness in the posterior occlusal region the BB is designed as a Schwarz device for the mandibular arch. To control the vertical dimension the BB has been prescribed for 12 months. The subject was advised to wear BB full time, except during meals and for toothbrushing. On the first permanent molars or on the second deciduous molars QH/Cg used a QH/C made of 0.036-inch stainless steel wire, soldered

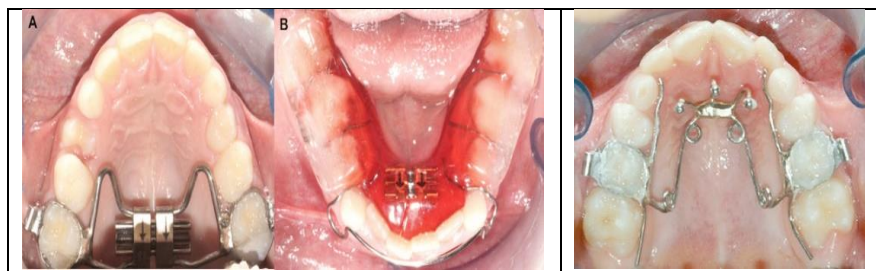


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to bands. To avoid thumb sucking the crib was made of three spurs of 0.036-inch stainless steel wire positioned on the anterior bridge of the QH/C. To prevent impingement on the sublingual mucosa the three segments was inclined lingually. Once

or twice during treatment the device was reactivated to achieve overcorrection of the transverse relationships. RME/BBg patients presented a posterior transverse interarch discrepancy of 5.4 ± 0.5 mm and QH/Cg



a) Rapid maxillary expander. b) Posterior bite block appliance and Quad Helix with crib

subjects showed a constricted maxillary arch discrepancy of 4.1 ± 0.4 mm at T1. At T2 in the QH/Cg and RME/BBg the overbite was greater than 0 mm in all the patients and no statistically significant differences were found between the three groups. No statistically significant changes at T2 was observed for the variations in the palatal vault morphology, the comparison RME/BBg vs. QH/Cg. By analysing RME/BBg and CG, PC1 variation defined the 30.8% of total shape variance. There were no significant variations in maxillary depth and the QH/Cg palatal vault was slightly statistically significant expanded in its transverse dimension than CG one.

Conclusion: To visually represent and depict palatal vault changes in growing subjects with AOB malocclusion after early treatment Geometric morphometric analysis(GMM) is a helpful way. When compared with QH/Cg and CG RME/BBg showed significant changes in the transversal and vertical dimensions with a clear maxillary expansion and a decrease of the palatal depth when compared with CG QH/Cg showed a significant slight maxillary expansion and no variation in vertical and sagittal planes.

Reference: Paoloni V, Fusaroli D, Marino L, Mucedero M, Cozza P. Palatal vault morphometric analysis of the effects of two early orthodontic treatments in anterior open bite growing subjects: a controlled clinical study. BMC Oral Health. 2021 Oct;21(1):1-9.



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Diagnosis of inflammatory peri-implant diseases using an immunochromatographic assay

Progression of peri-implant diseases result in an inflammation of periodontal tissues and destruction of peri-implant tissues with alveolar bone, and deciduation of dental implants. It is very important to diagnose peri-implant diseases to protect against incidence of these diseases and to maintain dental implants. The objective of this study was to determine calprotectin, an inflammatory marker in peri-implant crevicular fluid (PICF) using Immunochromatographic (IC) chip and to estimate the possibility of this diagnostic system.

Forty-six patients, 17 males and 29 females with a mean ages 69.6 ± 6.9 years with dental implants were included in this study. Subjects had healthy and diseased dental implants. Three periodontists measured the periodontal pocket depth around peri-implants. Using clinical indicators including probing depth (PD), bleeding on probing (BOP) and gingival index (GI) the study groups of healthy (non-inflammation) and inflammatory diseased sites of peri-implants were classified. After the collection of PICF, and the bone loss (BL) rate of alveolar bone clinical indicators of PD, BOP and GI was examined. From the peri-implant crevices using a sterile paper strip PICF sample was collected. Sampling site was gently air-dried and isolated with cotton rolls. PICF was extracted from paper strips in 100 μ L of phosphate buffered saline (pH=7.4). Using an IC chip and Calprotectin Human ELISA kit Calprotectin amount in the extracted PICF sample was measured.

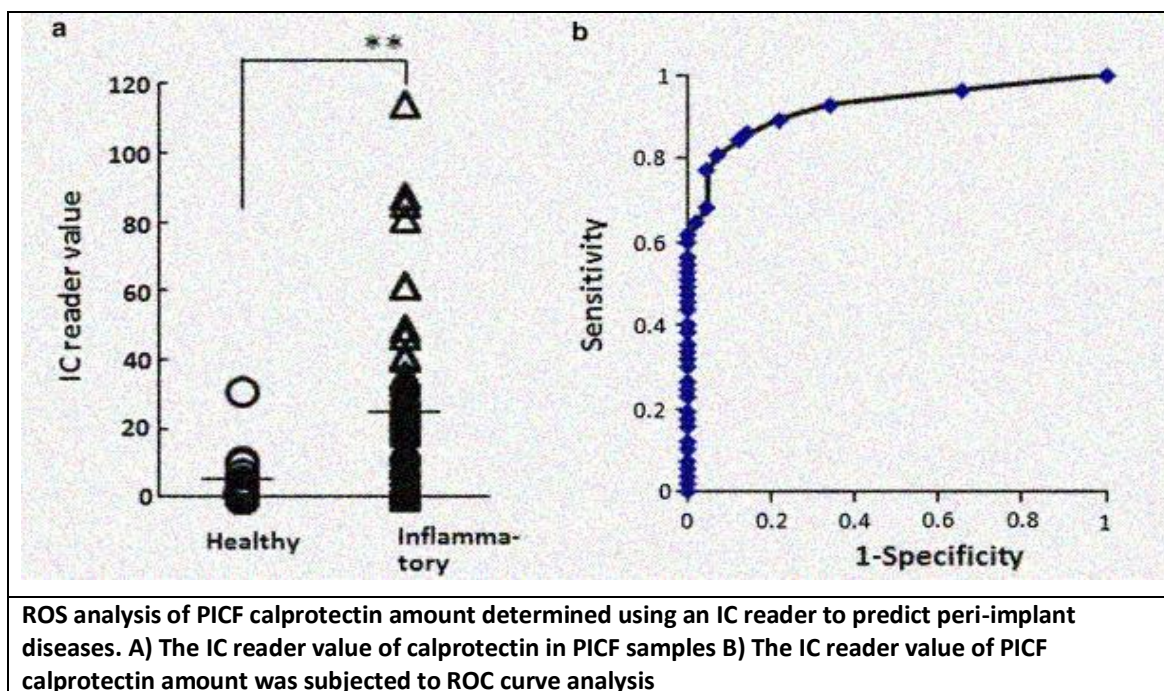
Forty-two PICF samples from healthy peri-implant sites without inflammation and 57 samples from the inflammatory diseased sites were collected. Compared to the healthy sites the mean PD at inflammatory sites (5.07 mm) was significantly deeper. GI Score was significantly higher than that of healthy sites. 47.4%. BOP-positive percentage at inflammatory sites, BL rate was 46.8%. IC reader value was positively correlated with ELISA value. PD ranged from 0 to 10 mm, and IC reader value of PICF calprotectin was



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also significantly correlated with PD. Compared with the healthy group the mean IC reader value in the inflammatory group was significantly higher.



Conclusion: This study suggested that Immunochromatographic IC assay for peri-implant crevicular fluid (PICF) calprotectin is useful as a point-of-care test for diagnosing inflammatory peri-implant diseases

Reference: Kido R, Kido JI, Nishikawa Y, Sakamoto E, Tomotake Y, Yumoto H. Diagnosis of inflammatory peri-implant diseases using an immunochromatographic assay for calprotectin in peri-implant crevicular fluid. International Journal of Implant Dentistry. 2021 Dec;7(1):1-8.



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Oro-Facial Manifestations of Hunter Syndrome with Generalised Primary Tooth Hypomineralisation and its Palliative Management Using Protective Stabilisation

Patient Description: A 5-year-old boy came with the complains of pain in the lower right back tooth region since 1 month and the pain was noted only during eating food. There was no lingering, nocturnal pain swelling or discharge. At the age of three years, he was diagnosed with Mucopolysaccharidoses II. There was no family history reported.

The subject was born prematurely to non-consanguineous parents and their 2nd sibling was normal. The child was 2 feet 6 inches in height and weight of 20 kg (BMI of 34.4 -Obese Class 1). Systemic manifestations were revealed such as short stature, stiff gait, protruded abdomen, hirsutism, stiffness in joints, broad claw like fingers and uncoordinated behaviour with global developmental delay.



Extra oral view (left); b- protective stabilisation (right)

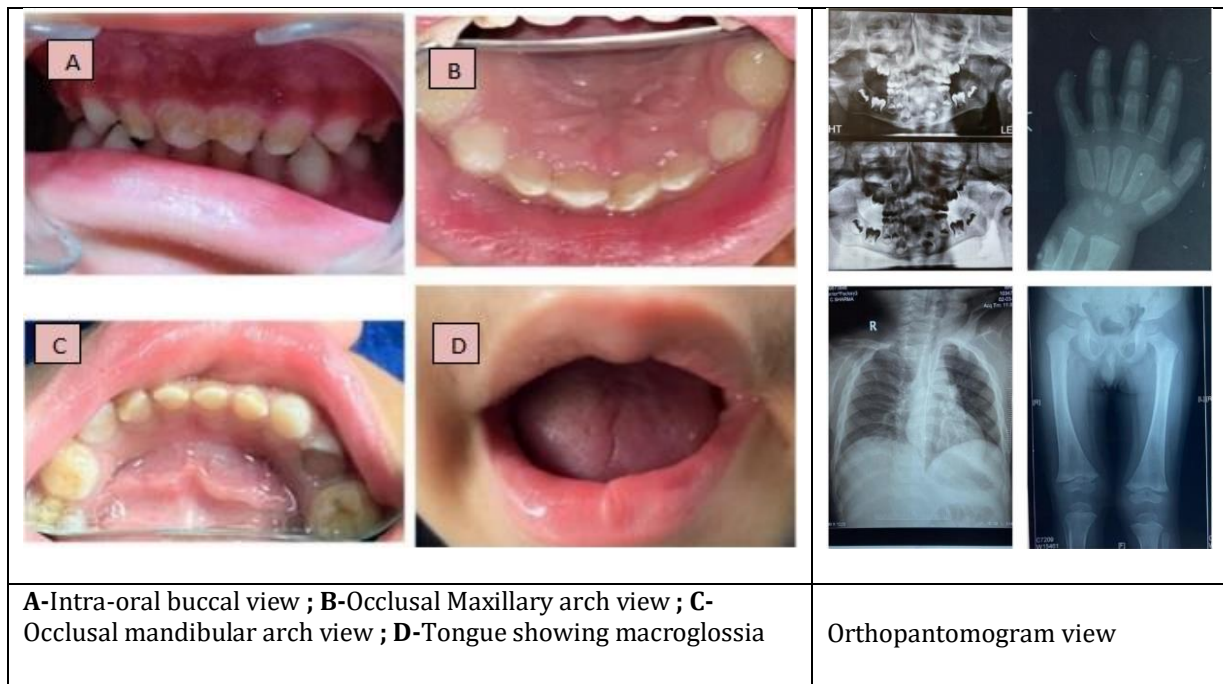
Adenotonsillar hypertrophy, speech impairment and bilateral conductive hearing loss which is suggestive of Hunter syndrome were the other associated findings. Thirteen months ago, there was reported history of Adenotonsillar Resection I with bilateral gromet insertion and also staphylococcus aureus associated septic arthritis of left knee. The patient had undergone Arthrotomy one year ago. Extra oral investigations showed that coarsening of facial features, bushy eyebrows, puffy eyelids, depressed nasal bridge with wide nostrils, incompetent lips, thick lips, limited maximum opening of the jaw. Macroglossia, pronounced rugae, maxillary and mandibular primary incisor,



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canine, molar hypomineralisation was revealed by Intra-oral manifestations. Eruption of teeth with short and broad mandible with mild condylar defects was revealed by orthopantomogram. Mild proximal pointing of the metacarpals and delayed ossification of carpal bones was revealed by hand wrist radiograph. Chest radiograph showed mild broadening of the anterior ribs and left side anterior clavicle. Radiographs of lower extremities depicted flaring of iliac bones. Dietary counselling was done, oral hygiene instructions were given and brushing of the teeth demonstration was done in front of parents and the child. The next visit included Tell-Play-Do technique which provides the child a comfortable friendly setting. Second visit also included Casein phosphopeptide (CPP)-Amorphous calcium phosphate (ACP) based varnish application using paint-on technique to all teeth. During the third visit restoration was done using Silver modified Atraumatic Restorative Technique. For every three months routine follow-up care with application of remineralising varnish was done.





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Conclusion: This case report showed the importance of oral health in the rare Mucopolysaccharidosis Type II (MPSII) or Hunter Syndrome. This report highlights the role of improving early diagnosis, palliative dental care and utilizing modified behaviour management techniques such as use of passive restraints.

Reference: Rishi Tyagi , Namita Kalra , Amit Khatri , Puja Sabherwal , Padma Yangdol and Khadeeja Kulood. Oro-Facial Manifestations of Hunter Syndrome with Generalised Primary Tooth Hypomineralisation and its Palliative Management Using Protective Stabilisation: A Case Report Oct 9; 4(4): 141-



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