Early weight gain in infants with cleft lip and palate treated with and without Nasoalveolar Molding: A Retrospective Study

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Objective: To assess the impact of Nasoalveolar Molding (NAM) on weight change in infants born with cleft lip and/or cleft palate (CL/P) until age of 6 years.

Design: A retrospective chart review was conducted of infants with CL/P to compare longitudinal weight change of infants treated with NAM (+NAM) or not treated with NAM (-NAM) prior to the primary lip surgery. In addition, a healthy non-cleft control sample (C) was collected.

Setting: Doernbecher Children’s Hospital, Oregon Health & Science University, Portland, Oregon

Patients, Participants: From the craniofacial clinic database, consecutively presenting infants with more than 5 longitudinal weight records born with a non-syndromic CL/P were evaluated, beginning in 2008, until a sample size of 40 treated infants, and 40 untreated infants was met. From the Doernbecher pediatric department database a non-cleft control group of 40 infants was selected from consecutive births.

Interventions: Weight measurements were obtained from the charts of CL/P and control subjects.

Main Outcome Measures: The weight gain observed in each population group was compared to determine if +NAM subjects demonstrated differences in weight gain compared to -NAM subjects, using a C group as a baseline.

Results: The weight gain observed was greatest in the C Group, followed by both the +NAM and -NAM group. There was no statistically significant difference in weight gain or weight gain percentage between the +NAM and -NAM groups. Additionally the +NAM and -NAM infants demonstrated greater weight rebound up to 9 months of age when compared to the control group.

Conclusions: There is no statistically significant difference in weight gain between +NAM patients and -NAM patients, indicating NAM therapy has no effect on weight gain. Control patients demonstrate the greatest overall weight gain.
In vitro evaluation of wear properties of six orthodontic thermoplastic retainer materials

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Introduction: The use of vacuformed retainers (VFRs) for orthodontic retention is relatively common practice and evaluation of the physical properties of these thermoplastic materials is necessary to determine their longevity. VFRs have exhibited significant wear with long term use with differences observed between the various thermoplastic materials. Previous studies have examined the wear properties of these materials and determined that polyethylene copolymers have superior wear resistance than polypropylene copolymers. The aim of this study was to evaluate the in vitro wear resistance of various thermoplastic materials including polypropylene copolymers (PPC), polyethylene copolymers (PEC) and polyvinyl chloride polymers (PVC).

Materials and Methods: Six thermoplastic materials were analyzed: two PPCs (Essix C+ and Invisacryl C), three PECs (Essix Plus, Essix ACE, Invisacryl Ultra) and one PVC (Endure). Net weight and volume loss, and maximum depth were analyzed to determine wear properties of the materials. The density and hardness of each material was also measured. The OHSU wear simulator was used to simulate in vitro two-body wear testing of the materials in water using 6.5 mm diameter steatite abraders under a force of 45 N for 2,500 cycles. Samples were scanned with an optical laser profilometer and maximum depth was analyzed with Zygo software. Samples were weighed prior to and after wear testing to determine net weight loss. Densities of the materials were measured and used to calculated volume. Hardness was measured using a Barcol-type impressor. Wear surfaces were imaged with scanning electron microscope.

Results: Endure showed significantly higher weight loss than C+ and Invisacryl C. Endure also showed greater wear depth than all other materials, and Ultra showed more wear depth than C+ and Invisacryl C. No statistical difference between groups was observed for volume loss. Hardness correlated with wear depth by a second order polynomial relationship (R2 =0.94). Weight loss was linearly correlated with volume loss (R2= 0.87). Scanning electron microscopy showed greater tearing and scratching in PVC, followed by PEC, then PPC.

Conclusions: PVC displayed inferior wear resistance as compared with both PECs and PPCs based on both wear depth and weight loss. PECs performed similarly to PPCs with the exception of Ultra which had larger wear depths than both PPCs.
Orthodontic Management and Retention Stability of Transposed Teeth

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Dental transposition is an eruption anomaly characterized by a positional substitution of two permanent teeth. The most frequent transposition in the maxillary arch involves the canines and first premolars, while in mandibular arch the lateral incisors and canines. The records of 24 orthodontically treated transposition cases were evaluated to determine the distribution in phenotypic expression, associated dental anomalies, radiographic evidence of calcification of the interclinoid ligament of the sella turcica, and interceptive treatment protocols. Four long-term retention cases of successfully treated transpositions were assessed for diagnostic and treatment modalities. Associations were found between tooth transpositions and other dental anomalies as well as radiographic evidence of calcific bridging of the sella turcica. These results suggest potential clinical predictors in determining the probability of a developing ectopic eruption or transposition. It was also found that with orthodontic management of transposed teeth, correcting the transposition may be most ideal esthetically, but to reduce iatrogenic harm, should only be attempted on transpositions of mild severity or in early stages of development. Transpositions severely expressed or diagnosed in a mature stage of development should be treated by orthodontically maintaining the irregularity, and esthetically concealing the anomaly with restorative treatment as needed. In order to ensure lifetime esthetic, functional, and periodontal stability, long-term retention protocols are required.
Practice based comparison of bracket placement accuracy between direct and indirect bonding

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Introduction: The goal of this study was to compare accuracy of orthodontic bracket placement using the American Board of Orthodontics Objective Grading System (ABO-OGS); to assess for alignment, marginal ridge and root angulation discrepancies between direct and indirect bonding.

Materials and Methods: Private practice patients having had orthodontic brackets bonded directly or indirectly for complete dental arches were recruited for assessment at the end of archwire progression. Progress models and panoramic radiographs were obtained for evaluation using the ABO-OGS. Data was analyzed using a Cochran-Mantel Haenszel (CMH) test.

Results: Indirect bonding of the maxillary arch showed significantly better alignment than direct bonding. Significant reductions in alignment scores were also found in upper and lower canines with indirect bonding. Largest mean difference in marginal ridge discrepancy between the two bonding methods was found with the upper second premolars but the difference was not statistically significant. Direct bonding in the mandibular arch showed significantly better root angulations than indirect bonding, this is likely attributed to an increase in root angulation discrepancy with indirect bonding of lower lateral incisors.

Conclusions: Largest benefit of utilizing the indirect bonding technique is seen in maxillary arch alignment. When utilized in the mandibular arch, there are potential drawbacks regarding less ideal root angulation.