

FEATURES SECTION

Relevant research from non-orthodontic journals

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This occasional section is designed to draw the attention of readers to papers that have been published in non-orthodontic journals, but which may be of interest.

Infant orthopaedics

Infant orthopedics in UCLP: Effect on feeding, weight, and length: A randomized clinical trial (Dutchcleft)

Prahl C, Kuijpers-Jagtman AM, Van 't Hof MA, Prahl-Andersen B
Cleft Palate Craniofac J 2005; 42: 171–7.

Objective: To study the effects of infant orthopaedics (IO) on feeding, weight, and length.

Design: Prospective two-arm randomized controlled trial in three academic Cleft Palate centres. Treatment allocation was concealed and performed by means of a computerized balanced allocation method.

Setting: Cleft Palate centres of Amsterdam, Nijmegen, and Rotterdam, the Netherlands.

Patients: Infants with complete unilateral cleft lip and palate (UCLP), no other malformations.

Interventions: One group (IO+) wore passive maxillary plates during the first year of life, but the other group (IO-) did not. All other interventions were the same for both groups.

Main outcome measures: Bottle feeding velocity (ml/min) at intake, 3, 6, 15 and 24 weeks (T0–T24); weight-for-age, length-for-age and weight-for-length using *z*-scores; reference values from the Netherlands' third nationwide survey on growth.

Results: Feeding velocity increased with time from 2.9 to 13.2 ml/min in the IO- group and from 2.6 to 13.8 ml/min in the IO+ group; no significant differences were found between groups. Weight-for-age, length-for-age and weight-for-length (*z*-scores) did not differ significantly between groups, but overall the infants with unilateral cleft lip and palate in both groups had significantly lower mean *z*-scores for weight-for-age

and height-for-age than the reference during the first 14 months, and had lower mean values for weight-for-length after soft palate closure.

Conclusion: Infant orthopaedics with the aim of improving feeding and consequent nutritional status in infants with unilateral cleft lip and palate can be abandoned.

Comment: Additional evidence-based research is presented for this highly controversial topic.

Ectopic canines

Patients' perception of recovery after exposure of impacted teeth: a comparison of closed-versus open-eruption techniques

Chaushu S, Becker A, Zeltser R, Branski S, Vasker N, Chaushu G
J Oral Maxillofac Surg 2005; 63: 323–9.

Objective: This prospective study compared the patient's perception of immediate post-operative recovery after surgical exposure of impacted teeth, treated with a closed-eruption versus an open-eruption surgical technique.

Patients and methods: Sixty patients (41 females and 19 males; mean age, 15.4 ± 2.8 years) were given a Health-Related Quality of Life (HRQOL) questionnaire to be completed each post-operative day (POD) for 7 days. The questionnaire was designed to assess the patients' perception of recovery regarding pain, oral function, general activity measures and other parameters. The impact of possible predictor variables, such as age, gender, length of surgical procedure, tooth location, height of impaction and the need for bone removal, was assessed.

Results: Substantial impairment and recovery time of pain and analgesic consumption, oral function (ability

to eat and enjoy food, swallowing and mouth opening) and food accumulation were longer after an open-eruption exposure. No differences were recorded concerning general activity. Palatal impaction and the need for bone removal resulted in delayed recovery after exposure with an open-eruption technique.

Conclusions: The immediate postoperative recovery was longer and more substantially impaired after open-versus closed-eruption surgical techniques. The present study provides information to patients and clinicians assisting them in choosing the most appropriate surgical modality in relation to quality of health parameters.

Comment: Controversy exists regarding the relative merits of the two different surgical approaches to the exposure of impacted teeth. This paper considers clinical outcome from a patient's perspective.

Imaging techniques

A new three-dimensional method of assessing facial volumetric changes after orthognathic treatment

Hajeer MY, Mao Z, Millett DT, Ayoub AF, Siebert JP
Cleft Palate Craniofac J 2005; 42: 113–20.

Objective: To validate a new method of facial volumetric assessment that is dependent on the use of stereophotogrammetric models and a software-based Facial Analysis Tool.

Design: The method was validated *in vitro* with three-dimensional (3D) models of a lifelike plastic female dummy head and *in vivo* with a male-subject head.

Methods: Thirty facial silicone explants were added in the nasal and peri-oral regions of each head, and their volumes were obtained by three different algorithms. These were compared with the actual values obtained by a 'water displacement' method.

Results: The least mean error was found with the 'tetrahedron formation' method followed by the 'projection' method and the 'back-plane construction' method. The error with the tetrahedron formation method was 0.071 cm^3 (95% confidence interval [CI]: -0.074 to 0.2161 cm^3) with the *in vitro* models and 0.314 cm^3 (95% CI: -0.080 to 0.708 cm^3) with the *in vivo* models. The increased volumetric assessment error observed *in vivo* was attributed to the registration procedure and possible changes in facial expression.

Conclusions: These results encourage the use of this method in the 3D assessment of orthognathic surgical outcome, provided a standardized facial expression is used for image acquisition.

Comment: Recent advances in computer technology and increased understanding of the importance of 3D analysis of dentofacial deformities have introduced new horizons for different imaging applications in orthodontics as well as in oral, maxillofacial and craniofacial surgery.

Sleep apnoea

Clinical audit of subjects with snoring and sleep apnoea/hypopnoea syndrome fitted with mandibular repositioning splint

Izci B, McDonald JP, Coleman EL, Mackay TW, Douglas NJ, Engleman HM
Respir Med 2005; 99: 337–46.

Objective: To assess the use of, and satisfaction with, mandibular repositioning splints (MRS) for the treatment of snoring and obstructive sleep apnoea/hypopnoea syndrome (OSAHS).

Methods: A survey was posted to 177 patients referred by a hospital orthodontic department for custom-fitting of a MRS.

Results: Data was analysed using non-parametric techniques. The response rate was 81% ($n=144$). Responders (30F, 114M) had mean (SD) age of 51 years (± 11), apnoea and hypopnoea index (AHI) of 24/hour (± 21) and Epworth Score of 10 (± 5) at diagnosis, and had been supplied with their MRS a median 7 months (IQR 5–11) previously. Fifty of the 144 patients (35%) had been offered continuous positive airway pressure (CPAP) treatment, but had declined or abandoned this type of treatment. Self-reported MRS use was 5 hours/night (2), with 74 of the 144 patients (51%) continuing to use MRS at least occasionally at a median 7 months after fitting. Survival analysis showed 12% still using MRS at 12 months. Epworth score fell slightly with MRS therapy [-2.4 (3.5); $p=0.005$], and seven daytime and two nocturnal symptoms improved in MRS users (all $p<0.05$). Marital satisfaction did not change with MRS. Problems preventing MRS use in 70 non-users included non-retention ($n=12$), sore mouth ($n=13$) or jaw ($n=7$), difficulties falling asleep ($n=10$) or breathing ($n=7$), excessive salivation ($n=4$), dental damage ($n=4$) and other problems ($n=3$).

Conclusions: Continued use of MRS therapy was associated with a higher number of teeth, low marital satisfaction perceived by partners and greater improvement in symptoms reported by patients and partners. Continuance with MRS may be low and linked to tolerance problems.

Comment: MRS therapy may offer a simple and effective alternative treatment of both non-apnoeic snoring and OSAHS. However, continuing treatment with MRS is often low and linked to specific problems. This study found continued use of MRS therapy to be associated with a higher number of teeth and, poor marital satisfaction prior to commencing treatment.

Statistics

Statistical power for analyses of changes in randomized controlled trials

Tu YK, Blance A, Clerehugh V, Gilthorpe MS
J Dent Res 2005; 84: 283–7.

Objective: To use computer simulations to explore how using different statistical methods of analysing change in continuous outcomes affects study power and the sample size required for randomized controlled trials (RCTs).

Methods: Computer simulations were used to explore how using different univariate and multivariate statistical methods of analysing change in continuous outcome variables affects study power and the sample size required for RCTs.

Results: In general, analysis of covariance (ANCOVA) yields greater power than other statistical methods in testing the superiority of one treatment over another or in testing the equivalence between two treatments.

Conclusions: ANCOVA should be used in preference to change score or percentage change score to reduce type II error rates.

Comment: Randomized controlled trials (RCTs) are widely recommended as the most useful study design to generate reliable evidence, and guidance to daily practices in medicine and dentistry. However, it is not well-known in dental research that different statistical methods of data analysis can yield substantial differences in study power.