ABSTRACTS

Occlusal changes following posterior tooth loss in adults. Part 1. A study of clinical parameters associated with the extent and type of supraeruption in unopposed posterior teeth

Craddock, H.L., Youngson, C.C., Manogue, M., Blance, A.

Purpose

One of the barriers to restoring an edentulous space may be the supraeruption of an unopposed tooth to occupy some or all of the space needed for prosthetic replacement. The aim of this study was to determine the extent and type of supraeruption associated with unopposed posterior teeth and to investigate the relationship between these and oral and patient factors.

Materials and methods

Diagnostic casts of 100 patients with an unopposed posterior tooth and of 100 control patients were scanned and analysed to record the extent of supraeruption, together with other clinical parameters. The type of eruption present was defined for each subject as 'periodontal growth', 'active eruption', or 'relative wear'. Generalised linear models were developed to examine associations between the extent and type of supraeruption and patient or dental factors. The extent of supraeruption for an individual was modelled to show association between the degree of supraeruption and clinical parameters. Three models were produced to show associations between each type of supraeruption and clinical parameters.

Results

The mean supraeruption for subjects was 1.68mm (SD 0.79, range 0 to 3.99mm), and for controls was 0.24mm (SD 0.39, range 0 to 1.46mm). The extent of supraeruption was statistically greater in maxillary unopposed teeth than in mandibular unopposed teeth. Supraeruption was found in 92% of subjects' unopposed teeth.

Conclusions

A generalised linear model could be produced to demonstrate that the clinical parameters associated with supraeruption are periodontal growth, attachment loss, and the lingual movement of the tooth distal to the extraction site. Three types of supraeruption, which may be present singly or in combination, can be identified. Active eruption has an association with attachment loss. Periodontal growth has an inverse association with attachment loss, and is more prevalent in younger patients, in the maxilla, in premolars, and in females. Relative wear has an association with increasing age and is more prevalent in unopposed mandibular teeth.

Journal of Prosthodontics 2007; 16 (6): 485-494.

Occlusal changes following posterior tooth loss in adults. Part 2. Clinical parameters associated with movement of teeth adjacent to the site of posterior tooth loss

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Purpose

Much anecdotal evidence is available on tooth positional changes following loss of an adjacent tooth, but only a few studies are available. In Part 1 of this series, supraeruption was assessed and generalised linear models were made to determine the clinical parameters associated with the supraeruptive process. The models demonstrated that clinical parameters were not only associated with the extent of supraeruption, but also with the type of eruption present. This investigation of tooth positional changes adjacent to sites of posterior tooth loss attempts to provide increased understanding of the magnitude, direction, and associated features that may be helpful in decision making and treatment planning in the clinical setting.

Materials and methods

A group of 100 patients with an unopposed posterior tooth, with 100 age-, sex-, and bone level-matched controls, were drawn from patients undergoing routine restorative care at Leeds Dental Institute. Study models were scanned, and the extent of eruption, type of eruption of the unopposed tooth, the overbite, overjet, buccal occlusion, and degree of crowding in the dentition, tipping, rotation, and buccal movement of the teeth associated with the edentulous site were recorded. Generalised linear models were developed to examine associations between each tooth movement and patient or dental factors.

Results

A statistical significance in the degree of tipping of teeth both mesial and distal to the extraction site was detected between the subject and control groups. There was also a significant difference in rotation of the tooth mesial to the site. Four generalised linear models were produced of the types of non-vertical movements found in teeth associated with sites of tooth loss.

Conclusions

Teeth adjacent to the site of tooth loss may undergo non-vertical movements. Teeth mesial to the extraction site had a tendency to tip distally. The degree of tipping was increased in upper teeth and in subjects with a cusp-to-cusp buccal occlusion. Rotation of teeth mesial to the extraction site was more prevalent in the lower arch. Tipping of the tooth distal to the extraction site could be extreme and was found to be more prevalent in subjects with a reduced (Code 1) overbite and in the lower arch. Rotation of teeth distal to the extraction site was greater in the upper arch and was also associated with a reduced (Code 1) overbite. It also had an association with rotation of the tooth mesial to the extraction site. Models of non-vertical movement are likely to be of limited value due to overdispersion, indicating a high degree of variability within the model.

Journal of Prosthodontics 2007; 16 (6): 495-501.

Surgical treatment of peri-implantitis using a bone substitute with or without a resorbable membrane: a prospective cohort study

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Objective
The aim of this prospective cohort study was to compare two regenerative surgical treatment modalities for peri-implantitis.

Material and methods
A group of 36 patients having a minimum of one osseointegrated implant, with a progressive loss of bone amounting to ≥3 threads (1.8mm) following the first year of healing, combined with bleeding and/or pus on probing, were involved in this study. The patients were assigned to two different treatment strategies. After surgical exposure of the defect, granulomatous tissue was removed and the infected implant surface was treated using 3% hydrogen peroxide. The bone defects were filled with a bone substitute (Algipore). In 17 patients (Group 1), a resorbable membrane (Osseoquest) was placed over the grafted defect before suturing. In 19 patients (Group 2), the graft was used alone.

Results
One-year follow-up demonstrated clinical and radiographic improvements. Probing depths were reduced by 2.9mm in Group 1 and by 3.4mm in Group 2. Defect fill amounted to 1.5 and 1.4mm, respectively. There was no significant difference between the groups.

Conclusion
It is possible to treat peri-implant defects with a bone substitute, with or without a resorbable membrane.

Journal of Clinical Periodontology 2007; 34 (7): 625-632.

Efficacy of panoramic radiographs in the preoperative planning of posterior mandibular implants: a prospective clinical study of 1,527 consecutively treated patients

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Objective
Various imaging techniques, including conventional radiography and computed tomography, are proposed to localise the mandibular canal prior to implant surgery. The aim of this study was to determine the incidence of altered mental nerve sensation after implant placement in the posterior segment of the mandible when a panoramic radiograph is the only preoperative imaging technique used.

Materials and methods
The study included 1,527 partially and totally edentulous patients who had consecutively received 2,584 implants in the posterior segment of the mandible. Preoperative bone height was evaluated from the top of the alveolar crest to the superior border of the mandibular canal on a standard panoramic radiograph. A graduated implant scale from the implant manufacturer was used and 2mm were subtracted as a safety margin to determine the length of the implant to be inserted.

Results
No permanent sensory disturbances of the inferior alveolar nerve were observed. There were two cases of postoperative paraesthesia, representing 2/2,584 (0.08%) of implants inserted in the posterior segment of the mandible or 2/1,527 (0.13%) of patients. These sensory disturbances were minor, lasted for three and six weeks, and resolved spontaneously.

Conclusions
Panoramic examination can be considered a safe preoperative evaluation procedure for routine posterior mandibular implant placement. Panoramic radiography is a quick, simple, low cost and low dose presurgical diagnostic tool. When a safety margin of at least 2mm above the mandibular canal is respected, panoramic radiography appears to be sufficient to evaluate available bone height prior to insertion of posterior mandibular implants; cross-sectional imaging techniques may not be necessary.

Clinical Oral Implants Research 2008; 19 (1): 81-85.