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HP01 CAREER SATISFACTION AND WORK-LIFE BALANCE IN ORTHODONTICS

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AIMS: To investigate factors affecting career satisfaction and work-life balance in specialist orthodontists in the United Kingdom/Republic of Ireland.
SUBJECTS AND METHOD: This was a prospective questionnaire-based study. The questionnaire was sent to all specialist orthodontists who were members of the British Orthodontic Society. Simple descriptive statistics were used to describe the demographics and work related information of the respondents. Multiple regression analyses were used to investigate the potential impact of the various factors explored in the questionnaire on career satisfaction and work-life balance.
RESULTS: Orthodontists reported high levels of career satisfaction (median score 90 out of 100). Career satisfaction was significantly higher in those who showed: i) satisfaction with current working hours ii) satisfaction with the level of control over their working day iii) ability to manage unexpected home events and iv) confidence in how readily they managed patient expectations. The work-life balance score was lower than the career satisfaction score but was still relatively high with a median score of 75 out of 100. Work-life balance scores were significantly affected by the same four factors but also by satisfaction with current working patterns and were higher in those who worked part-time compared with those who worked full-time.
CONCLUSION: Orthodontists in this study were highly satisfied with their career and the majority said they would choose their career again. Work-life balance scores were lower than the career satisfaction score but were still relatively high. It remains important that the profession considers certain measures in order to maintain or improve career satisfaction and work-life balance and in order to continue to recruit to the profession; this includes continuing to maintain flexibility of working hours and providing training in management of patient expectations through educational courses, continuing professional development or mentoring.

HP02 GINGIVAL CREVICULAR FLUID ANALYSIS BY VIBRATIONAL SPECTROSCOPY DURING ORTHODONTIC TOOTH MOVEMENT

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AIMS: The gingival crevicular fluid (GCF) is a site-specific exudate deriving from the epithelium lining of the gingival sulcus. Biochemical analysis of GCF has been used as a simple and non-invasive diagnostic procedure to evaluate biologically active substances expressed in the periodontal ligament and alveolar bone after mechanical stimuli. The GCF composition changes at different times of the fixed orthodontic treatment were evaluated with the Fourier transform infrared (FTIR) microscopy and micro-Raman spectroscopy (μ-RS).
MATERIALS AND METHOD: GCF samples were collected from patients between 10 and 21 years of age before (T0) and after 2 (T1), 7 (T2) and 14 (T3) days of fixed orthodontic treatment. Standardized filter paper cones inserted 1 mm into the gingival crevice were used. The samples were analyzed by FTIR and μ-RS. A Perkin Elmer Spectrum One FTIR spectrometer was used in specular-reflection mode for FTIR spectroscopy analysis, whereas the μ-RS analysis was performed using a Jobin-Yvon TriAx 180 system with a He-Ne laser as excitation source.
RESULTS: FTIR spectra in the range of 4000 to 600 cm^{-1} with 4 cm^{-1} of spectral resolution were obtained from GCF samples. Significant changes in proteins were estimated by analyzing amide I and II bands and changes of lipid and carbohydrates contents were also observed. Raman spectra in the range of 500-3000 cm^{-1} with 4 cm^{-1} of spectral resolution were obtained by μ-RS. A suitable data treatment was

used in order to subtract the substrate signal. The main vibrational modes of proteins (amide I, CH3 bands) and lipids were identified. The changes of μ-RS analysis indicated a modification of the secondary structure of proteins, as underlined by the decrease of α-helix mode compared to other secondary structures. Moreover, an increase of carotenoid content in GCF was observed in the samples.
CONCLUSION: The FTIR and μ-RS can give a consistent contribution providing a valuable insight into the nature of GCF and its changes at different phases of orthodontic tooth movement, whereas further investigations are required to use the vibrational spectroscopies as easy methods to assess the periodontal status during different types of treatments.

HP03 DO THE FACES OF GENETICALLY IDENTICAL TWINS GROW SIMILARLY? A LONGITUDINAL GROWTH STUDY ON MONOZYGOTIC TWINS

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AIMS: A longitudinal analysis of untreated monozygotic twins was to investigate the change of the facial soft tissues during the growth period, to identify distinct facial patterns, and to assess the genetic component of soft tissue development.
MATERIALS AND METHOD: Lateral cephalograms of 33 pairs of untreated monozygotic twins (70% male, and 30% female) from the Forsyth Moorrees Twin Study taken between 1959-1975, who were followed annually from childhood to early adulthood (6-18 years of age). Radiographs were taken on the same machine with 6 per cent magnification at three-year intervals and traced to assess various soft tissue measurements. Statistical analysis included the assessment of longitudinal changes and their 95 per cent confidence intervals (CIs) with a three-level nested mixed-effects linear model, while the intraclass correlation coefficient (ICC) was calculated to measure concordance between twins for each variable.
RESULTS: Considerable variability existed among soft tissue measurements during the growth period. The nasolabial angle and chin thickness remained stable overall during the growth period, while a trend for increase over time was seen for the facial convexity (change = 3.3°; 95% CI = 0.1,6.6°; $P = 0.049$), nasal prominence (change = 6.6 mm; 95% CI = 3.9, 9.3 mm; $P < 0.001$), and upper lip length (change = 4.7 mm; 95% CI = 2.6, 6.8 mm; $P < 0.001$). The facial growth pattern showed statistically significant differences in magnitude and direction depending on the patient's gender and the underlying sagittal maxillomandibular relationship (measured with ANB angle). Although considerable variations were detected during the growth period even between monozygotic twins, the concordance between monozygotic twins at 18 years of age for the studied variables was moderate to high, ranging from 0.37 for the soft tissue chin thickness to 0.87 for the facial convexity angle. Finally, the concordance between monozygotic twins was higher for females than for males, and higher for Class II and Class III than for Class I patients.
CONCLUSION: Although monozygotic twins possess the same genetic material, differences in the soft tissues are found during and after growth, to a varying degree according to the various components of the face. This supports the complex developmental mechanism of the human face and the varying influence of genetic and environmental factors.

HP04 A GEOMETRIC MORPHOMETRIC EVALUATION OF HARD AND SOFT TISSUE PROFILE CHANGES IN EXTRACTION VERSUS NON-EXTRACTION PATIENTS.

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AIMS: To evaluate the hard tissue and facial profile changes in matched extraction and non-extraction Class I patients with the use of geometric morphometrics.
SUBJECTS AND METHOD: From a parent sample of 542 Class I patients, been subjected to discriminant analysis in a previous study, a subsample of 68 borderline cases, with regards to extraction modality, was obtained and analyzed. Of the borderline patients 34 were treated with extraction and 34 without extraction of the four first premolars. The validity of the discriminant analysis in successfully identifying a borderline group of morphologically similar patients was examined by geometric morphometric methods (Procrustes superimposition and Principal Component Analysis). Inter- and intragroup skeletal and facial profile changes were evaluated morphometrically using pre- and post-treatment cephalometric radiographs. Permutation tests were conducted to test statistical significance, based on the Procrustes distances between group means. Multivariate regression analysis was conducted between linear and angular cephalometric measurements of incisal position and changes in the Principal Components of soft tissue shape before and after treatment.
RESULTS: The discriminant analysis was validated. The non-extraction group showed an increase in overall hard tissue height ($P < 0.00$, 10000 permutations), with slightly retruded upper and slightly protruded lower ($P = 0.027$, 10000 permutations) lips. The extraction group showed a significant retraction of the hard tissue and facial profile outline ($P < 0.00$, 10000 permutations). The post-treatment soft tissue differences were marginally significant ($P = 0.053$, 10000 permutations), but not in the hard tissue skeletal component ($P = 0.078$, 10000 permutations). Changes in the position of the lips correlated significantly with changes in the position of the upper and lower incisors.
CONCLUSION: The choice of treatment modality in regards to extractions has a definite impact on the skeletal and soft tissue profile in Class I borderline patients. In patients treated non-extraction a vertical increase of the skeletal structures was observed, whereas facial profile altered slightly. Patients treated by extractions presented similar changes in the vertical direction in addition to retroposition of the maxillary and mandibular alveolar osseous contours, accompanied by lip retrusion.

HP05 IMPACT OF ORTHODONTIC TREATMENT COMPLEXITY ON ORAL HEALTH RELATED QUALITY OF LIFE

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AIMS: To investigate the association between orthodontic treatment complexity and oral health-related quality of life (OHRQoL) in adults and adolescents who have undergone orthodontic treatment, and to compare quality of life according to age and gender.
SUBJECTS AND METHOD: One hundred and two patients who had registered for orthodontic treatment in the years between 2013-2015. The inclusion criteria were patients between 13-35 years of age, planning for comprehensive fixed orthodontic treatment. Patients with missing teeth except third molars, dental caries or periodontal problems, craniofacial anomalies or chronic medical problems, temporomandibular joint problems and those who had previously received any type of orthodontic treatment were excluded from the study. Before orthodontic treatment clinical evaluation was performed using the models and photographs of the patients and the Index of Complexity, Outcome and Need (ICON) was used to determine orthodontic treatment complexity. According to ICON scores, the subjects were divided into five groups as follows: 10.8 per cent were easy, 37.3 per cent were mild, 14.7 per cent were moderate, 10.8 per cent were difficult and 25.5 per cent were very difficult. The ICON was measured independently by two trained and calibrated examiners. To assess intra- and inter-examiner reliability, 20 subjects not included in the present study were randomly selected and reexamined 2 weeks after their initial examination. The kappa values were 0.85 for inter- and 0.95 and 0.99 for intrarater reliability. Surveys including OHIP-14 and sociodemographic datas were applied to the patients before and 1 month after orthodontic treatment.
RESULTS: There was no statistically significant difference between the groups of complexity in THE total Oral Health Impact Profile-14 scores, in both the pre- and post-treatment evaluation. The difficult group showed a statistically significant difference in subscale of pre-treatment psychological disability,

compared to the moderate group ($P < 0.05$). According to pre-treatment scores, girls showed a significantly greater impact on the physical pain domain compared to boys and adults showed a significantly greater impact on the psychological discomfort and psychological disability domains compared to adolescents ($P < 0.05$).
CONCLUSION: Malocclusion has a significantly negative effect on OHRQoL and orthodontic treatment has a positive impact on patients' quality of life. There is no statistically significant relationship between orthodontic treatment complexity and OHRQoL.