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BOOK OF ABSTRACTS

77TH EDSA SPRING MEETING 2026 RESEARCH COMPETITION

Amsterdam
THE NETHERLANDS

Original Research Category Authors

Case Report
Category Authors

UPPER-EXTREMITY MUSCULOSKELETAL DISORDERS AND ERGONOMIC INTERVENTIONS AMONG LATVIAN DENTAL STUDENTS AND DENTAL HEALTHCARE WORKERS: A CROSS-SECTIONAL STUDY

AUTHORS: GEORGS ALBERTS PIMANOVS, JEĻENA RESTE

Introduction: Dental healthcare workers and students are exposed to repetitive hand movements, sustained static postures, awkward wrist positions, and vibrating instruments, all of which may contribute to upper-extremity work-related musculoskeletal disorders (WRMSDs). Data from Latvia and the Baltic States remain limited, and ergonomic factors in this occupation warrant further evaluation.

Aim: To determine the prevalence of upper-extremity WRMSDs among Latvian dental students and dental healthcare workers and to identify associated sociodemographic, occupational, and ergonomic factors.

Materials and methods: A cross-sectional anonymous electronic survey was conducted among Latvian dental students and practicing dental personnel. The study sample consisted of 421 respondents, including 107 students and 314 professionals. The mean age was 34.6 ± 13.3 years, and 85.7% of respondents were women. The survey included the Boston Carpal Tunnel Questionnaire (BCTQ), the abbreviated Nordic Musculoskeletal Questionnaire (NMQ), and additional items addressing demographics, clinical workload, wrist movements, instrument use, and ergonomic measures. As the data were not normally distributed, group comparisons were performed using the Mann-Whitney U and Kruskal-Wallis tests. Pearson's chi-square test was used to analyse associations between categorical variables, while Spearman's rank correlation coefficient was applied to assess correlations.

Results: Upper-extremity musculoskeletal disorders were highly prevalent in the study population. Among self-reported physician-diagnosed upper-extremity musculoskeletal disorders, carpal tunnel syndrome (CTS) was the most frequently reported condition, affecting 36 respondents (8.6%) and reported only by women (10.0%, $p = 0.011$). Over the preceding 12 months, the most commonly reported pain sites were the neck (82.4%), right wrist/hand (64.4%), and right shoulder (63.7%). Work-limiting pain was most frequent in the right wrist/hand (10.9%). Women reported musculoskeletal pain more frequently than men, particularly in the neck, right shoulder, and right wrist/hand. BCTQ Symptom Severity Scale (SSS) and Functional Status Scale (FSS) scores were significantly higher in women and increased with age and work experience ($p < 0.001$), whereas weekly clinical workload was not significantly associated with BCTQ outcomes. More frequent wrist flexion and extension, as well as use of manual and vibrating instruments, showed weak positive associations with worse BCTQ scores. Regarding ergonomic measures, more frequent microscope use was associated with lower BCTQ FSS scores, while loupe use was associated with lower pain prevalence only in the left elbow/forearm region. No significant associations were observed between regular microbreaks taken every 30 minutes and BCTQ outcomes or pain prevalence.

Conclusion: Upper-extremity WRMSDs and CTS-related symptoms were common among Latvian dental students and dental healthcare workers. Higher symptom burden was associated with female sex, older age, longer work tenure, repetitive wrist movements, and frequent use of manual and vibrating instruments. These findings highlight the need for better ergonomic prevention in both dental education and clinical practice, particularly through improved working posture and the appropriate use of magnification devices.

Keywords: upper-extremity musculoskeletal disorders; ergonomic interventions; dentistry; dental students; dental healthcare workers

BRIDGING ORAL AND SYSTEMIC HEALTH: MEDICAL STUDENTS' KNOWLEDGE OF THE ASSOCIATIONS BETWEEN PERIODONTITIS, DIABETES MELLITUS, AND CARDIOVASCULAR DISEASES IN LATVIA

AUTHORS: UNDĪNE UNA HEIDEMANE, DĀRTA ELIZABETE SENKĀNE

Introduction: Periodontitis is a chronic inflammatory disease with well-established bidirectional and systemic associations with diabetes mellitus and cardiovascular diseases. Despite growing evidence, the extent to which these relationships are understood and applied in clinical practice by medical students remains unclear, particularly within specific national contexts.

Materials and methods: This study aimed to evaluate and compare the knowledge and attitudes of medical students from Rīga Stradiņš University (RSU) and the University of Latvia (LU) — the two largest medical education institutions in Latvia — regarding the association between periodontitis, diabetes mellitus, and cardiovascular diseases, as well as their readiness to integrate oral health into multidisciplinary patient care. A cross-sectional quantitative study was conducted using an anonymous online questionnaire distributed among medical students from both universities. A total of 1051 students participated (RSU: n=732; LU: n=319), representing study years 2–6. A 95% confidence level was achieved for each study year group. Descriptive statistical analysis was performed.

Results: The findings demonstrate a clear disparity in students' understanding of different systemic associations. Knowledge of the bidirectional relationship between periodontitis and diabetes mellitus was consistently high, with 70.4%–100% of LU students and 78.6%–100% of RSU students identifying the correct association. In contrast, knowledge of the periodontal–cardiovascular relationship was more variable and overall lower, with correct responses ranging from 48.6%–76.6% among LU students and 33.1%–96.7% among RSU students across study years, indicating less consistent understanding of this association. This disparity was also reflected in clinical decision-making.

While a majority of students reported that they would inform or refer patients with diabetes mellitus to a dentist (ranging from 48.1%–84.4% among RSU students and 52.8%–71.9% among LU students), significantly lower engagement was observed in the context of cardiovascular diseases. Notably, 48.2% of respondents indicated that they would not inform or refer patients with cardiovascular diseases to a dentist, highlighting a gap between theoretical knowledge and its translation into clinical practice. Additionally, while 70.1% of respondents correctly identified the full spectrum of periodontitis symptoms, a substantial proportion demonstrated misconceptions, which may further limit appropriate clinical decision-making. Differences between institutions were also observed, with higher referral rates among LU students (59.9%) compared to RSU students (48.2%), suggesting variability in how oral–systemic health concepts are integrated into medical education.

Conclusions: Medical students in Latvia demonstrate adequate theoretical knowledge — particularly regarding diabetes mellitus — yet show less consistent understanding and application of the periodontal–cardiovascular relationship. The observed gap between knowledge and clinical action highlights the need for stronger integration of oral health and multidisciplinary principles within medical curricula to improve future patient care.

Keywords: periodontitis; diabetes mellitus; cardiovascular diseases; multidisciplinary approach; medical students

DENTAL CARIES IN A MIGRATORY SETTING: THE ROLE OF CULTURAL BACKGROUND IN A CROSS-SECTIONAL STUDY FROM MARDIN, TÜRKIYE

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Introduction: Recent political and regional dynamics along Türkiye's southern border have led to significant social migration and increased cultural diversity within local populations. Assessing the impact of these demographic changes on children's oral health has become an important public health concern. Dental caries, one of the most prevalent infectious diseases worldwide, is influenced by a complex interaction of biological, environmental, and socio-cultural factors. Understanding how caries is distributed among children from different cultural backgrounds, including both migrant and local populations, is essential for developing effective preventive and community-based oral health strategies.

Aim: This study aimed to evaluate dental caries prevalence and dmft scores among children aged 0–10 years with different cultural backgrounds and to investigate the possible association between cultural background and caries experience.

Materials and methods: A total of 583 children (mean age: 3.04 ± 1.33 years) were clinically examined in Mardin city center and its districts (Mardin: n=133; Kızıltepe: n=177; Midyat Camp: n=240; Nusaybin: n=53). All examinations were conducted under natural daylight in a supine position using a mouth mirror and probe, in accordance with World Health Organization (WHO) criteria. Examinations were performed by four calibrated dental students under the supervision of an experienced dentist. Inter-examiner reliability was high (Kappa values: 0.86–0.94). Only primary dentition was evaluated. Data were recorded using standardized forms. Statistical analysis was performed using ANOVA, with significance set at $p < 0.05$.

Results: The overall mean dmft score was 1.43 ± 2.84, and caries prevalence was 31.0%. District-based analysis revealed the following mean dmft scores and caries prevalence: Mardin (1.40 ± 2.84; 28.3%), Kızıltepe (1.51 ± 3.14; 31.1%), Midyat Camp (1.43 ± 2.62; 34.6%), and Nusaybin (1.28 ± 2.66; 20.8%). Cultural distribution included Kurdish (n=244; 41.9%), Syrian (n=73; 12.5%), Yazidi (n=153; 26.2%), and Arab (n=113; 19.4%) children. Mean dmft scores were 1.52 ± 3.05 (Kurdish), 1.58 ± 2.59 (Syrian), 1.25 ± 2.58 (Yazidi), and 1.40 ± 2.90 (Arab), with caries prevalence rates of 29.9%, 39.7%, 30.7%, and 28.3%, respectively. No statistically significant association was found between cultural background and caries prevalence ($p = 0.778$). Furthermore, the Significant Caries Index (SiC) among children with caries experience (dmft > 0) was notably high at 4.5 ± 3.4.

Conclusion: Although variations in caries prevalence were observed among different cultural groups, no statistically significant relationship was found between cultural background and caries experience. These findings suggest that factors such as access to healthcare, environmental conditions, and preventive practices may play a more critical role than cultural background alone. Considering that dental caries is one of the most prevalent infectious diseases worldwide, monitoring oral health in migrant populations and implementing preventive public health strategies are essential. These findings highlight the importance of targeted preventive approaches in populations exposed to migration-related challenges.

Keywords: Dental caries, dmft index, children, migration, cultural background, oral health

DIAGNOSTIC ACCURACY OF AI-ASSISTED CARIES DETECTION ON BITEWING RADIOGRAPHS IN EUROPEAN CLINICAL SETTINGS: A RECENT SYSTEMATIC REVIEW AND META-ANALYSIS (2024–2025)

AUTHORS: ŠIMON ČERNÝ

Introduction: Dental caries remains the most prevalent non-communicable disease worldwide, affecting over 2.4 billion people. Bitewing radiography is the established standard for detecting proximal and occlusal carious lesions in clinical practice. Artificial intelligence (AI), particularly deep learning-based convolutional neural networks, has emerged as a promising tool to assist clinicians in radiographic caries detection. Despite growing evidence, heterogeneity in AI systems, patient populations, and reference standards limits interpretability. A synthesis of contemporary evidence focused on European clinical settings and the 2024–2025 publication window is currently lacking.

Aim: To systematically evaluate and meta-analyse the diagnostic accuracy of AI-assisted caries detection on bitewing radiographs in European clinical settings, reporting pooled sensitivity, specificity, and area under the receiver operating characteristic curve (AUC), and to assess the methodological quality of available evidence.

Materials and methods: A systematic review was conducted following PRISMA-DTA guidelines. PubMed was searched for studies published between January 2024 and March 2025. Thirty-four articles were screened. Inclusion criteria required: AI-assisted caries detection on bitewing radiographs; reporting of diagnostic accuracy metrics; European clinical data or internationally validated datasets with European applicability; and human subjects or ex vivo histological reference standards. Secondary research was used for contextualisation only. Risk of bias was assessed using QUADAS-2. A bivariate random-effects meta-analysis was performed for studies with extractable quantitative data, with heterogeneity quantified by I^2 statistics.

Results: Of 34 screened records, 14 met full inclusion criteria as primary diagnostic accuracy studies; 13 were excluded as secondary research and 7 for wrong modality or insufficient data. Eight studies contributed to meta-analysis, including datasets from Germany, Norway, Denmark, and Poland. AI systems evaluated included dentalXrai Pro, Diagnocat, and deep-learning architectures. Pooled sensitivity was 0.87 (95% CI: 0.76–0.94) and pooled specificity was 0.89 (95% CI: 0.75–0.96), with a diagnostic odds ratio of 55.8 (95% CI: 28.8–108.3). Subgroup analysis demonstrated superior performance for dentin-level lesions (sensitivity 0.84, 95% CI: 0.80–0.87) compared to enamel-level lesions (sensitivity 0.71, 95% CI: 0.66–0.75). A complementary meta-analysis of approximal caries detection across 21 studies independently reported pooled sensitivity of 0.94 (95% CI: 0.78–0.99) and specificity of 0.91 (95% CI: 0.84–0.95). In a direct comparison study, AI-assisted students demonstrated a mean sensitivity of 0.80 (95% CI ± 0.04) for enamel-level detection versus 0.50 (95% CI ± 0.13) in the unassisted group ($p < 0.01$). High heterogeneity was observed across pooled studies ($I^2 > 70\%$). QUADAS-2 assessment of the included studies revealed high or unclear risk of bias in the majority of studies, predominantly in the patient selection and index test domains, consistent with the findings of all major systematic reviews in this field.

Conclusion: AI-assisted caries detection on bitewing radiographs demonstrates clinically acceptable diagnostic accuracy, with AI-assisted clinicians outperforming unassisted peers particularly for early enamel lesions. However, substantial methodological heterogeneity, limited European-specific validation, and predominantly retrospective study designs preclude definitive clinical recommendations. AI tools should function as decision-support adjuncts under clinician supervision. Prospective multicentre European validation studies using standardised lesion classification and histological reference standards are urgently needed.

INTEGRATED DIGITAL ASSESSMENT OF TEMPOROMANDIBULAR JOINT STRUCTURE AND FUNCTION USING CBCT AND JAW TRACKING

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Introduction: Temporomandibular disorders (TMD) involve structural and functional alterations of the temporomandibular joint, with diverse clinical manifestations. The relationship between anatomical joint parameters and mandibular dynamic behavior remains insufficiently understood, while integrated digital assessment methods may provide a more comprehensive and objective evaluation.

Aim: To assess anatomical and functional differences between patients with TMD and healthy subjects, as well as to analyze correlations between joint structure, mandibular function, and skeletal class.

Material and methods: An observational, analytical, cross-sectional study was conducted on a total sample of 30 subjects (15 patients diagnosed with TMD and 15 clinically healthy controls). Anatomical parameters were obtained from CBCT images, including joint space dimensions and condylar height and width. A lateral cephalogram was reconstructed from the CBCT volume to determine the ANB angle for skeletal class classification. Functional parameters were digitally recorded using a jaw tracking system, assessing condylar inclination and Bennett angle bilaterally. Null hypotheses were tested regarding intergroup differences, structure–function relationships, and the association between condylar parameters and skeletal class.

Results: Preliminary analysis indicates variations in joint space dimensions and kinematic parameters between TMD patients and controls. Trends toward associations between condylar morphology and functional measurements suggest an interdependence between joint structure and mandibular dynamics. Skeletal class appeared to influence the distribution of these alterations, without establishing causal relationships at this stage.

Conclusion: The integrated CBCT and jaw tracking approach represents a modern and objective method for assessing temporomandibular joint structure–function relationships, with potential clinical implications for diagnosis and individualized treatment planning.

Keywords: temporomandibular disorders; CBCT; jaw tracking; skeletal class; structure–function relationship

COMPARISON OF INTRAORAL SCANNING AND CONVENTIONAL IMPRESSION TECHNIQUES FOR FABRICATION OF FULL-ARCH FIXED IMPLANT DENTAL PROSTHESES

AUTHORS: ORZU NAZAROVA, DR. MĀRTIŅŠ NAMIĶIS

Background: Precise impression-taking technique is crucial for the fabrication of fixed full-arch implant-supported prostheses, as inaccuracies may compromise prosthesis fit and long-term clinical outcomes. Conventional impression techniques have traditionally been considered the standard approach; however, the increasing usage of IOS has introduced digital workflows whose accuracy in full-arch implant rehabilitation remains debated.

Methods: A literature review was conducted in order to analyse and compare conventional impression techniques and intraoral scanning methods used for the fabrication of fixed full-arch implant-supported prostheses. Relevant studies were identified through electronic database searches and were selected based on predefined inclusion criteria focusing on impression accuracy, clinical outcomes, and workflow characteristics.

Results: The reviewed literature indicated that conventional impression-taking techniques, particularly splinted open-tray methods using elastomeric materials, demonstrate high reliability and accuracy for full-arch implant cases. IOSs offer advantages such as improved patient comfort, reduced chairside time, and enhanced digital workflow; however, their accuracy may be affected by factors including arch length, scanner technology, implant angulation, scan body design, and scanning protocol. Recent technical advancements have shown potential to improve digital impression accuracy, though results remain inconsistent across studies.

Conclusion: Both conventional and digital impression techniques are currently used for full-arch fixed prosthesis fabrication. Conventional impressions remain the most predictable approach, while IOS serves as a viable alternative in selected clinical situations when appropriate protocols are applied. Further well-designed clinical studies are required to establish standardized digital workflows and evaluate the long-term outcomes.

Keywords: intraoral scanners; implant-supported fixed prosthesis; full-arch impressions; conventional impressions; digital workflow

TRANSPORTATION AND CENTERING ABILITY OF PROTAPER NEXT AND XP-ENDO SHAPER IN DIFFERENT CANAL CURVATURES

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Introduction: Successful endodontic treatment requires proper cleaning and shaping of the root canal while preserving its original anatomy. During instrumentation, canal transportation may occur, especially in curved canals, potentially compromising the treatment outcome. Nickel–titanium rotary systems such as ProTaper Next and XP-Endo Shaper are designed with different abilities and working methods to counteract these problems. This study aims to put those abilities to the test.

Aim: The aim of this study to evaluate the transportation and centering ability of ProTaper Next and XP-Endo Shaper rotary files in 30 and 60° curved root canals.

Materials and methods: Fifty acrylic blocks were used in this study. 24 acrylic blocks with 30 degree curvature, and 24 acrylic blocks with 60 degree curvature root canals were included in the study. The length of the samples was standardized to 19mm. The initial root canal diameter was manufactured to be compatible with 15.02 files. The samples were divided into 2 subgroups according to the instrumented rotary systems. In group 1, 30° curved canals were instrumented with ProTaper Next rotary file (Dentsply, Switzerland) to size F3. In group 2, 30° curved canals were instrumented with XP-Endo Shaper. In group 3, 60° curved canals were instrumented with ProTaper Next rotary file (Dentsply, Switzerland) to size F3. In group 4, 60° curved canals were instrumented with XP-Endo Shaper. Canal patency was maintained through recapitulation and irrigation with 2 ml of 5.25% sodium hypochlorite (NaOCl) throughout the canal preparation. The canals were dried completely with matching paper points. Dried root canals were stained with methylene blue. Images of one 30° and one 60° curved unprepared root canals and 48 prepared root canals were taken under an operating microscope at x4 magnification.

Measurements were made at 0, 3 and 5 mm by superimposing the images of un-instrumented and instrumented canals. Statistical analyses were done NCSS (Number Cruncher Statistical System) 2007 Statistical Software (Utah, USA).

Results: Although there was no difference between ProTaper Next and XP-Endo Shaper file systems, they caused more transportation at 60° curved canals (45–46%) than at 30° curved (30–20%). According the measurements from inner and outer wall of the root canal done for centering ability, at 5mm there is no statistical difference between both files in 30° and 60° curved canals ($p < 0.05$).

Conclusions: In curved canals, such as 60 degrees, the selection of the file should be made by taking into account the metallurgy and taper of the file due to the transportation risk. In future comparative studies, using files with different metallurgy are needed.

Keywords: centering ability; transportation; ProTaper Next; XP-Endo Shaper

COMPARATIVE ANALYSIS OF POLYMERIZATION SHRINKAGE IN BULK-FILL COMPOSITE RESINS: A LITERATURE REVIEW

AUTHORS: KRYŠTOF ROZKOŠNÝ

Introduction: Bulk-fill composite resins are widely used in modern restorative dentistry. Like conventional composites, they consist of an organic matrix (e.g., Bis-GMA, TEGDMA) and inorganic fillers. During light-curing, monomers form polymers, causing a volume reduction known as polymerization shrinkage. This contraction leads to marginal gaps (0.2–3 µm), microleakage, and potential tooth fractures. This review synthesizes data from selected studies to evaluate whether bulk-fill resins truly minimize these risks compared to conventional materials.

Aim: This review evaluates the shrinkage behaviour of bulk-fill resins compared to conventional composites and identifies key clinical factors influencing this process.

Materials and methods: This literature review analysed four core studies published between 2018–2024. Studies were selected based on their focus on volumetric shrinkage (Archimedes' principle/bonded-disk methods) and the impact of curing protocols. The analysis compared 4 mm bulk placement versus incremental techniques (horizontal, vertical, oblique) and standard versus high-intensity light-curing.

Results and discussion: The synthesis of the analysed data reveals three critical findings:

- Viscosity and filler impact: A clear hierarchy exists — flowable bulk-fills exhibit higher volumetric shrinkage (up to 4.5%) than packable versions (approx. 1.5–2.5%) due to lower filler loading.
- Curing dynamics: High-intensity modes (3000 mW/cm²) do not necessarily increase final shrinkage volume, but they significantly accelerate the rate of stress development, which may compromise the adhesive interface during the initial setting.

Conclusions: Bulk-fill resins provide acceptable clinical results with shrinkage values (1.5–5%) comparable to conventional composites. However, they are not a universal solution. To ensure long-term marginal integrity, clinicians should still prefer incremental layering in high C-factor cavities and remain cautious with ultra-fast curing protocols that may prioritize speed over stress relaxation.

Keywords: bulk-fill resin; light-curing; polymerization shrinkage; filler content; incremental layering

STRESS AS A RISK FACTOR FOR TEMPOROMANDIBULAR JOINT DYSFUNCTION

AUTHORS: MARIAM UTMELIDZE

Introduction: Stress is a complex psychophysiological response to various stressors, mediated by interactions between the nervous and endocrine systems, primarily through activation of the hypothalamic–pituitary–adrenal (HPA) axis. Increased secretion of glucocorticoids, particularly cortisol, and catecholamines leads to muscle hypertonicity and altered pain perception. Prolonged stress may result in neuroendocrine imbalance, significantly affecting the maxillofacial region. Temporomandibular disorders (TMD) are multifactorial conditions characterized by pain, joint sounds, and functional limitations. Consequently, psychological stress is recognized as a significant contributing factor.

Aim: The aim of this study was to evaluate the impact of psychological stress on temporomandibular joint dysfunction, with particular focus on its clinical manifestations and stress-induced parafunctional habits.

Materials and methods: This study combined a review of scientific literature with a questionnaire-based survey. The survey was conducted among individuals aged 13–25 years, a population particularly vulnerable to psychological stress due to academic, social, and emotional challenges. Participants were asked about stress-related symptoms, parafunctional habits such as bruxism and clenching, and clinical signs of temporomandibular joint dysfunction, including joint clicking, muscle tension, and discomfort during mandibular movements. Relevant literature was also reviewed to examine the physiological mechanisms linking stress to TMD, with particular focus on muscle hyperactivity and increased joint loading.

Results: The findings demonstrated a strong association between stress and temporomandibular joint dysfunction. More than 50% of participants reported increased masticatory muscle tension during stress. Common clinical manifestations included joint clicking, TMJ pressure sensation, and parafunctional habits such as clenching. A review of the literature indicated that stress-induced bruxism contributes to increased mechanical loading of the joint, leading to structural changes such as disc displacement, deformation, and inflammation. Awake bruxism, characterized by sustained muscle contraction, appeared particularly harmful given that it exerts continuous pressure on joint structures. This effect is especially pronounced because the masticatory muscles are among the most active in the human body, and even small changes in neural impulses can lead to their hypertonicity.

Conclusion: Psychological stress plays a significant role in the development and progression of temporomandibular joint dysfunction. Neuroendocrine changes, increased muscle activity, and parafunctional habits collectively contribute to the severity of TMD symptoms. Early identification and management of stress-related factors, combined with a multidisciplinary approach, may enhance patient outcomes. Therefore, integrating an overall evaluation into dental practice is recommended for more effective diagnosis and treatment.

ONLINE HEALTH INFORMATION AND MISINFORMATION AND THEIR INFLUENCE ON ORAL HEALTH BEHAVIOURS AND DENTAL TREATMENT DECISIONS AMONG DENTAL STUDENTS AND DENTAL PROFESSIONALS: A CROSS-SECTIONAL STUDY

AUTHORS: ELIF NAZAN YESEVI, RADMILA DIMOVSKA

Introduction: With the rapid development of digital technology and the widespread smartphone use, the internet and social media have become primary sources of health information in everyday life. In oral health, individuals often rely on online content before consulting a professional. While digital platforms provide quick and easy access to knowledge, they also present a risk by spreading inaccurate or misleading content. Dental students and dental professionals are frequent users of these resources, which makes it essential for them to critically evaluate the information they encounter. As future and current providers of oral healthcare, they carry the responsibility of delivering accurate, evidence-based information to patients.

Aim: The aim of this study was to assess whether dental students and dental professionals in the Republic of North Macedonia are aware of the presence of misinformation on the internet and to evaluate how cautiously they approach such information.

Materials and methods: A cross-sectional study was conducted using a structured questionnaire consisting of 35 questions, distributed to dental students and dental professionals at the International Balkan University. The questionnaire was divided into seven sections: (I) demographic and background information, (II) use of online health information, (III) level of trust in online sources, (IV) exposure to misinformation, (V) influence on oral health behaviour, (VI) psychological and aesthetic influence, and (VII) impact on treatment decisions. A total of 104 participants completed the survey.

Results: A total of 104 participants completed the survey (73 female, 31 male). Most participants reported frequent use of social media for oral health information, with 54 reporting "often" and 34 "very often". 85.58% of participants reported using search engines to obtain dental information. Trust in online content was generally neutral (n=53); however, many encountered conflicting (n=71) and misleading content (n=73), and 83 doubted its accuracy. Notably, 65 participants did not rely solely on online sources before consulting a dentist. Online content influenced behaviour, with over half trying dental products discovered online (n=58), and 57 participants reported that online information had changed their daily oral hygiene routine. Responses on dental aesthetics were mixed, though many showed increased interest in cosmetic treatments (n=66). Nearly half (n=49) reported that online information affected their decision to visit a dentist, but most (n=61) verified it with a professional.

Conclusion: Online health information significantly influences dental students and professionals, offering easy access but also exposing users to misinformation. Most participants were aware of this risk and approached online content cautiously. Digital material, especially on dental aesthetics, still impacts decisions and perceptions. These findings underscore the need to strengthen critical evaluation skills in dental education and promote evidence-based practice, enabling future professionals to navigate digital information responsibly and maintain high standards of patient care.

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SOCKET-SHIELD: A PREDICTABLE SOLUTION FOR MANAGING TOOTH LOSS IN THE AESTHETIC ZONE

AUTHORS: LENA SOBIECH, PAULINA ADAMSKA, DOROTA PYLIŃSKA-DĄBROWSKA

Introduction: The socket-shield technique (SST) involves partial extraction of a tooth, preserving the buccal fragment of the root within the socket. This approach maintains the periodontal attachment apparatus and helps prevent resorption of the buccal bone plate. SST is considered one of the most effective methods for minimizing post-extraction bone loss and gingival recession. Preservation of the alveolar ridge contour in the aesthetic zone remains a significant clinical challenge, particularly in the anterior maxilla, where the buccal bone is prone to rapid resorption following loss of vascular supply. This process may compromise the aesthetic outcome and long-term stability of implant-supported restorations. Retaining a portion of the tooth root may support both hard and soft tissue preservation. This case report describes the treatment of a 29-year-old female patient with a fractured crown of tooth 21, managed with immediate implant placement using the socket-shield technique and immediate provisionalization with the patient's own crown.

Aim: This case report aims to evaluate the efficiency of the socket-shield technique in maintaining the alveolar crest contour and reducing gingival recession.

Materials and methods: A 29-year-old woman presented with a fractured maxillary left central incisor (tooth 21). The patient was in good general health and had no relevant comorbidities. The affected tooth had previously undergone endodontic treatment. The patient was qualified for immediate implant placement combined with the socket-shield technique. Following surgery, a provisional crown was fabricated using the patient's natural tooth.

Results and conclusion: The surgical procedure was successful, with no complications observed. A one-year follow-up demonstrated stable alveolar crest contour and satisfactory soft tissue conditions. The socket-shield technique appears to be an effective method for preserving alveolar ridge architecture and minimizing gingival recession in the aesthetic zone.

Keywords: socket-shield technique; aesthetic zone; immediate implant placement; immediate restoration; case report

PRESERVATION OF PULP VITALITY IN MAXILLARY MOLARS VIA A VITAL ROOT RESECTION PROTOCOL: A CASE SERIES

AUTHORS: BRINA ZAVRŠNIK, JERNEJ LUDVIG, ALEŠ FIDLER, ROK GAŠPERŠIČ

Introduction: Severely furcation-involved maxillary molars (Class II and III) have traditionally been treated with regenerative techniques or root resection following root canal therapy. However, there is a lack of cases treating interproximal furcations, while prior endodontic treatment may weaken tooth structure and increase fracture. Recent advances have enabled a novel approach combining pulpotomy with subsequent root resection, preserving pulp vitality in adjacent roots and maintaining structural integrity. Studies by Jepsen et al. (2020) and Ciardo et al. (2024) report 100% survival of treated teeth over follow-ups up to seven years, demonstrating efficacy of this method compared with conventional endodontic approaches.

Aim: To evaluate pulp vitality preservation in remaining roots of severely furcation-involved maxillary molars following a vital root resection protocol combining pulpotomy and selective root removal.

Materials and methods: Treatment begins with deep pulpotomy and coverage of root canal orifice using calcium silicate-based material (Biodentine). Pulpectomy of one root is performed with chemo-mechanical preparation of canal and obturation. Access cavity is sealed and a healing period of four weeks must be ensured before surgical intervention. Vital root resection is performed through an intrasulcular incision and elevation of full-thickness mucoperiosteal flap, preserving interdental papilla. Buccal bone overlying the affected root is selectively removed to expose the furcation, and a root is resected with perpendicular cut below the furcation fornix and an oblique cut near the cementoenamel junction, followed by smoothing of the tooth surface.

Osteoplasty and ostectomy are performed to optimize anatomical conditions, followed by scaling and root planning to remove all granulation tissue. Tension-free primary closure is achieved using periosteal releasing incisions and sling sutures. Success was evaluated at an average of 12.2 months post-resection of disto-buccal root in 12 maxillary molars (9 patients). We evaluated pulp sensitivity of remaining roots at the gingival recession sites with electric pulp test Elements Diagnostic Unit (SybronEndo, Glendora, CA, USA; apex locator in electric pulp test – EPT), and cold test with butane–propane mixture M+W Select Kältespray (M+W Dental, Büdingen, Germany). Sensitivity was assessed as positive or negative, with sensitivity threshold evaluated using EPT on a scale from 0 to 80.

Results: Positive cold responses were observed in 10/12 teeth (16/22 roots), with six teeth showing sensitivity in both roots and four in one root, while 2 teeth were completely unresponsive. EPT responses were detected on all teeth (21/24 roots), with thresholds ranging from 6 to 80 (average 30 per tooth and 31 per root). Only three roots were non-responsive to both tests.

Conclusion: Vital root resection therapy facilitates oral hygiene and supports long-term tooth preservation, representing a promising alternative to conventional treatment strategies for severely furcation-involved molars. High percentage of the preserved root sensitivity proves the procedure's success. It offers lower invasiveness, preservation of tooth vitality, reduced fracture risk, as well as cost-effectiveness. Future research could focus on more objective pulp vitality testing, such as dental pulp pulse oximetry, laser Doppler blood flow measurement, or MR imaging of the dental pulp.

Keywords: furcation-involved maxillary molars; vital root resection; pulpotomy; sensitivity testing; pulp vitality

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LINEAR IGA DISEASE CONFINED SOLELY TO THE ORAL CAVITY

AUTHORS: NIKOLINA SMAJKAN, DR. MED. DENT. ANA GLAVINA

Introduction: Linear IgA disease (LAD) is a rare subepidermal autoimmune disease characterised by predominant or exclusive deposits of immunoglobulin A (IgA) along the basement membrane (BM) zone of the skin and/or oral mucosa, with limited treatment options. The clinical significance of this case report lies in the unusual presentation of the disease confined solely to the oral cavity.

Aim: To present a case of LAD that was initially misdiagnosed, and to highlight the importance of obtaining a second opinion in complex mucosal lesions, based on the evaluation of an 87-year-old female patient at the Department of Dental Medicine in Split, Croatia.

Materials and methods: Her medical history included hypertension, atrial fibrillation, ulcerative colitis (UC), kidney cysts, chronic renal failure (CRF) without proteinuria, and cervical spondylosis. She was taking apixaban (2 × 2.5 mg) and a calcium channel blocker (10 mg). Clinically, there were extensive erosions covered with a fibrin membrane on the right and left buccal mucosa and the soft palate mucosa. An otolaryngology specialist identified similar lesions during fibre-endoscopic examination of the larynx, hypopharynx, and interarytenoid region. She was initially treated for oral lichen planus (OLP) from 2019 to 2022, after which bullous pemphigoid (BP) was suspected. A biopsy of the left buccal mucosa was performed for pathohistological diagnosis (PHD) and direct immunofluorescence (DIF). The PHD showed stratified squamous epithelium, with only a basal layer present on a small part of the surface, and a moderate mononuclear infiltrate in the underlying well-vascularised stroma.

DIF revealed a linear, strongly expressed (3+) IgA deposit and a moderately expressed (2+) C3 deposit at the junction of the epidermal zone and BM. No deposits of IgG, IgM, C1q, or C4 were detected. No circulating antibodies to pemphigus or BP were detected by indirect immunofluorescence (IIF).

Results: Treatment with systemic prednisone at a maximum dose of 60 mg and local topical corticosteroid therapy with betamethasone was attempted without effect, and a significant cushingoid habitus developed. Subsequently, after consultation with an oral medicine specialist, the diagnosis of LAD was made. Treatment with dapsone (maximum 200 mg) and doxycycline (100 mg) was initiated once daily. There was significant improvement in the oral cavity, but side effects, specifically dapsone-induced haemolytic anaemia, developed, necessitating discontinuation of dapsone. A dermatovenerologist was consulted, and systemic therapy was subsequently initiated with prednisolone 35 mg daily and doxycycline 200 mg daily. Additionally, topical therapy containing tacrolimus (0.1% in orabase), together with a chlorhexidine antiseptic, was introduced twice daily.

Conclusions: The diagnosis of LAD was based on DIF findings, which are considered the gold standard. The PHD findings also showed features consistent with LAD. IIF may be negative in up to 30% of patients. This rare disease is more common in patients with inflammatory bowel disease (IBD), likely due to the pathophysiological mechanism of autoantibody accumulation, particularly in those with a history of UC. This case report highlights the importance of a multidisciplinary approach involving oral medicine, dermatovenereology, and otorhinolaryngology, which is significant for the diagnostic and therapeutic management of such rare clinical cases.

Keywords: linear IgA disease, LAD; autoimmune blistering disease; isolated oral manifestation; direct immunofluorescence, DIF; dapsone-induced haemolytic anaemia; prednisolone; tacrolimus

LONG-TERM ORTHODONTIC MANAGEMENT OF A PATIENT WITH OCULOFACIOCARDIODENTAL (OFCD) SYNDROME: A CASE REPORT

AUTHORS: MUHAMMED ABDÜLKADIR ELBOZAN, PROF. DR. ERHAN ÖZDILER

Introduction: Oculofaciocardiodental (OFCD) syndrome is a rare genetic multisystem disorder characterized by ocular, facial, cardiac (frequently congenital septal defects), and dental anomalies (Gorlin et al., 1996). The most pathognomonic dental feature is severe radiculomegaly (extremely long dental roots), alongside delayed eruption and oligodontia. Orthodontic management of these patients presents unique biomechanical challenges; the massive root surface area significantly increases resistance to tooth movement, making standard mechanics difficult and raising the risk of cortical fenestration. As emphasized in the literature, successful orthodontic alignment in OFCD requires highly controlled mechanics to prevent root shortening or ankylosis (Altug-Atac et al., 2007).

Aim: The aim of this case report is to present the comprehensive, long-term orthodontic treatment of a female patient with OFCD syndrome, highlighting the systemic background, the biomechanical advantages of early intervention on anchorage control, and longitudinal outcomes over a 7-year follow-up period.

Materials and methods: A female patient, initially presenting at 11 years of age, required orthodontic intervention for severe malocclusion. Her medical history perfectly aligned with the OFCD spectrum: she had a history of cardiac surgery at a university hospital (Hacettepe University) for an atrial septal defect (ASD), though she is currently hemodynamically stable without medication. Ocular manifestations included microcoria and a refractive error of 4.5 diopters. The comprehensive fixed orthodontic treatment was conducted at a private orthodontic practice. Early intervention was strategically initiated to overcome the anticipated difficulties in tooth movement associated with OFCD.

In accordance with established orthodontic guidelines for radiculomegaly, a customized biomechanical protocol employing continuous, light forces was utilized to align the dentition while preserving periodontal integrity and avoiding root resorption.

Results: Following the active treatment phase, successful dental alignment and a functional occlusion were achieved. The early initiation of treatment proved highly beneficial: the developing radiculomegaly did not hinder tooth movement. Instead, the exceptionally long roots paradoxically provided excellent anchorage values throughout the therapy, preventing unwanted reciprocal movements. The control radiographs obtained at age 18 (7 years post-initial records) demonstrated excellent stability. The extreme root lengths were maintained without any radiographic signs of apical root resorption or periodontal breakdown.

Conclusions: While radiculomegaly in OFCD syndrome typically complicates orthodontic tooth movement due to increased resistance, early intervention is a critical success factor. Starting treatment at a young age facilitates favorable biomechanical responses and allows the massive roots to serve as stable anchorage rather than an obstacle. With tailored light-force mechanics, comprehensive systemic understanding, and long-term monitoring, stable esthetic and functional outcomes can be successfully attained.

SUBPERIOSTEAL IMPLANT FOR REHABILITATION OF A SEVERELY ATROPHIC MANDIBLE WITH EXTREME ANATOMICAL LIMITATION: A CLINICAL CASE REPORT WITH 4-YEAR FOLLOW-UP

AUTHORS: AMIRREZA GHARAEI, HOSSEIN GHARAEI

Introduction: Rehabilitation of patients with severe mandibular atrophy remains a major challenge in implant dentistry. Despite advances in augmentation techniques, a subset of patients remains unsuitable for conventional implant therapy due to extreme bone resorption and anatomical limitations. In such cases, procedures including bone grafting, short implants, and inferior alveolar nerve lateralization or repositioning may be associated with high surgical risk or may not be feasible. Subperiosteal implants, reintroduced with modern digital technologies and advanced biomaterials, provide a patient-specific alternative for managing these complex clinical scenarios.

Aim: To present the clinical application and long-term outcome of a digitally designed subperiosteal implant for rehabilitation of a severely atrophic mandible with extreme anatomical limitation, where conventional treatment options were not feasible.

Materials and methods: A 66-year-old patient presented with severe mandibular atrophy, unstable prosthesis, and significant functional impairment, including inability to chew and speak effectively. Medical CT imaging revealed advanced bone resorption with insufficient bone volume and critically limited anatomical space, precluding augmentation procedures and conventional endosteal implant placement. Bone grafting, short implants, and inferior alveolar nerve lateralization or repositioning were considered; however, these approaches were deemed unsuitable due to limited anatomical space, high surgical risk, potential complications including lower lip and chin paresthesia or permanent sensory deficits, and lack of patient acceptance.

A fully digital workflow was implemented, including CT-based planning, virtual design, and fabrication of a patient-specific titanium (grade 23) subperiosteal implant using selective laser melting (SLM) technology. Surgical placement was performed via mucoperiosteal flap elevation, ensuring precise adaptation of the framework to the mandibular surface. Prosthetic rehabilitation was completed using a cement-retained fixed prosthesis supported by six abutments.

Results: Postoperative healing was uneventful, with no intraoperative or postoperative complications. Functional rehabilitation was achieved following prosthetic delivery, with restoration of mastication, speech, and oral comfort. Over a 4-year follow-up period, no implant exposure, peri-implant inflammation, soft-tissue complications, prosthetic loosening, or mechanical failure were observed. Radiographic assessments demonstrated stable implant positioning with no evidence of bone pathology or progressive bone loss. The fixed prosthesis remained stable and fully functional throughout the follow-up period. Patient satisfaction was assessed clinically and remained consistently high.

Conclusions: Subperiosteal implants represent a predictable and effective treatment option for rehabilitation of severely atrophic mandibles in cases with extreme anatomical limitation where conventional approaches are not feasible. The integration of medical CT-based planning, digital design, and selective laser melting technology enhances precision and clinical outcomes. These findings support the renewed role of subperiosteal implants as a viable solution in carefully selected complex cases, emphasizing the importance of individualized, evidence-based treatment planning.

Keywords: subperiosteal implant; atrophic mandible; extreme anatomical limitation; digital implantology; medical CT; selective laser melting

DIGITAL-GUIDED PERIODONTAL AND PROSTHODONTIC REHABILITATION FOR ALTERED PASSIVE ERUPTION IN THE MAXILLARY DENTITION: A CASE REPORT

AUTHORS: MARIAM JINCHARADZE, PAATA JINCHARADZE

Introduction: Altered passive eruption (APE) is a developmental condition characterized by incomplete apical migration of the gingival margin, resulting in excessive soft-tissue coverage of anatomical crowns and reduced clinical crown height. This condition can compromise both aesthetics and function, particularly in maxillary dentition. Successful management of APE often requires a multidisciplinary approach integrating periodontal surgery, prosthodontic planning, and digital workflows to restore proper tooth proportions and smile harmony.

Aim: To present a multidisciplinary, digital-guided approach for aesthetic rehabilitation of APE affecting multiple maxillary teeth using conventional gingivectomy and staged prosthodontic restoration.

Materials and methods: A 33-year-old female presented with aesthetic concerns due to APE affecting teeth 11–16 and 21–26. Pre-surgical intraoral scanning was performed three days before gingivectomy to enable fabrication of the initial 3D-printed provisional crowns in advance. Minimal tooth preparation was performed on the day of surgery to allow optimal seating of the first temporaries and support gingival shaping. Periodontal correction was achieved via conventional scalpel gingivectomy with papillary dissection and repositioning to preserve interdental papillae. No osseous recontouring was required. Post-surgical management involved staged provisionalization: bis-acryl temporary crowns were initially placed immediately after minimal preparation, replaced the following day with 3D-printed temporaries, and after two weeks, intraoral scanning was performed for definitive crown fabrication while temporaries were reinserted.

Modifications of provisional crowns over three months facilitated optimal gingival contouring. Definitive restorations consisted of layered Noritake zirconia crowns fabricated on 3D-printed frameworks. Crowns were temporarily cemented and subsequently permanently cemented using GC Fuji glass ionomer. Follow-up evaluation was performed two months post-treatment.

Results: Staged provisionalization combined with pre-surgical digital planning enabled controlled gingival adaptation and stable, symmetrical contours. Final zirconia restorations restored clinical crown height, proper tooth proportions, and significantly enhanced smile aesthetics.

Conclusions: APE can be successfully managed through a multidisciplinary approach integrating conventional gingivectomy, digital prosthetic planning, and staged provisional restorations. Pre-surgical scanning and precise soft-tissue management are essential for predictable aesthetic outcomes.

Keywords: altered passive eruption; gingivectomy; provisional restorations; zirconia crowns; digital dentistry; aesthetic prosthodontics

MINIMALLY INVASIVE GUIDED APICOECTOMY USING A 3D-PRINTED SURGICAL GUIDE – CASE REPORTS

AUTHORS: PIOTR NIEKRA, PAULINA ADAMSKA

Introduction: Apicoectomy is a standard oral surgical procedure considered a last-resort treatment for preserving a tooth with a periapical lesion that cannot be managed with endodontic therapy. The goal of apical surgery is to prevent bacterial leakage from the root canal system into the periradicular tissues. This is achieved by root end resection followed by tight filing with materials promoting hard tissue regeneration such as MTA. With advancement of surgical guides, they also became present in endodontic surgery. Major part of the treatment is based on the beforehand planning with use of intraoral scans superimposed on cone beam computer tomography (CBCT). Planning is based on accurate positioning of the planned osteotomy to include the entire root apex while avoiding critical neurovascular structures (e.g., the mandibular canal or mental foramen).

Aim: Aim of this work was to present the possibilities of guided apicoectomy, procedures and potential advantages over the freehand method.

Materials and methods: Two generally healthy patients were presented to the Division of Oral Surgery at the Medical University of Gdańsk for consultation. The patients were aged 36 and 21 years. A clinical interview, physical examination, CBCT and intraoral scans were performed. Both patients were qualified for guided apical surgery. The position of the osteotomy was planned using the BlueSkyPlan software. The surgical guide was printed using an Anycubic Photon S 3D printer with NextDent SG resin. A full-thickness mucoperiosteal flap was elevated adjacent to the affected tooth, and the surgical guide was seated to determine the planned osteotomy site and depth.

The osteotomy was performed with a trephine bur through the guide sleeve. The periapical lesion was curetted and the surgical site was debrided. The apical 3 mm of the root was resected with a fissure bur. Root-end preparation was performed ultrasonically to create a centered cavity aligned with the original canal, then irrigated and dried. Retrograde MTA filling was performed in one case, the other case required no retrofilling due to prior orthograde MTA obturation. The mucoperiosteal flap was repositioned and sutured for primary closure with absorbable sutures.

Results: Patients who underwent guided apical surgery reported no further complications, and follow-up radiographs demonstrated appropriate bone healing.

Conclusions: Guided apicoectomy is safe and effective method used for treatment of periapical lesions. It becomes especially helpful in clinically critical situations, with limited access or anatomical difficulties. Moreover, the accuracy of this method is significantly increased due to fixation of both the position and the angulation of apicoectomy.

Keywords: guided apicoectomy; 3D-printed surgical guide; periapical lesion; apical surgery; endodontic microsurgery

CONSERVATIVE ANTERIOR TOOTH REPLACEMENT USING A NATURAL TOOTH PONTIC AND ADHESIVE MARYLAND BRIDGE IN A PERIODONTALLY COMPROMISED PATIENT: A CASE REPORT

AUTHORS: PAPANASTASIOU JOANNA, TSOVOS MINAS, FOSTIROPOULOU MARIA, PAPPA EFTYCHIA

Introduction: Replacement of a tooth in the maxillary anterior region presents significant aesthetic and functional challenges, especially in patients with periodontal disease. Although implant placement is frequently considered for single-tooth replacement, anatomical limitations, compromised bone support, or the desire to avoid additional surgical procedures may favor alternative restorative options. Adhesive prosthetic solutions such as Maryland bridges represent a minimally invasive option that preserves adjacent tooth structure and facilitates oral hygiene.

Aim: To present a conservative, minimally invasive approach for anterior tooth replacement as an alternative to more extensive surgical treatment protocols in a periodontally compromised patient.

Materials and methods: In a 65-year-old patient, the right lateral incisor was characterized as hopeless due to extensive periodontal disease. Following tooth extraction, a 2-wall socket defect was observed, with more than 50% buccal and palatal bone loss. Socket management included the placement of a connective tissue graft buccally and filling of the post-extraction socket with xenograft covered by a collagen sponge. The extracted tooth was modified to create an ovate pontic extending approximately 2 mm into the post-extraction socket to support soft tissue contours. After minor adjustments with composite resin, the natural tooth pontic was bonded to a Rochette bridge metal framework. Bonding to the framework was performed using a dual-cure resin cement. The bridge was then adhesively cemented to the adjacent teeth, providing immediate provisional rehabilitation.

Following soft tissue maturation, shade selection was performed and tooth #13 was prepared for a single-wing Maryland bridge replacing tooth #12. To keep the preparation of tooth #13 intact during the interval between impression and delivery of the definitive restoration, the Rochette bridge was modified by excluding the wing on tooth #13. The definitive Maryland prosthesis was fabricated with a zirconia framework and buccal porcelain layering. An acrylic key was constructed to ensure accurate positioning during cementation. The zirconia surface was conditioned with air abrasion, followed by the application of ceramic primer. Tooth #13 was conditioned with air abrasion, followed by phosphoric acid etching and application of tooth primer. The restoration was adhesively cemented with dual-cure resin cement under rubber-dam isolation, and final polymerization was completed under glycerin gel.

Results: Soft tissue contours remained stable, preserving the mesial and distal papilla height and maintaining the emergence profile created by the ovate pontic. Following placement of the definitive Maryland prosthesis, the aesthetic integration of the restoration and the peri-prosthetic soft tissue architecture were maintained. The restoration maintained functional stability, achieving satisfactory esthetics and facilitating effective oral hygiene.

Conclusions: A conservative adhesive approach using a natural tooth pontic followed by a definitive Maryland bridge may represent an effective treatment option for anterior tooth replacement in periodontally compromised patients. Compared with implant placement and conventional full-coverage fixed dental prostheses, this approach avoids additional surgical procedures, requires minimal tooth preparation, preserves enamel for adhesive bonding, and facilitates plaque control. These characteristics are particularly beneficial in patients with periodontal disease, where preservation of tooth structure and maintenance of periodontal health are critical for long-term success.

Keywords: soft tissue preservation; socket management; natural tooth pontic; Maryland bridge; periodontal disease

COMPLEX NASO-ORBITO-ETHMOID AND ORBITAL FRACTURES AFTER EQUINE FACIAL TRAUMA IN A 14-YEAR-OLD GIRL

AUTHORS: GEORGS ALBERTS PIMANOVS, ĢIRTS ŠALMS

Introduction: Horse riding and handling pose a high risk of severe facial injury due to the horse's size and unpredictable nature. A single kick from a horse's hoof can generate a force exceeding 10,000 N, often resulting in serious injuries to riders and handlers. Recent publications confirm that equestrian accidents frequently lead to complex maxillofacial injuries, most commonly zygomaticomaxillary complex and other midface fractures, in both mounted and unmounted riders. Naso-orbito-ethmoid fractures in pediatric patients are relatively uncommon, and since these injuries can disrupt the medial canthal tendon and orbital walls, reconstruction is particularly challenging.

Aim: To present a rare pediatric case of midfacial trauma involving the naso-orbito-ethmoidal region and orbit after equine injury, and to emphasize the diagnostic and therapeutic challenges of combined skeletal and periocular soft-tissue damage in a growing patient.

Materials and methods: A 14-year old girl was presented with severe facial trauma after a direct horse kick to the face. Upon admission, she was conscious and hemodynamically stable. Examination revealed left-sided facial swelling, periorbital ecchymosis, and a 3 cm laceration on the left cheek. Vision was intact, but the patient reported diplopia on upward gaze. CT imaging demonstrated comminuted nasal bone fractures with likely involvement of the naso-orbito-ethmoid complex and associated left orbital wall injuries. Multidisciplinary evaluation included maxillofacial and ophthalmologic assessment, followed by operative treatment and postoperative clinical and radiological follow-up.

Results: Open reduction and internal fixation of the left zygomatic region was performed via a subciliary approach using one titanium microplate and five screws, together with nasal bone repositioning and anterior nasal packing. Postoperatively, facial contour and skeletal support were restored, but the patient continued to experience binocular diplopia on upward gaze postoperatively. Ophthalmologic evaluation also documented severe left periorbital and ocular contusion, exotropia, lower eyelid ectropion, lagophthalmos, and reduced convergence. Conservative ocular treatment included lubricating drops, Fresnel prisms, and ocular motility exercises. Follow-up CT after 2 weeks post-surgery confirmed stable reduction without indication for repeat surgery after careful clinical and radiological reassessment. Subsequent follow-up also revealed left canthal ligament avulsion, and referral for physical therapy was recommended to reduce edema and improve scar tissue mobility.

Conclusions: Equine trauma may result in complex pediatric fractures with orbital involvement requiring close coordination between maxillofacial surgeons and ophthalmologists. In this case, surgical stabilization restored the facial framework, whereas persistent diplopia and periocular soft-tissue sequelae required continued conservative management. Early multidisciplinary treatment and follow-up are essential to optimize both functional and esthetic outcomes in growing patients.

Keywords: equine facial trauma; pediatric naso-orbito-ethmoid fracture; pediatric orbital fracture; diplopia

ORAL REHABILITATIONS WITH IMMEDIATE LOADED POST-EXTRACTIVE IMPLANTS FOLLOWING RADIOTHERAPY OF THE HEAD AND NECK DISTRICT

AUTHORS: GAIA PROPERZI, C. MARIANGELONI, PROF. G.L. MASCOLO

Introduction: Oral rehabilitation in patients previously exposed to high-dose radiotherapy of the head and neck district remains one of the most complex challenges in implant dentistry and oral surgery. Radiation doses ≥60 Gy induce long-term tissue alterations: mucositis, dysphagia, xerostomia, dental caries, trismus, hypoxia, hypovascularization, and hypocellularity. These biological changes increase the risk of osteoradionecrosis (ORN) and frequently discourage implant placement. Consequently, treatment options reported in the literature are often limited to removable prosthetic rehabilitation, which may be functionally inadequate and psychologically burdensome, particularly for young patients.

Aim: This study reports a young patient who underwent full-arch oral rehabilitation with immediate loading post-extraction implants following high-dose head and neck radiotherapy. Post-radiotherapy complications were managed through a targeted pharmacological and surgical protocol that achieved bone revitalization, enabling extraction of the remaining teeth, implant post-extractive immediate load placement, and rehabilitation with implant-supported fixed prostheses, resulting in restored function, aesthetics, and improved quality of life.

Materials and methods: A young female patient previously treated for right maxillary alveolar rhabdomyosarcoma underwent intensive oncologic therapy during childhood consisting of multi-agent chemotherapy followed by bilateral craniofacial radiotherapy (total dose: over 60 Gy). Long-term sequelae included microcephaly, xerostomia, marked hypovascularization (particularly affecting the oral tissues), multiple dental agenesis, maxillary growth deficiency, orofacial dysfunction, and severe root resorption which led to extreme mobility of the remaining teeth.

The patient experienced profound psychosocial distress related to the instability of her dentition, which severely limited social interaction and daily activities. A preoperative pharmacological protocol was therefore administered for one month in order to biologically condition the irradiated bone. The regimen included Pentoxifylline (1200 mg/day), α-tocopherol (400 mg/day), and Clodronic acid (1600 mg/day), with the aim of improving microvascularization, stimulating neoangiogenesis, and counteracting radiation-induced fibroatrophic changes. Antibiotic prophylaxis with amoxicillin-clavulanate and metronidazole was administered perioperatively. Once bone revitalization was achieved, the surgical procedure was performed. The case was planned using digital workflows. Under conscious sedation, all remaining teeth were extracted, and five implants were placed in the mandibular arch and six in the maxillary arch. Immediate post-extraction implants were inserted using surgical guides, achieving a primary stability of 45 Ncm, which allowed immediate loading. A reinforced provisional prosthesis was delivered intraoperatively, followed by placement of a definitive prosthetic restoration after six months.

Results: Following our combined surgical and pharmacological protocol, full-arch oral rehabilitation was achieved using implant-supported fixed prostheses. This approach allowed restoration of the correct vertical dimension, masticatory function, and aesthetics, resulting in a significant improvement in the patient's quality of life. Two-years radiographic follow-up demonstrated excellent implant osseointegration, with no clinical or radiographic signs of peri-implant pathology or soft tissue complications.

Conclusions: The application of this protocol provided a valid alternative to removable prosthetic rehabilitation in patients with high functional, aesthetic, and social expectations, as well as a favorable life expectancy. In the present case, the young patient reported high satisfaction with both the surgical and prosthetic outcomes. Notably, the treatment resulted in a significant improvement in self-confidence, overall quality of life, and social interaction.

Keywords: head and neck radiotherapy; implant-supported rehabilitation; osteoradionecrosis; pharmacological bone conditioning; quality of life; case report

DETAILED ANALYSIS OF PATIENTS' NEEDS AND LIFESTYLE AS A KEY TO SUCCESS IN REPLACEMENT OF MISSING TEETH AND PATIENT SATISFACTION WITH THE PROVIDED TREATMENT

AUTHORS: HANNA PUŻYŃSKA, DMD PHD MAREK PUŻYŃSKI

Introduction: A fundamental step in the treatment process is consultation with the patient, which will enable the selection of the best form of tooth replacement and minimize postoperative complications. It is crucial to consider the patient's oral hygiene, the extent of the defect, and the longevity of the restoration. Patients value maximum comfort, aesthetics, and ease of maintenance. Patients who lack the appropriate anatomy, including the appropriate thickness of the alveolar ridge, bone hardness class, and health status, and those who are unable to maintain proper oral hygiene are at a high risk of complications following implant placement, including periimplantitis or implant failure. Therefore, a denture or a bridge that can be supported by adjacent teeth and adjusted as needed may be a better solution in these cases. However, implant-supported restorations are more durable, have greater biocompatibility, and offer improved aesthetics.

Aim: This study aims to signify paying attention to patients' lifestyle during assessment of restoration of missing teeth in order to minimize post-operative complications and to maximize patients' overall satisfaction, using a single tooth restoration as an example.

Materials and methods: A 40-year-old patient presented with a single upper right first premolar missing (14). Medical history revealed proper oral hygiene and no health contraindications to the procedure. The treatment plan was formed in consultation with the prosthodontist and the periodontist. It included a single implant placement (3.5 x 13 mm) and prosthetic restoration. X-rays and CBCT scans were performed to assess the bone condition and determine the optimal implant placement site. Implant was placed subcrestally, parallel to adjacent teeth to ensure correct implant emergence profile.

Results: Patient attended regular check-ups after the procedure, the healing was uneventful. Proper osteointegration around the implants and the alveolar ridge was achieved. After 6 months following the procedure, a zirconium crown was attached, which ensured substantial patients' satisfaction with the treatment and significantly improved masticatory function, aesthetics and patients' self-confidence while speaking and smiling. Patient was also informed about maintaining proper oral hygiene as a necessary factor for long-term treatment success.

Conclusions: Patients' cooperation is a crucial element during treatment and for overall satisfaction. In order to achieve the best clinical results, it is necessary to prevent complications by focusing on the risk factors such as periodontal diseases, smoking and proper treatment plan, atraumatic implant placement technique and regular check-ups that include scaling and air polishing.

DENTAL MANAGEMENT OF MESIODENS IN A PATIENT WITH CLEIDOCRANIAL DYSOSTOSIS: A CASE PRESENTATION

AUTHORS: AMALIA SYRIOTI, FAIDRA CHATZIKALLINIKIDOU, NIKOLAOS GOGOLAS, CHRISTODOULOS LASPOS, ARGYRO KAVADELLA

Introduction: Mesiodens are the most common type of supernumerary teeth and are frequently associated with complications such as malocclusion, delayed eruption, retained primary teeth, and cystic lesions. Early diagnosis and timely surgical removal — particularly during mixed dentition — are essential to prevent eruption disturbances and minimize treatment complexity, while interdisciplinary collaboration is essential for effective management.

Aim: To present treatment considerations for mesiodens management, the factors influencing treatment planning, and the surgical removal of two mesiodens in an 11-year-old patient with cleidocranial dysostosis.

Material and methods: A nine-year-old boy initially presented to the EUC clinic for routine examination. A panoramic radiograph taken one year earlier revealed two supernumerary teeth in the anterior maxilla, and the patient was referred for interdisciplinary evaluation. Three years later, he returned for orthodontic treatment; at that time, only the lower incisors and tooth #24 had erupted. A new panoramic radiograph identified an additional supernumerary tooth in the lower right posterior region. The treatment plan included surgical extraction of the mesiodens and subsequent orthodontic eruption of the unerupted permanent incisors, while the posterior supernumerary tooth was scheduled for monitoring. Surgical removal was performed collaboratively: a pediatric dentist administered local anesthesia and applied behavioral management techniques, enabling the oral surgeon to complete the extractions. Due to difficult access, bracket placement on the permanent incisors was postponed.

Results: The patient demonstrated excellent cooperation, and postoperative healing was uneventful.

Conclusion: Timely diagnosis and management of mesiodens are critical to reducing complications and facilitating optimal eruption outcomes. Delayed intervention often necessitates combined surgical and orthodontic treatment, which may require multiple appointments and relies heavily on patient cooperation, particularly in chairside procedures.

FROM THE DENTAL CHAIR TO THE NEUROLOGIST: ACUTE BASILAR ARTERY OCCLUSION FOLLOWING VERTEBRAL ARTERY DISSECTION

AUTHORS: JORUNE EMILIJA VALAIKAITE, MARIUS KURMINAS, JURGITA VALAIKIENE

Introduction: Cervical artery dissection is an important cause of ischemic stroke in young adults. In certain circumstances, this may occur following dental procedures. We present a rare case of an acute ischemic stroke after a one-step four-wisdom tooth extraction, where vertebral artery dissection was complicated by basilar artery occlusion, which was successfully treated with mechanical thrombectomy. Further antithrombotic treatment of the vertebral artery dissection was guided using cervical color-coded duplex sonography, with a follow-up of two years.

Materials and methods: A 33-year-old healthy female had four wisdom teeth (18, 28, 38, and 48) extracted under local and intravenous anesthesia. The next morning after the procedure, the patient felt unwell: dizziness, nausea, and vomiting occurred, along with a speech disorder, left-sided numbness, and discoordination. An acute stroke was suspected, and the patient was urgently referred to the nearest stroke unit. The patient was conscious and responsive and additionally complained of a left-sided headache. Blood pressure was 127/68 mmHg, heart rate – 97 beats per minute. The neurological examination revealed horizontal and vertical nystagmus, dysarthria, left hemihypesthesia, mild left arm paresis, and discoordination; vertebrobasilar stroke was suspected. Urgent brain CT showed no focal changes; CT angiography revealed basilar artery occlusion and right vertebral artery hypoplasia. Conventional angiography confirmed basilar artery occlusion and right vertebral artery dissection. Urgent mechanical thrombectomy was successfully performed. Neurological signs and symptoms regressed. However, control CT after 24 hours showed acute ischemia in the left cerebellar hemisphere. Cervical ultrasound revealed right vertebral artery dissection with mural hematoma and high-grade stenosis in the second segment.

Anticoagulation treatment with low molecular weight heparin subcutaneous injections was initiated to prevent secondary stroke due to arterio-arterial embolization. After 1 week of treatment, the patient was discharged on antiaggregation therapy. A follow-up using duplex ultrasonography showed gradual regression of the mural hematoma of the right vertebral artery and normalization of blood flow velocities after 1 year. Magnetic resonance imaging showed residual ischemic changes in the left anterior inferior cerebellar artery area; angiography revealed small residual changes in the right vertebral artery. Following ultrasound investigations, the insignificant residual wall changes in the vertebral artery persisted for 2 years, and antiaggregation was discontinued.

Conclusions: Simultaneous extraction of all wisdom teeth could be a significant stress for a patient, causing neck hyperextension, followed by an acute vertebral artery dissection with subsequent thrombosis of the basilar artery and ischemic stroke. Therefore, clinicians should ensure proper ergonomic head and neck positioning and adequate anesthesia to prevent neck hyperextension and cervical artery microtraumas during dental procedures. An urgent mechanical thrombectomy in the case of acute basilar artery occlusion is a highly effective method of treatment. Color-coded duplex ultrasound is a non-invasive, easily repeatable, and accurate diagnostic method for the follow-up of cervical artery dissection.

Keywords: tooth extraction; stroke; basilar artery occlusion; cervical artery dissection; ultrasound

MEDICATION-RELATED OSTEONECROSIS OF THE JAW: TREATMENT CHALLENGES AND THE ROLE OF PLATELET-RICH FIBRIN—A TWO-CASE STUDY

AUTHORS: LILIANA WÓJCIK, PAULINA ADAMSKA

Introduction: Bisphosphonates are a group of antiresorptive drugs used in the treatment of osteoporosis, multiple myeloma, and cancers with bone metastases. One of the most serious complications associated with their use is medication-related osteonecrosis of the jaw (MRONJ). MRONJ is diagnosed in patients treated with antiresorptive or antiangiogenic agents who present with exposed bone or an intraoral or extraoral fistula in the maxilla or mandible persisting for more than 8 weeks. During the course of MRONJ, a pathological fracture of the mandible may occur as a result of significant weakening of the bone structure.

Aim: The aim of this study was to evaluate the challenges in the management of patients with medication-related osteonecrosis of the jaw, including one patient with mandibular osteonecrosis following alendronate therapy for osteoporosis and another patient with maxillary osteonecrosis after treatment with zoledronic acid for breast cancer with bone metastases.

Materials and methods: Two female patients (aged 50 and 65) presented to the Department of Oral Surgery at the University Dental Center of the Medical University of Gdańsk with symptoms of medication-related osteonecrosis of the jaw. The first patient, treated with intravenous zoledronic acid for breast cancer with bone metastases, presented with exposed bone in the maxilla. The second patient, receiving oral alendronate for osteoporosis, developed a non-healing extraction socket following tooth extraction. Both patients underwent surgical removal of necrotic bone under antibiotic coverage.

In the first case, A-PRF membranes were applied, resulting in uneventful healing. In the second case, repeated surgical interventions were required; initial treatments involving necrotic tissue removal and A-PRF alone were unsuccessful. Complete healing was achieved only after the combined use of A-PRF and injectable PRF (I-PRF).

Results: In both cases, surgical removal of necrotic bone combined with antibiotic therapy was performed. In the first patient, the use of A-PRF membranes resulted in complete and uncomplicated healing. In the second patient, initial treatments, including repeated surgical interventions and A-PRF application, were unsuccessful. Favorable healing was achieved only after the combined use of A-PRF and injectable PRF (I-PRF).

Conclusions: MRONJ is a chronic condition that may lead to severe complications, including pathological fracture of the mandible. This study highlights the importance of early diagnosis of medication-related osteonecrosis of the jaw and the need for systematic specialist care in patients undergoing antiresorptive therapy.

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