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BOOK OF

ABSTRACTS

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Case Report
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CHALLENGES IN SPECIAL CARE DENTISTRY REGARDING SUSTAINABILITY

Congrats!
1ST PLACE WINNER

AUTHORS: SARA LUKIĆ, MARIJA MILIKIĆ

Introduction: Sustainability is a current topic in dentistry that encompasses practices and techniques aimed to understand the impact of dental care on the economic, technological, social and environmental systems, while ensuring equal treatment out comes for patients.

Purpose: of the study was to analyse data related to the impact of the special care dental treatment in general anesthesia from financial and ecological aspects.

Material and Methods: The research was conducted at the Clinic for Pediatric and Preventive Dentistry at the Center for Special Care Dentistry. The sample involved patients who, underwent treatment under general endotracheal anesthesia (GA) due to cooperation difficulties, during a period from January to December 2023. Data were obtained from dental records and interviews with parents. The data base was created in Excel. Descriptive statistical methods were used for statistical analysis.

Results: The study included 117 patients, with a higher frequency of male patients (n=88, 75.2%). The average age was 11.03 years (±3.6 years). On average, patients traveled 177.9 km (min=3.6 km, max=1086.9 km) for tooth treatment under GA. The average travel costs were 4079.1 RSD, and the total carbon emissions produced during this process amounted to 7 t. On average, patients waited 5.4 months (range: from 10 days to 21 months). Only 12.8% (n=15) of patients had follow-up appointments after GA. More than half of the patients (54.7%) have never received preventive advice, and more than half of the patients (53.0%) do not have a dentist caring for their oral health.

Conclusion: The results of this study showed significant carbon emissions and travel costs for the treatment of patients under GA in Belgrade.The results indicate the need to improve education and training of dentists to work with individuals with special needs in local and regional centers and to expand knowledge in the field of sustainable dentistry.

Keywords: special needs; sustainable dentistry; general endotracheal anesthesia; pediatric dentistry

THE INFLUENCE OF CHEWING GUM AND THE USE OF ANALGESICS ON THE INTENSITY OF PAIN IN THERAPY WITH FIXED ORTHODONTIC APPLIANCES

Congrats!
2ND PLACE

AUTHORS: ALEKSA KOLAREVIĆ

Introduction: Most orthodontic appliances use mechanical force. Pain is a reaction during orthodontic therapy, which affects the patient's attitude towards orthodontic therapy.
Purpose: To examine the effect of chewing gum and analgesics on the intensity of pain in therapy with fixed orthodontic appliances.
Material and Methods: The research was conducted at the Clinic of Orthodontics. It included 30 respondents aged 14 to 20, 12 male and 18 female. Patients were treated with a fixed orthodontic appliance, straight wire technique. The first archwire placed was a 0.012-inch diameter nitinol archwire. Patients filled out a visual analog scale (VAS) at predetermined intervals by recording the pain in the positions of physiological rest and central occlusion (0 - no pain, 10 - maximum pain intensity). In the indicated time intervals, to patients whose pain intensity was increased, chewing gum was recommended. If there was no relief, an analgesic was recommended. The impact of chewing gum and analgesics was monitored on the VAS, which was completed by the patients 2, 4 and 6 hours after administration of the agent.
Results: Out of 30 respondents, 26.7% used chewing gum and 36.7% used both chewing gum and an analgesic. Most patients expressed the highest pain intensity 24 hours after the fixed orthodontic appliance installation, both in the position of physiological rest and in central occlusion. Patients who used chewing gum, 6 hours after chewing a decrease in the pain value on the VAS was observed.
Conclusion: The results showed that chewing gum in combination with an analgesic reduces the intensity of pain after the installation of a fixed orthodontic appliance.
Keywords: orthodontic pain, fixed orthodontic appliance, chewing gum, analgesic.

HAPTIC TECHNOLOGY TO ENHANCE DEVELOPMENT OF ORAL SURGERY CLINICAL SKILLS – A SCOPING REVIEW

AUTHORS: JOSHUA KENNEDY, JAMIE COULTER, RACHEL GREEN, SIMON STONE

Background: Simulation training plays a key role in undergraduate dental clinical skills development, including oral surgery skills such as exodontia. The literature reports the use of traditional model-based simulation (including phantom head, cadaver and animal models as well as more recent digital simulation options including virtual and augmented reality (including haptic, or touch based, technology).
Since its initial reported use in a clinical educational setting, haptic technology has rapidly evolved, offering immersive and tactile experiences that enhance traditional educational methods. In dental education, particularly in teaching oral surgery to undergraduate students, there is growing interest in the application of novel haptic devices. These technologies promise to bridge the gap between theoretical knowledge and practical skills, offering a risk-free environment for students to practice surgical techniques.

Aim: To explore haptic simulation technology as applied to dental education, with a focus on undergraduate teaching in oral surgery.

Methods: This work was conducted via a scoping review, using a structed approach to map and synthesize existing literature. The Joanna Briggs Institute and PRISMA framework were adopted. A search strategy was developed using MeSH (Medical Subject Headings) terms and key words. Medline/PubMed and Embase were searched using the chosen strategy. Data were synthesised using thematic analysis.

Findings: The review identified 10 studies that met the inclusion criteria. The most common haptic technologies included virtual reality (VR) simulators, augmented reality (AR) systems, and force-feedback devices. These technologies were predominantly used for teaching procedures such as tooth extractions. The majority of studies reported positive educational outcomes, with improvements in students' technical skills, confidence, and procedural understanding. Students and faculty generally perceived these technologies as valuable supplements to traditional teaching methods, highlighting enhanced engagement and the ability to practice complex procedures without patient risk.

Conclusion: Novel haptic technologies offer promising advancements in the education of undergraduate dental students, particularly in the high stakes domain of oral surgery. These tools not only provide a safe and controlled environment for skill acquisition but also enhance students' learning experiences and preparedness for clinical practice. However, further research is needed to evaluate the long-term impact of these technologies on clinical competence and to explore cost-effectiveness and accessibility issues. Integrating haptic technologies into dental curricula should be considered, with attention to evidence-based outcomes and practical implementation strategies.

THE IMPACT OF MOTHER'S ORAL HEALTH ON THE HEALTH OF THE FETUS

AUTHORS: MARIAM JINCHARADZE, SOPO GOGLIDZE

Introduction: Maternal health is a critical determinant of fetal well-being, with various factors influencing pregnancy outcomes. Among these, maternal oral health has gained attention as a potential contributor to fetal health, particularly in terms of birth weight, gestational age, and the presence of neonatal reflexes. Previous research has indicated that periodontal disease, dental caries, and other oral infections can lead to systemic inflammation, which may adversely affect pregnancy outcomes. However, there is a need for further empirical evidence to understand the extent of this impact. This study aims to explore the relationship between maternal oral health and fetal outcomes by analyzing data collected from a group of pregnant women. The research seeks to answer the following questions: – How does the frequency of professional dental cleanings during pregnancy affect fetal health? – What is the prevalence of oral diseases among pregnant women, and how do these conditions correlate with fetal outcomes? – How does the success of dental treatment during pregnancy influence neonatal health indicators?

Methods: This study was conducted using a descriptive cross-sectional design. The study population consisted of pregnant women from various socioeconomic backgrounds, who were surveyed and clinically examined to assess their oral health status. Participants were selected based on their willingness to participate and their ability to provide informed consent. Data were collected through a structured questionnaire and clinical examinations. The questionnaire included questions about the frequency of professional dental cleanings, the presence of specific oral diseases, and whether the participants had visited a dentist for treatment during their pregnancy. Clinical examinations were performed to confirm the presence of oral health conditions reported by the participants.

The key variables analyzed in this study include: - *Frequency of Professional Dental Cleanings: * 0, 1, 2, or 3 times during pregnancy. - *Prevalence of Oral Diseases: * Including caries, gingivitis, periodontitis, halitosis, and others. - *Dental Treatment: * Whether participants sought and successfully completed dental treatment. - *Fetal Health Indicators: * Including birth weight, gestational age, neonatal health scores (e.g., N8-10, N4-7, N0-4), and the presence of neonatal reflexes. Data were analyzed using descriptive statistics to summarize the frequency and distribution of the variables. Correlation analysis was conducted to examine the relationship between maternal oral health indicators and fetal outcomes. Results were presented in terms of percentages and correlations to identify significant trends.

Results: *Frequency of Professional Dental Cleanings* - 0 times: 50% of participants - 1 time: 15% of participants - 2 times: 20% of participants - 3 times: 15% of participants *Prevalence of Oral Diseases* - Caries: 45% - Bleeding from the gums: 40% - Eating or chewing problems: 30% - Halitosis: 50% - Nausea and vomiting: 75% - Increased sensitivity: 65% - Xerostomia: 60% - Gingivitis: 35% - Severe periodontitis: 15% - Chronic periodontitis: 10% - Tooth loss: 25% - Abscess: 10% *Dental Treatment During Pregnancy* - Visited a dentist: 70% - Did not visit a dentist: 30% - Treatment successfully finished: 40% - Treatment not successfully finished: 60% *Fetal Health Indicators* - *Child's Assigned Health Score:* - N8-10 (healthy): 60% - N4-7 (mild asphyxia): 30% - N0-4 (severe asphyxia): 10% *Presence of Unconditional Reflexes: * - Yes: 90% - No: 10% *Week of Birth: * - 37-42 weeks: 60% - 22-37 weeks: 40% *Height at Birth: * - 46-52 cm: 40% - 30-46 cm: 45% - 52+ cm: 15% *Weight at Birth:* - 2500-4000 g: 55% - 500-2500 g: 45%.

Discussion: The findings of this study demonstrate a significant association between maternal oral health and fetal outcomes. The data indicate that a lack of professional dental cleanings and the presence of multiple oral diseases during pregnancy are correlated with adverse fetal health indicators, such as lower birth weight, preterm birth, and lower neonatal health scores. Specifically, the high prevalence of oral diseases among participants suggests that poor oral health is a common issue during pregnancy, which may contribute to systemic inflammation and subsequent fetal complications.

The fact that only 40% of those who sought dental treatment successfully completed it further underscores the challenges pregnant women face in managing their oral health. These findings are consistent with existing literature, which has also highlighted the potential impact of maternal oral health on pregnancy outcomes. However, this study adds to the body of evidence by providing detailed, original data on the prevalence of oral health issues and their direct correlation with specific fetal health outcomes. The study's implications are clear: there is a pressing need for better integration of oral health care into prenatal care programs. Pregnant women should be encouraged and supported to maintain good oral hygiene and seek regular dental care, as this may reduce the risk of adverse outcomes for their babies. Conclusion This study provides compelling evidence of the link between maternal oral health and fetal outcomes. It highlights the importance of regular dental check-ups and effective treatment of oral diseases during pregnancy. The findings suggest that improving maternal oral health could have a positive impact on fetal health, reducing the incidence of preterm birth, low birth weight, and other complications. Future research should focus on exploring the long-term effects of maternal oral health on child development and identifying effective interventions to promote oral health among pregnant women.

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MINIMIZING NEURAL TRAUMA IN IMPLANTOLOGY:
A GUIDED APPROACH

Congrats!
1ST PLACE WINNER

AUTHORS: DIMITRIOS RAPTOPOULOS, MICHAIL RAPTOPOULOS

Keywords: CBCT, Guided Bone Regeneration, implant guides, inferior alveolar nerve, non-resorbable titanium reenforced membrane.

Introduction: Cone-beam computed tomography (CBCT) has transformed implant planning in dentistry with its low radiation, economical properties and excellent imaging capabilities. In adition, the ability of combining the CBCT files with STL files from intra-oral or extra-oral scanners provides the ability to fabricate implant guides in order the implants to be placed accurately avoiding trauma on anatomical structures, such as the IAN. In case of a neural trauma, neurological pain, numbness and paraestesias may result severely in influencing the patient's quality of life. Hence, a CBCT should be taken prior to an implant placement.

Purpose: The aim of this case report is to demonstrate how CBCT and digital planning can be used before the actual surgery to plan a GBR procedure but more importantly how a digitally designed implant guide can be used for the implant placement minimizing the danger of traumatizing the IAN.

Materials and Methods: A 56-year-old patient was referred for new implant placement at positions 44 and 47 to support a four-unit implant-supported bridge, after his old ones had been removed by the referral dentist. Assessment of the initial CBCT scan demonstrated the proximity of IAN. A Guided Bone Regeneration (GBR) was performed to widen the bucco-lingual width of the alveolar ridge using a non-resorbable titanium reenforced membrane which was stabilized with titanium pins. A mix 1:1 ration mix of allograft an xenograft was used as grafting material. Five months later an implant guide was fabricated using the data of a new CBCT and STL files. A 3.75/10mm and a 4.2/10mm Paltop implant were placed placed fully guided in positions #44 and #47, respectivelly, avoiding the IAN. A post surgical low-dose CBCT was taken to verify the proper position of the implants. Patient needs to return for a Free Gingival Graft (FGG) and to complete the prosthesis.

Results: Digital planing of implant placement and implant guide fabrication using CBCT data and STL files enhanced the accuracy of implant placement avoiding IAN. CBCT scans helped determine the exact location of the IAN as well a the success of the GBR procedure. Fully guided implant placement was successfully completed without neural trauma, and no postoperative adverse effects related to IAN trauma. The prosthetic phase is pending.

Discussion: This case underscores the critical role of advanced imaging and guided surgical techniques in dental implantology, particularly in anatomically challenging situations. The integration of CBCT and implant guides facilitates precise implant placement, minimizing the risk of nerve damage and ensuring optimal functional results. The digital tools used in this procedure provided minimized the risk of nerve trauma and reduced the overall surgical time. This case illustrates how modern technology can transform complex and risky procedures into straightforward and safe ones.

Conclusion: The use of CBCT and digital technology can help plan GBR procedures and design implants guides in order critical IAN and other anatomical structures to be protected. This approach ensures both safety and effectiveness in implant therapy. It also highlights how digital technology can simplify procedures that were previously considered difficult and risky.

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MASTERING SINUS LIFTS AND GBR:
ACHIEVING OPTIMAL IMPLANT OUTCOMES

AUTHORS: DIMITRIOS RAPTOPOULOS, MICHAIL RAPTOPOULOS

Introduction: A sinus lift surgery and Guided Bone Regeneration (GBR) are always challenging and complex procedures. In this case report, we describe a 74-year-old patient with missing posterior upper and lower left molar teeth who sought occlusal and aesthetic rehabilitation, along with improved mastication. In the upper left arch, a sinus lift procedure and immediate implant placement were performed. Simultaneously, in the lower left posterior arch, GBR and implant placement were carried out together. This comprehensive approach ensured successful functional and aesthetic outcomes for the patient.

Aim: The aim of this case report is to illustrate how we treated a challenging case that was involving sinus lifting and implant placement procedures, which would used to support bridges and splinted implant-supported crowns. The report shows step-by-step the surgical procedures, proving that with meticulous planning and precision, such cases can be managed effectively to achieve the desired aesthetic and functional results.

Materials and the Methods: The patient presented to the dental clinic with missing posterior upper and lower left teeth, bringing an initial CBCT scan that revealed the need for a comprehensive treatment approach. A left sinus lift was performed, followed by bone grafting to enhance the alveolar ridge, and two implants were placed in the maxillary positions 24 and 26—a 4.0/11.5mm implant at position 24 and a 5.0/10mm implant at position 26, which now support a three-unit fixed implant-supported bridge. After two months, Guided Bone Regeneration (GBR) was performed in the mandibular region, and two identical 5.0/10.5mm implants were placed in positions 35 and 36. These implants now support splinted implant-retained crowns. A six-month healing period was observed to allow for complete osseointegration before proceeding with the final prosthetic rehabilitation.

Results: All surgical procedures were successfully performed, including the sinus lift, bone grafting, Guided Bone Regeneration (GBR), and implant placements. The subsequent prosthetic rehabilitation was also successful, resulting in a three-unit fixed implant-supported denture on positions 24 and 26, as well as splinted implant-supported crowns on positions 34 and 35. The treatment outcomes met the functional and aesthetic expectations, ensuring patient satisfaction.

Conclusion: This case demonstrates that with meticulous planning and execution, challenging procedures like sinus lifts, GBR, and implant placements can be successfully managed, achieving both functional and aesthetic outcomes, and ensuring high patient satisfaction.