

ACCURACY AND PRECISION IN SEGMENTATION OF THE RIGHT AND LEFT INFERIOR ALVEOLAR NERVE: A COMPARATIVE STUDY BETWEEN AI AND YOUNG STUDENTS ON CBCT

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Aim: evaluate the accuracy and precision of AI-assisted segmentation of the inferior alveolar nerve (IAN) — both right and left — compared to young inexperienced operators using CBCT data processed on REALGUIDE software.

Methods: ten CBCT datasets were segmented independently by four dental students (Young 1–4) and an AI segmentation tool. STL files were exported and superimposed on the ground-truth using CloudCompare. Accuracy was assessed via Mean Distance (MD) and precision via RMS and Standard Deviation (SD). Non-parametric statistical analysis (Mann-Whitney U test; Kruskal-Wallis) was performed to compare groups.

Results: the AI showed superior performance across all metrics: mean RMS = 0.601 ± 0.369 mm vs 0.790 ± 0.548 mm for young operators; mean |MD| = 0.227 ± 0.225 mm vs 0.434 ± 0.455 mm. The difference in accuracy (|MD|) was statistically significant ($p = 0.047$). RMS differences did not reach significance overall ($p = 0.149$), though AI outperformed the least accurate operator individually ($p = 0.024$). The Kruskal-Wallis test across all five groups showed a trend toward significance ($p = 0.076$).

Conclusions: AI segmentation demonstrated greater accuracy and precision than inexperienced operators in IAN delineation on CBCT. These findings support the integration of AI tools in pre-surgical planning to reduce operator-dependent variability.

COMBINED APPROACH WITH CROSS-LINKED HYALURONIC ACID AND ND:YAG LASER PHOTOBIMODULATION FOR DIFFICULT HEALING OF POST-EXTRACTION SOCKETS: A RANDOMIZED CLINICAL STUDY

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Aim: this randomized controlled trial assesses the therapeutic efficacy of 1.6% cross-linked hyaluronic acid (xHyA) combined with Nd:YAG laser-mediated Low-Power Biomodulation (LPBM) in enhancing tissue healing and mitigating postoperative discomfort. The study specifically targets a high-risk patient cohort, including individuals with diabetes or those undergoing chemotherapy, head and neck radiotherapy, or anti-resorptive drug treatment.

Methods: this study compared 17 patients treated with a HA-enriched collagen sponge and LPBM against a control group of 21 patients receiving an empty sponge and LPBM. Outcomes were measured at multiple intervals: healing was assessed on days 3, 7, and 14 using the Landry-Turnbull-Howley index, and pain levels were monitored on days 1, 3, and 7 through VAS and NRS assessments.

Results: the test group (HA gel + LPBM) demonstrated superior healing compared to the control group at all intervals: day 3 (3.71 vs 3.42), day 7 (4.35 vs 3.90), and day 14 (4.82 vs 4.45). These results indicate accelerated re-epithelialization and a lack of inflammation. Furthermore, the test group reported significantly lower VAS and NRS scores for pain, discomfort, chewing difficulties, stress, bleeding, and analgesic intake.

Conclusions: combining HA with LPBM effectively can stimulate regeneration in patients predisposed to healing complications. By utilizing the bacteriostatic and anti-inflammatory benefits of xHyA, this dual therapy accelerates wound healing and ensures superior clinical results after dental extractions.

POSTOPERATIVE EDEMA AFTER THIRD MOLAR SURGERY: DOES ACUPUNCTURE MAKE A DIFFERENCE? A MULTICENTER RANDOMIZED TRIAL WITH 3D ANALYSIS

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Aim: this study evaluated adjunctive acupuncture in reducing postoperative sequelae after third molar surgery, compared with standard therapy and placebo.

Methods: a multicenter, randomized, placebo-controlled, blinded trial was conducted. Patients undergoing simultaneous extraction of four third molars under sedation were allocated to four groups: G1 (standard corticosteroids), G2 (acupuncture + reduced corticosteroids), G3 (placebo acupuncture + reduced corticosteroids), and G4 (acupuncture without corticosteroids). The primary outcome was 3D-assessed facial edema, evaluated preoperatively (T0) and at two (T1) and seven (T2) days post-surgery using a standardized, automated digital protocol. Secondary outcomes included pain (VAS), trismus (interincisal distance), and analgesic consumption. Statistical analysis was conducted with a significance level of $\alpha = 0.05$.

Results: forty-eight patients (22 males, 26 females; mean age 17.5 ± 1.47 years) were included. Facial swelling differed significantly among groups at all time intervals (T0–T1, T0–T2, T1–T2; $p < 0.05$), indicating distinct patterns of edema development and resolution across treatments. Pain reduction was significant on the day of surgery (D0) and at days 5 and 6 ($p < 0.05$), with no differences at intermediate time points. Mouth opening showed significant postoperative changes ($p < 0.05$). In the G1 vs G4 comparison, significant differences were observed in mouth opening (T0–T1, T1–T2; $p < 0.05$) and VAS scores at days 1, 3, and 4 ($p < 0.05$), showing a decreasing trend over time.

Conclusions: acupuncture may represent a promising adjunctive approach that could potentially contribute to an evolution in postoperative management strategies following third molar surgery; however, further studies are required to confirm its clinical effectiveness and reproducibility.

IA VS HI: A COMPARATIVE STUDY OF ACCURACY AND PRECISION IN CBCT FIRST MOLAR SEGMENTATION

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Aim: this study aimed to assess whether AI-based CBCT segmentation of the first molar (3Diemme) achieves accuracy and precision comparable to young operators, using a senior expert consensus as ground truth, to evaluate AI as a tool to reduce inter-operator variability.

Methods: ten CBCT scans were selected, yielding 39 first molars. Each tooth was independently segmented by four young operators and an AI software (3Diemme). Two senior operators established the ground truth via consensus segmentation. STL outputs were superimposed onto the ground truth using CloudCompare. Agreement was measured using Root Mean Square error (RMS), mean surface distance, and standard deviation (SD). Statistical analysis used the Mann-Whitney U test ($\alpha = 0.05$).

Results: the AI achieved the lowest median RMS (0.033 mm) and mean RMS (0.041 mm, SD 0.036 mm) after outlier exclusion. Junior operators ranged from median RMS 0.046 to 0.171 mm, with mean RMS 0.066–0.258 mm and SD 0.063–0.271 mm. The AI vs junior pool comparison was statistically significant ($p < 0.001$); all individual comparisons confirmed significance ($p < 0.05$).

Conclusions: the AI system significantly outperformed all young operators in segmentation accuracy ($p < 0.001$), achieving lower RMS, lower mean distance, and greater consistency (SD). Shared outliers across operators suggest image quality or registration issues rather than operator-specific errors. These results support AI integration as a reliable, reproducible alternative to reduce inter-operator variability in clinical and research workflows.

EFFECTIVENESS OF KINESIO TAPING ON POSTOPERATIVE DISCOMFORT AFTER MANDIBULAR THIRD MOLAR SURGERY: A THREE-DIMENSIONAL MORPHOMETRIC ANALYSIS

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Aim: evaluation of the effectiveness of Kinesio Taping (KT) in reducing postoperative pain, swelling and trismus after mandibular third molar extraction using a three-dimensional morphometric approach.

Methods: a prospective randomized split-mouth study was conducted on 7 patients undergoing bilateral mandibular third molar extraction. KT was applied on the test side immediately after surgery, while the control side received standard care. Pain was assessed using a Visual Analog Scale (VAS), swelling through 3D facial scans analyzed with dedicated software and trismus by measuring maximum mouth opening with a caliper. Evaluations were performed preoperatively and at 3 and 7 days postoperatively. Statistical analysis was performed using R software.

Results: both groups showed improvement over time; however, the KT-treated side demonstrated a greater and faster reduction in postoperative morbidity. A significant reduction in swelling was observed at both 3 and 7 days in the test group. Pain and trismus showed statistically significant improvements at 7 days compared with the control side, whereas no significant intergroup differences were observed at day 3. Overall, KT resulted in enhanced recovery and reduced symptom severity.

Conclusions: Kinesio Taping appears to be a safe, non-invasive and cost-effective adjunct for reducing postoperative discomfort following mandibular third molar surgery, improving patient recovery and quality of life.

THE IMPACT OF DIFFERENT AMOXICILLIN REGIMENS FOR DENTAL IMPLANT SURGERY ON ANTIBIOTIC RESISTANCE IN THE ORAL MICROBIOTA

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Aim: to evaluate the effect of different antibiotic strategies for implant surgery on peri-implant tissue health, oral microbiota and salivary MiRNomics in healthy patients (ethical approval: EU CT 2023-510391-31-00). This abstract will analyze the outcomes regarding antibiotic resistance in the oral microbiota.

Methods: 84 patients were randomly divided into two groups: 1. Long-span: 1 g Amoxicillin every 8 h starting 1 day before surgery and for 5 days after surgery 2. Short-span: 2 g Amoxicillin 1 h before surgery. Crevicular fluid (CF) samples were taken with paper points 1 week before surgery and 2 and 6 months post-surgery. Sensitivity test (AST) to amoxicillin (10 mg) was carried out using the Kirby-Bauer method on Columbia blood agar plates. Fisher's exact test was applied at each

observation point for cross-sectional comparisons. For within-group longitudinal comparisons McNemar's test was used.

Results: among growth-positive samples only, 15.4% were resistant-like (R), and susceptible-like (S) communities increased over time. The proportions of R's samples were comparable (approx. 29%) in short- and long-span groups. Although in the short group all observed transitions (4) were directed toward resistance, no statistically significant differences in amoxicillin resistance were detected between short- and long-span antibiotic exposure.

Conclusions: the results suggest that resistance is not dominant in the bacterial community of the CF and provide evidence against antibiotic selection for resistance applying the treatment regimens herein examined.

LEUKOCYTE- AND PLATELET-RICH FIBRIN *VERSUS* COLLAGEN SPONGE AFTER MANDIBULAR THIRD MOLAR EXTRACTION: A RANDOMIZED CLINICAL STUDY

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Background: post-operative pain, swelling, and delayed healing are common after mandibular third molar extraction. Leukocyte- and platelet-rich fibrin (L-PRF) has been proposed to enhance wound healing and reduce post-operative morbidity.

Methods: 40 patients requiring mandibular third molar extraction were randomly allocated to receive either L-PRF (test group) or a collagen sponge (control group) in the extraction socket. Post-operative pain was assessed using the VAS over 7 days. Facial swelling and trismus were evaluated at 48 hours and 7 days. Radiographic bone healing was assessed at baseline and at 6 and 12 months. Between-group comparisons were performed using independent-sample t-tests. Effect sizes were calculated using Cohen's d. Longitudinal changes were analyzed using linear mixed-effects models.

Results: post-operative pain and swelling tended to be lower in the L-PRF group compared with the collagen group, although no statistically significant differences were observed. Small-to-moderate effect sizes were found for post-operative pain and swelling at 48 hours, suggesting a potential clinically relevant benefit. Radiographic bone healing at 6 and 12 months showed minimal effect sizes.

Conclusions: within the limitations of this pilot randomized clinical study, L-PRF did not demonstrate statistically significant advantages over collagen sponge. However, trends toward reduced early post-operative morbidity and small-to-moderate effect sizes suggest a potential clinical benefit of L-PRF. Larger randomized trials are warranted to confirm these preliminary findings.

EFFICACY OF ADJUVANT DOMICILIARY PHOTODYNAMIC THERAPY (A-PDT) IN THE TREATMENT OF PERI-IMPLANT MUCOSITIS: A PILOT RANDOMIZED CONTROLLED CLINICAL TRIAL

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Aim: peri-implant mucositis is an inflammatory condition affecting peri-implant soft tissues, characterized by bleeding on probing without progressive bone loss. It represents the most common peri-implant condition and a reversible stage of disease, providing a therapeutic window to prevent progression to peri-implantitis. Non-surgical conventional treatment (TNC) is the gold standard; however, long-term biofilm control may be difficult. This study evaluates whether domiciliary antimicrobial photodynamic therapy (aPDT), adjunctive to TNC, improves peri-implant inflammation control.

Methods: a randomized controlled pilot study was conducted on 13 patients with peri-implant mucositis, randomly assigned to a control group (n = 6), receiving TNC alone, or a test group (n = 7), receiving TNC combined with domiciliary aPDT using the Lumoral® device. Bleeding on probing (BoP) was the clinical outcome, while pro-inflammatory cytokines (IL-6, IL-1 β ,

TNF- α) in peri-implant sulcular fluid, quantified by ELISA, were assessed as biological outcomes. Follow-up was performed up to T3 (60 days).

Results: both groups showed BoP reduction; however, this was progressive and more pronounced at sites with reduced accessibility only in the test group, with no similar trend in the control group. From a biomolecular perspective, only the test group showed a temporally organized modulation of inflammatory cytokines (IL-6, TNF- α , IL-1 β), consistent with their role in the inflammatory cascade. Overall, BoP reduction was associated with biomolecular modulation only in the test group.

Conclusions: results up to T3 suggest that combining TNC with aPDT may modulate peri-implant inflammation, with effects not attributable to mechanical debridement alone. These preliminary findings support its adjuvant role in maintaining long-term inflammation control.

EFFECT OF CAVITATION IN POST EXTRACTIVE SOCKET HEALING: A SPLIT-MOUTH MULTICENTRE RANDOMISED CONTROLLED TRIAL

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Aim: this multicenter randomized controlled trial aimed to evaluate whether ultrasonic cavitation applied to post-extractive sockets improves soft tissue healing.

Methods: patients requiring bilateral single-rooted tooth extraction were included and treated with a minimally traumatic technique. The randomly assigned test side received a 90-second ultrasonic cavitation lavage with a dedicated insert (Piezoclean, Esacrom, Imola, Italy); the control side received sodium chloride irrigation. Healing Index (HI) was assessed at days 3, 7, 14, and 21. Age, gender, smoking habits and diabetes were evaluated as potential predictors of HI through multivariate analysis.

Results: sixty-six patients were enrolled (29M; 37F; mean age 64.74 ± 15.98 years); 70 teeth were extracted in the upper arch

and 62 in the lower. Both groups showed significant HI improvement over time ($p < .001$ for both). The test group reached a healing plateau earlier (days 7-14) compared to controls (days 14-21), and showed significantly lower HI scores at days 3, 7, and 14 ($p < .001$), with no significant difference at day 21 ($p = .083$). Age was the only significant predictor of HI in the test group at days 3, 7, and 14 ($p \leq .002$), with older patients showing greater benefit from the cavitation treatment.

Conclusions: ultrasonic cavitation significantly improves early soft tissue healing after tooth extraction compared to conventional irrigation, with differences resolving by day 21. Age emerged as a key factor influencing the healing response to ultrasonic cavitation.

HUMAN VS ARTIFICIAL INTELLIGENCE FOR THIRD MOLAR SEGMENTATION ON CBCT IMAGES: A PILOT STUDY

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Aim: the aim of the study is to compare the accuracy and precision of AI-based segmentation of third molars with manual segmentation performed by young operators on CBCT images.

Methods: a total of 38 third molars were segmented from 10 anonymized CBCT datasets (DICOM format), generating STL files. The segmentation was performed using virtual implant planning software (RealGUIDE, 3DIEMME SRL) through three different approaches: AI-based automatic segmentation, manual segmentation by four 5th year dental students (Young Operators) and manual segmentation by two Senior Operators (≥ 5 years' experience). Senior Operators have worked together to establish the ground truth. Accuracy and precision were assessed using an open-source mesh processing software (CLOUDCOMPARE), by overlaying STL files and calculating

Root Mean Square (RMS) and Mean Surface Distance (MSD) as accuracy measures, and standard deviation (SD) as a precision measure.

Results: AI showed a mean RMS of 0.341 ± 0.364 mm and SD of 0.335 ± 0.354 mm, vs 0.380 ± 0.330 mm (RMS) and 0.366 ± 0.324 mm (SD) for Young Operators. Mean absolute MSD for AI was 0.126 mm. No statistically significant difference was found between groups (Mann-Whitney U, $p = 0.114$).

Conclusions: AI-based segmentation showed accuracy and precision comparable to inexperienced operators, with no significant differences in RMS or SD. These findings support AI as a potential reliable aid for less experienced clinicians in surgical planning, though larger samples are needed to confirm these results.

IMMEDIATE VS DELAYED LOADING OF ZIRCONIA IMPLANTS FOR SINGLE POSTERIOR RESTORATIONS: 4-YEARS RESULTS OF THE PATENT RANDOMIZED CONTROLLED MULTICENTER TRIAL

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Aim: this multicenter randomized controlled trial (RCT) compares the 4-year clinical outcomes of two-piece zirconia implants for single posterior restorations under immediate *versus* delayed loading protocols.

Methods: patients requiring single premolar or molar replacement were randomly assigned to one of the two groups. The Test group received immediate loading (provisional crown within 7 days), while the Control group followed a delayed protocol (8 weeks). Two-piece zirconia implants with a trilobated 3.3 mm deep connection (3C™) and a 2.5 mm transmucosal neck were placed in all patients, who were then restored with customized fiberglass abutments. Final crowns were placed at 8 weeks for both groups. Clinical and radiographic follow-ups

were performed annually up to 4 years to monitor implant survival, success, and marginal bone loss (MBL).

Results: at 4 years, the overall survival rate was 96% for both the Test and Control groups. No significant differences were observed regarding MBL or soft tissue stability between the two protocols. Periodontal indices remained stable throughout the study period, and no technical complications related to the fiberglass abutments or implant fractures were recorded.

Conclusions: the 4-year data of the PATENT study confirm that immediate loading of two-piece zirconia implants in the posterior region is a reliable and safe alternative to delayed loading. This protocol offers high esthetic and biological integration, providing a predictable metal-free solution for everyday clinical practice.

ACCURACY AND PRECISION IN CBCT SEGMENTATION OF MAXILLARY AND MANDIBULAR PREMOLARS: AI VS HI YOUNG VS HI SENIOR

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Aim: precision and accuracy evaluation of CBCT human premolar segmentation of 3DIEMME AI system compared to young and senior operators.

Methods: ten CBCT scans were segmented for all maxillary and mandibular premolars, for a total of 78 elements, by four young operators and one AI system. Ground truth was established by two senior operators with over 5 years of experience in digital planning, who performed the segmentations in a consensual and agreed manner. STL files were matched against the ground truth in CloudCompare to compute RMS, Mean Distance (MD) and Standard Deviation (SD). MD defined accuracy; SD defined precision; RMS served as combined index. Cases with RMS ≥ 5 mm were excluded. Mann-Whitney

U and Kruskal-Wallis tests were applied ($\alpha = 0.05$).

Results: AI achieved RMS 0.136 mm, MD 0.099 mm and SD 0.086 mm. Operators 1–3 showed comparable values (RMS 0.121–0.123 mm), while Operator 4 presented higher RMS (2.011 mm) with acceptable MD (0.130 mm) and SD (0.100 mm). AI outperformed pooled HI Young operators ($p = 0.022$); inter-group differences were significant (Kruskal-Wallis $H = 22.35$, $p = 0.0002$).

Conclusions: AI demonstrated superior accuracy and precision over HI Young operators, with three out of four novices reaching accuracy levels close to AI. Operator 4 underlined the risk of inter-operator variability in inexperienced users. AI integration may standardise CBCT segmentation and reduce human error in clinical workflows.

SOFT TISSUE EXPANSION WITH SILICONE EXPANDERS BEFORE BONE VOLUME AUGMENTATION: A CASE REPORT

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Aim: to describe the use of a silicone expander as an adjunctive aid to implant rehabilitation in a patient with an anterior maxillary bone defect requiring soft and hard tissue augmentation.

Methods: a patient presenting with an anterior maxillary bone defect was treated with a two-stage approach. In the first stage, a vertical incision was made and a subperiosteal tunnel was prepared; a pre-shaped silicone expander was then inserted by pressure-fit to promote soft tissue expansion. After 11 days, guided bone regeneration was performed using a trapezoidal flap, cortical perforations, xenograft particles mixed with autologous platelet liquid, and collagen membrane stabilization. Implant placement was carried out after 5 months, followed by prosthetic rehabilitation. Clinical and CBCT evaluations were performed up to 1 year.

Results: soft tissue expansion allowed tension-free flap closure during bone augmentation. No soft tissue dehiscence, graft exposure, infection, or neurological complications were observed during healing. CBCT evaluation showed horizontal and vertical bone gain at 5 months, with stable conditions at the 1-year follow-up and minimal resorption. Implant placement and prosthetic rehabilitation were successfully completed.

Conclusions: within the limitations of a single case report, the use of a silicone expander appears to be a useful adjunct in implant rehabilitation, facilitating soft tissue management before bone augmentation and contributing to favorable clinical and radiographic outcomes.

ENDODONTIC SURGERY OF TOOTH 11 WITH A 3-YEAR FOLLOW-UP EVALUATION

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Abstract: periapical lesions are inflammatory disorders of periradicular tissues caused by microbial infection of the root canal system, which may occur secondary to pulpal necrosis or inadequately performed root canal treatment. The etiology is attributed to polymicrobial infections, predominantly composed of anaerobic bacteria organized in biofilms within the root canal system.

Introduction: treatment of periapical lesions includes non-surgical root canal therapy as the first-line approach, followed by surgical intervention when necessary, particularly in the presence of fiber-reinforced posts, cast metal posts, or definitive prosthetic restorations. Indications for surgical treatment include favorable surgical access with adequate visibility and operative field, safe distance from critical anatomical structures, and sufficient residual root length to ensure functional stability.

Materials and methods: a 50-year-old male patient, smoker, with no systemic diseases, presented with discomfort in the upper right central incisor, previously treated endodontically 16 years earlier. Clinical and CBCT evaluation revealed subtle, non-specific symptoms, absence of buccal probing, and a significant periapical lesion, with no evidence of a sinus tract. Following informed consent, the patient underwent apicectomy of tooth 11, including retrograde endodontic preparation, retrograde filling, and surgical removal of the lesion.

Results: at the 3-year radiographic follow-up, complete *restitutio ad integrum* of the periapical tissues was observed, with stable hard and soft tissue conditions adjacent to the prosthetic restoration. Surgical endodontic treatment represents a predictable solution when orthograde retreatment is not feasible, allowing complete resolution of periapical pathology and long-term tissue stability.

TITANIUM-REINFORCED D-PTFE MEMBRANE FOR VERTICAL RIDGE AUGMENTATION AND FINAL IMPLANT REHABILITATION IN THE POSTERIOR MANDIBLE: A CASE REPORT

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Aim: the aim of this work is to report a case of vertical bone augmentation using titanium-reinforced d-PTFE membrane for successful implant-prosthetic rehabilitation in the posterior mandible.

Methods: a 75-year-old patient was managed at the Oral Surgery Unit, University of Milan, with written informed consent obtained, operative details and follow-up recorded. The patient presented with a Cawood and Howell Class V bone atrophy in the fourth quadrant.

A vertical ridge augmentation was performed using a titanium-reinforced d-PTFE membrane filled with a 1:1 mixture of autogenous and bovine bone mineral and secured with titanium tacks to ensure stability. Periosteal releasing incisions ensured tension-free primary closure. Postoperative care included amoxicillin/clavulanic acid 1g TID, chlorhexidine 0.2% rinses, and a controlled diet.

Results: by the 9-month re-entry, the site presented no evidence of exposure or infection.

Membrane removal revealed significant vertical bone gain with a dense, well-vascularized regenerated tissue, allowing for immediate placement of two bone-level implants with optimal primary stability.

At the 90-day post-implant follow-up, both fixtures demonstrated optimal osseointegration with no biological or mechanical complications. Consequently, the prosthetic phase was commenced.

Conclusions: vertical bone augmentation with d-PTFE membranes and final implant rehabilitation proved to be an effective therapeutic approach for the management of severe ridge atrophy.

Further standardized studies with longer follow-up are needed.

SURGICAL MANAGEMENT OF CONCRESCENCE BETWEEN MANDIBULAR THIRD AND SUPERNUMERARY FOURTH MOLARS: A CASE REPORT

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Aim: the aim of this work is to report a case of concrescence involving a mandibular third molar and a supernumerary fourth molar, highlighting diagnostic and surgical challenges according to current evidence.

Methods: a 26-year-old patient presented to the Emergency Department, University of Milan, exhibiting signs of recurrent pericoronitis related to a partially erupted 4.8. OPT radiographs suggested a close structural relationship between the roots of element 4.8. and an impacted supernumerary element 4.9.

Surgical intervention was performed at the Oral Surgery Unit, with written informed consent obtained and follow-up recorded. Local anesthesia, full-thickness flap and selective osteotomy were performed to reveal a cementum-mediated union between the root of 4.8 and 4.9 elements. The concrescence was

luxated and extracted in toto. Following alveolar debridement, primary closure was achieved with resorbable sutures.

Results: macroscopic examination confirmed the diagnosis of concrescence, showing a solid union restricted to the cementum layer.

The post-operative course was uneventful, and the surgical management proved effective in preventing further infective complications.

Conclusions: concrescence represents a rare developmental phenomenon complicating tooth eruption, maintainability and surgical protocols; nevertheless, surgical extraction remains an effective treatment for resolving recurrent infectious episodes.

The rarity of this anomaly necessitates further studies to standardize diagnostic and surgical protocols.

DIFFICULTY HEALING OF DENTAL EXTRACTION IN A PATIENT WITH SIMULTANEOUS BREAST AND OVARIAN CANCER

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Aim: the aim of this report is to emphasize the critical role of differential diagnosis in oncological patients, where post-extractive complications may mask new primary malignancies or metastatic localizations. This case documents the clinico-pathological management of an oral lesion to ensure timely and accurate identification of a second primary tumour.

Methods: a 66-year-old female with a history of breast and ovarian cancer with brain metastases presented for an oral examination. Clinical inspection revealed a firm-elastic ulcerated lesion on the left hemipalate, arising after a dental extraction. Given the patient's complex oncologic background, an urgent incisional biopsy was performed under local anesthesia to rule out a metastatic disease or a new primary tumour.

Results: histopathological examination revealed an infiltration of high-grade keratinizing squamous cell carcinoma (SCC). The diagnosis confirmed a new primary oral malignancy rather than a metastatic spread from previous cancers. This finding necessitated a rapid multidisciplinary referral for staging and surgical planning, highlighting the aggressive nature of the lesion despite its clinical appearance mimicking a post-extractive complication.

Conclusions: this case underscores that any oral lesion failing to show physiological signs of healing should be considered suspicious, especially in patients with a complex oncologic history. Clinical persistence requires immediate histological verification to rule out potential malignancy and to avoid diagnostic delays that could significantly impact the patient's prognosis.

FULL-ARCH REHABILITATION OF SEVERE MAXILLARY ATROPHY WITH A JUXTA-OSSEOUS IMPLANT: A CASE REPORT

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Aim: severe jaw atrophy often limits traditional endosseous implantation, necessitating complex regenerative procedures. Modern juxta-osseous implants (JOI), reintroduced through digital planning and 3D printing, offer a viable alternative. This study aims to demonstrate the efficacy of JOI in providing rapid functional restoration for extreme maxillary atrophy, avoiding the morbidity of bone grafting.

Methods: a 65-year-old female with hypertension and Brugada syndrome required full-arch rehabilitation. Due to systemic risks, the procedure was performed in an operating room. Two custom-made JOI in medical-grade Grade V titanium were designed via CAD/CAM and manufactured using SLM/DMLS. Each framework was secured with 9 osteosynthesis screws (4 posterior, 3 anterior, and 2 palatal) to ensure primary stability. A

screw-retained provisional prosthesis was delivered immediately post-surgery.

Results: no post-operative complications were reported. At the one-week follow-up, the clinical situation was stable with optimal soft-tissue healing. The definitive prosthesis was delivered 3 months post-intervention. A 1-year follow-up CT scan confirmed excellent framework stability, maintenance of peri-implant bone levels, and the absence of dehiscence or infection.

Conclusions: modern JOI represent a promising, minimally invasive "graftless" solution for severe atrophy. The integrated digital workflow ensures a millimetric passive fit and strategically distributes masticatory loads, enabling predictable immediate loading even in medically compromised patients.

MANAGEMENT OF A MANDIBULAR CYSTIC LESION IN CLOSE PROXIMITY TO THE MENTAL FORAMEN ASSOCIATED WITH OSTEOMYELITIS: A CASE REPORT WITH LITERATURE REVIEW

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Aim: this study aimed to describe the surgical management of a mandibular cystic lesion located near the mental foramen and associated with osteomyelitis in a smoking patient, with comparison to the literature of the last 10 years.

Methods: a 56-year-old patient presented with persistent pain in the right mandibular region following previous non-resolutive surgery. Clinical and radiographic evaluation revealed a residual root of tooth 4.3, a cystic lesion in the 4.4 area, and signs of local infection. Surgical treatment involved removal of the root remnant, enucleation of the cyst in close proximity to the mental foramen, and thorough debridement of infected tissues, with particular care to preserve the inferior alveolar nerve. During surgery, altered crestal bone was observed and sampled together with the cystic lesion for histological analysis. A structured clinical and radio-

graphic follow-up was established. Findings were compared with evidence from the last 10 years.

Results: histological examination confirmed osteomyelitis associated with a non-inflammatory odontogenic follicular cyst. The postoperative course was uneventful, with progressive symptom resolution. At 6 months, panoramic radiography demonstrated bone regeneration in the treated site. The patient was asymptomatic, satisfied, and successfully rehabilitated prosthetically.

Conclusions: proper surgical management allows successful resolution of complex lesions even in anatomically critical areas. Careful follow-up is essential to ensure complete healing, particularly in patients with risk factors such as smoking, in agreement with current literature.

SURGICAL-ORTHODONTIC TREATMENT OF A UNILATERAL RIGHT CLEFT LIP AND PALATE

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Aim: Cleft Lip and palate (CLP) is a congenital malformation due to genetic and environmental factors. Dental anomalies, agenesis, supernumerary teeth, and transpositions are often found in these patients, especially in the cleft area. This condition requires a multidisciplinary approach. The purpose of this paper is to demonstrate the surgical-orthodontic management of CLP in a young girl.

Methods: a 16-year-old female patient with unilateral right LPS was referred to the Department of Dentistry at the Bari Polyclinic Hospital for smile improvement. She had dental and skeletal Class I, tending toward Class III, with a contracted upper arch, severe lower crowding, transposition of 1.3, palatinization of 1.4, impaction of 2.3, and agenesis of 2.5. She had undergone cheiloplasty and palatoplasty when she was 6 and 24 months old, respectively. After evaluating

X-rays, LL-T, and CONE BEAM CT, the orthodontist and surgeon planned: cementation of a lingual arch and extraction of 3.4 and 4.4 to resolve the lower crowding with maximum anchorage; alignment and leveling of the upper arch after extraction of the impacted 2.3 and application of a palatal expander with a fanscrew.

Results: in A.G., after incising and dissecting a trapezoid flap with preservation of the papilla from 1.1 to 2.6, we proceeded with an osteotomy and extraction of 2.3 in horizontal vestibular impaction, horizontal mattress silk suture, and extraction of 3.4 and 4.4. The PRP technique was applied to all surgical sites to promote tissue healing.

Conclusions: a timely and appropriate multidisciplinary approach is needed to improve quality of life, aesthetics, and function in patients with LPS.

LINGUAL NERVE NEURORRHAPHY AFTER IATROGENIC ROOT DISPLACEMENT: CASE REPORT

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Aim: to report the management of a lingual nerve injury following iatrogenic root displacement.

Methods: a 30-year-old patient developed anesthesia and dysesthesia after mandibular third molar extraction. CBCT revealed root displacement and nerve damage. Surgical treatment included root removal and microsurgical end-to-end neurorrhaphy with 8-0 polypropylene under magnification.

Results: at 8 months, sensory function progressively improved. Neuropathic pain and burning sensation resolved completely. Oral function recovered with significant quality-of-life improvement.

Conclusions: microsurgical neurorrhaphy is the gold standard for lingual nerve neurotmesis and can provide significant functional recovery, even when performed later.

SURGICAL MANAGEMENT OF PERIPHERAL GIANT CELL GRANULOMA IN A MEDICALLY COMPLEX PATIENT: STAGED APPROACH AND HEMORRHAGE CONTROL CHALLENGES

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Aim: Peripheral giant cell granuloma (PGCG) typically requires surgical excision. Systemic conditions such as diabetes mellitus and anticoagulant therapy pose significant challenges to surgical management. This report describes a staged approach focused on intraoperative hemorrhage control in a patient with multiple comorbidities.

Methods: a patient with type 2 diabetes mellitus on rivaroxaban presented with a gingival lesion of ~2 cm, clinically suggestive of PGCG. Incisional biopsy confirmed the diagnosis histopathologically. Intralesional corticosteroid injections were planned (four weekly sessions) but discontinued after two due to inadequate glycemic control, with partial regression. Surgical excision under local anesthesia with epinephrine extended to bone with full periosteal removal. Intraoperative evaluation prompted concurrent extraction of tooth 4.2 (grade III mobility, root resorption). Hemorrhage from intraosseous vessels was managed with bipolar electrosurgery. Oxidized regenerated cellulose was applied as compressive pack for secondary intention healing, sutured with Vicryl 4-0.

Results: at 7-day evaluation, no signs of infection were observed. Complete tissue resolution was achieved at the 1-month postoperative follow-up, with no recurrence.

Conclusions: in medically complex patients with PGCG, a staged approach combining preoperative intralesional corticosteroid injections - even when incomplete- to reduce lesion volume, and meticulous intraoperative hemorrhage control, facilitates safe and predictable surgical outcomes.

IMPLANT REHABILITATION OF CENTRAL INCISOR: A STAGED APPROACH

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Aim: the aim of this case report is to demonstrate how the aesthetic in the anterior maxilla can be a result of many surgical steps.

Materials and methods: in the same surgical time, a guided bone regeneration technique with a multiple staged approach and the implant placement was performed.

Results: the satisfactory aesthetic result obtained with multi-step bone and soft tissue regeneration was reported.

Conclusions: aesthetics in implantology is related to correct management of many phases: presurgical planning, surgical technique, and prosthetic rehabilitation. In the presurgical phase, preexisting anatomical conditions can influence the choice of regenerative techniques. Only a successful anatomical correction of hard and soft tissues can assure a satisfying therapeutic achievement involving many operative steps and the rigorous observance of recovery timing.

PIEZOELECTRIC ADVANTAGES IN HIGH-RISK GERMECTOMY OF IMPACTED MANDIBULAR THIRD MOLAR (4.8) WITH NAI CONTACT: 17-YEAR-OLD CASE REPORT

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Aim: this report presents a piezoelectric germectomy, highlighting how this technology mitigates the risks of traditional rotary extraction. Impacted mandibular third molars with curved roots in close proximity to the inferior alveolar nerve (IAN) significantly elevate the risk of nerve injury (0.4-8.4%). Piezoelectric surgery addresses this via minimising vibration, bleeding, and soft tissue trauma —ultimately reducing postoperative pain, swelling, and trismus.

The case involves a 17-year-old patient presenting with a mesio-angularly impacted mandibular right third molar (4.8), classified as Pell-Gregory Class II, Position C, and Winter Class II. OPG and CBCT confirmed the tooth's close proximity to the IAN canal. Under local anesthesia, the germectomy was performed using a piezoelectric device equipped with diamond-coated inserts. A buccal flap was raised, and selective

osteotomy was executed, meticulously preserving the periodontal ligament integrity of the adjacent second molar. The follicle was enucleated intact without the use of rotary burs; primary closure followed with 4-0 Vicryl sutures.

Results: surgery duration was 25 minutes with negligible bleeding. Postoperative OPG showed no IAN involvement or bone defects. The patient reported minimal pain (VAS score 2/10 at 24 hours), no edema, and uneventful healing at 1-week follow-up.

Conclusions: piezoelectric germectomy enables precise, atraumatic extraction of impacted third molars, minimizing neurovascular risks and enhancing recovery. This case underscores its efficacy as a superior alternative to conventional methods.

DOUBLE-LAYER CLOSURE OF AN IATROGENIC OROANTRAL COMMUNICATION USING A PEDICLED BUCCAL FAT PAD AND A SLIDING MUCOPERIOSTEAL FLAP: A CASE REPORT

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Aim: the aim of this work is to report the successful management of a iatrogenic oroantral communication using a double-layer technique, based on current surgical evidence.

Methods: a 62-year-old male patient was managed at the Oral Surgery Unit, University of Milan, with written informed consent obtained and surgical details recorded. The patient had no significant past medical history, no known drug allergies, and no ongoing pharmacological therapy.

The patient presented with a medium-sized (approximately 6 mm) oroantral communication occurring as a complication associated with implant rehabilitation procedures in the 2.6 region. Under local anesthesia, a trapezoidal mucoperiosteal flap was reflected extending from site 2.4 to 2.7. The pedicled buccal fat pad was released through a small periosteal inci-

sion, mobilized, and anchored over the defect without tension using absorbable sutures. A hermetic seal was obtained through primary intention closure of the mucoperiosteal flap over the anchored pad. Postoperative care included amoxicillin/clavulanic acid 1g three times a day, chlorhexidine 0.2% rinses and nasal saline irrigation for 15 days.

Results: at 7 days the site showed uneventful healing with stable margins and no signs of nasal regurgitation. Partial aesthetic restoration, with no clinical signs of residual communication or sinusitis were observed.

Conclusions: the double-layer approach provides a highly predictable seal for iatrogenic OAC closure, ensuring a stable and robustly vascularized hermetic seal. Further standardized studies with longer follow-up are needed.

LINGUAL FRENECTOMY WITH ND:YAG LASER (NEODYMIUM YTTRIUM-ALUMINUM GARNET)

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Aim: ankyloglossia, or short lingual frenulum, can lead to significant functional limitations in children, including speech impediments (difficulty with phonemes d, l, n, r, s, t, z), orthodontic malocclusions (cross-bite or open-bite), and increased risks of periodontal issues. This study aims to evaluate the benefits of utilizing a DM200 Nd:YAG laser for lingual frenectomy in pediatric patients.

Methods: a 7-year-old male patient with ankyloglossia, was treated. The procedure was performed under topical anesthesia (lidocaine spray) using a DM200 Nd:YAG laser (320-micron fiber, 3.5 Watt, 200Hz). Post-operative instruc-

tions included 0.12% chlorhexidine spray for 7 days and myofunctional therapy.

Results: no intraoperative pain or psychological trauma was reported. Bleeding was negligible, and the patient achieved immediate functional recovery, speaking and eating comfortably on the day of surgery.

Conclusions: Nd:YAG laser technology represents an excellent surgical option for pediatric frenectomy. It avoids the need for general anesthesia, ensures a bloodless surgical field, and promotes rapid, suture-free healing.

TREATMENT OF TWO TEETH VIA APICOECTOMY: A CASE REPORT WITH FOLLOW UP

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Aim: to report the treatment of a large periapical lesion by surgical resection and apicoectomy of two adjacent teeth, with a 6-month follow-up showing healing and no signs of endodontic complications.

Methods: a 32-year-old patient presented with tenderness and recent swelling in two maxillary incisors, both previously treated endodontically, associated with a large periapical lesion. A CBCT scan was obtained and revealed a well-defined radiolucent lesion periapical to teeth 1.1 and 1.2. The lesion was surgically removed, and apicoectomy, retrograde cavity preparation with a piezosurgical instrument, and retrograde obturation of both teeth with mineral trioxide aggregate (MTA) were performed. The specimen obtained during lesion removal

was submitted for histological analysis to confirm the nature of the periapical lesion. The patient was evaluated clinically and radiographically at 1 and 6 months postoperatively to assess healing and the effectiveness of the apical seal.

Results: histological analysis confirmed the clinical diagnosis of inflammatory periapical granuloma. At follow-up visits, the patient was asymptomatic, and radiographs showed signs of bone healing with no further endodontic complications.

Conclusions: this case report demonstrates that apicoectomy can be an effective treatment for large endodontic lesions and may allow conservative preservation of affected teeth without the need for extraction.

SURGICAL MANAGEMENT OF OROANTRAL COMMUNICATION FOLLOWING THIRD MOLAR EXTRACTION: PRIMARY CLOSURE WITH MUCOPERIOSTEAL FLAP AND BUCCAL FAT PAD

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Aim: to describe the surgical management of an oroantral communication following extraction of tooth 28, evaluating the effectiveness of primary closure using a mucoperiosteal flap combined with the buccal fat pad.

Methods: after informed consent, the procedure was performed under plexus anesthesia with 2% mepivacaine with vasoconstrictor. A trapezoidal mucoperiosteal flap was elevated in the region of tooth 28, followed by identification, exposure, and mobilization of the buccal fat pad. The oroantral communication was closed by primary intention using resorbable 4/0 vicryl sutures, with horizontal mattress and single interrupted stitches. Careful flap passivation was performed to obtain a tension-free closure, then the flap was repositioned and sutured. Hemostasis was achieved by compression. Post-

operative therapy included clarithromycin 500 mg every 12 hours for 6 days, paracetamol 1000 mg as needed, and 0.2% chlorhexidine mouthwash three times daily for 10 days starting from the day after surgery.

Results: the postoperative course was uneventful, with no signs of infection, wound dehiscence, or sinus complications. Stable closure of the communication and complete resolution of the defect were observed. Clinical follow-up showed satisfactory soft tissue healing and absence of oroantral fistula formation.

Conclusions: primary closure using a mucoperiosteal flap associated with the buccal fat pad represents a reliable and predictable technique. Adequate surgical execution and postoperative management contribute to minimizing complications and achieving optimal healing outcomes.

MULTIDISCIPLINARY SURGICAL MANAGEMENT OF A MAXILLARY OSTEOLYTIC LESION UNDER GENERAL ANESTHESIA IN A PATIENT WITH SEVERE COGNITIVE IMPAIRMENT

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Aim: the aim of this clinical case report is to describe the multidisciplinary surgical management of an odontogenic cyst in a noncooperative patient with severe cognitive impairment, highlighting the role of general anesthesia in ensuring safe and effective treatment.

Methods: a 55-year-old male patient with severe cognitive impairment (ASA III) had a large osteolytic lesion in the left jaw. Due to poor compliance, surgical treatment under general anesthesia was planned. Radiographic evaluation (panoramic radiography and CT scan) revealed a well-defined radiolucent lesion in the second quadrant, involving the alveolar process and residual roots, suspected of being an odontogenic lesion. In the day hospital setting and under general anesthesia, extraction of residual roots in the second quadrant and complete enucleation of the lesion were performed. The sample was subjected to histopathological analysis.

Results: macroscopic examination revealed a lesion 1.8 cm in diameter. Histological analysis revealed a cystic wall lined by stratified squamous epithelium with associated chronic and acute inflammatory infiltrate, leading to the diagnosis of odontogenic cyst. The postoperative course was smooth, with proper wound healing and resolution of local inflammation.

Conclusions: this case highlights the importance of a multidisciplinary and individualized approach in the management of frail and uncooperative patients. General anesthesia represents a valuable option to ensure procedural safety and therapeutic success. Accurate radiological diagnosis and timely surgical management are essential to prevent complications, while coordinated teamwork is essential to achieve optimal results in complex clinical scenarios.

COMPUTER-GUIDED PIEZOSURGERY IN ENDODONTIC SURGERY: A CASE REPORT

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Aim: the aim of this case report is to present a minimally invasive technique for the surgical management of periapical lesions in an anatomically high-risk area due to the proximity to the inferior alveolar and mental nerves.

Methods: a 53-year-old male patient underwent a panoramic radiograph, which revealed a circular radiolucent lesion, approximately 2 cm in diameter, at the apex of tooth 36, previously treated endodontically. A cone-beam computed tomography (CBCT) scan was performed, showing the proximity of the lesion to the inferior alveolar nerve and the emergence of the mental nerve. Based on CBCT data, a hybrid tooth- and bone-supported surgical guide was produced. A full-thickness flap from tooth 34 to 37 was reflected buccally. Computer-guided osteotomy was performed using the surgical guide

designed to direct the piezosurgery saw tip along the planned osteotomy planes, creating a bone window involving the apices of tooth 36. The bone window was detached, the apices of tooth 36 resected and the lesion enucleated. At the end the bone lid was repositioned without the need for rigid fixation, and a tension-free flap closure was obtained.

Results: the patient experienced an uneventful postoperative course. The six-month follow-up CBCT showed ongoing bone healing at the site of the lesion.

Conclusions: this case report demonstrates the positive outcomes of a minimally invasive, computer-guided technique for the surgical treatment of a lesion of endodontic origin in an anatomically high-risk area, emphasizing the importance of precise planning to reduce surgical morbidity.

APPLICATION OF PIEZOELECTRIC SURGERY IN THIRD MOLAR EXTRACTION

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Aim: the aim of this study is the assessment of piezoelectric elevator (Mectron S.p.A., Carasco, Italy) application for the extraction of third molars through the presentation of two clinical cases.

Methods: two patients underwent extraction of impacted third molar germs (elements 1.8, 4.8, 2.8 and 3.8). Piezoelectric instruments were chosen in order to reduce surgical trauma since the teeth were close to vital anatomical structures. After local anaesthesia and elevation of a mucoperiosteal flap a standardized procedure has been performed. Syndesmotomy was done with EX1 piezoelectric insert, pericoronal ostectomy with OT7 micro-saw insert. Upper third molars did not require odontotomy and were extracted without it, while lower molars were extracted after odontotomy performed with conical bur

and conventional elevator. Extractions were finished using EXL-2 short piezoelectric elevator, followed by socket debridement and 4/0 silk sutures.

Results: postoperative pain was well controlled in both cases with the use of analgesics only on the first day. Patients reported minimal discomfort and postoperative course was without complications and showed uneventful wound healing.

Conclusions: piezoelectric instruments enhanced surgical visibility, allowing for precise ostectomy and minimally invasive extraction of impacted molars. This technology promotes high-precision surgery and bone tissue preservation. It is especially useful for surgeries that call for utmost care because of the closeness of important anatomical structures, such as implant dentistry.

MANAGEMENT OF INFERIOR ALVEOLAR NERVE INVOLVED IN OSTEOLYTIC LESIONS: A CASE SERIES

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Surgical management of inferior alveolar nerve involved in osteolytic lesion. Review of literature and report of a case.

Aim: the risk of inferior alveolar nerve damage is a significant concern for both clinicians and patients. It can occur during third molars extractions or cyst enucleation; this study aims to evaluate the best surgical strategies to ensure clinical success and patients' safety and to report one case successfully treated with nerve isolation.

Methods: the state of the art of evidence indicates various techniques such as: piezoelectric surgery, multistage resection technique, inferior alveolar nerve lateralization throughout a collagen membrane, tubing technique (consisting of wrapping a standard suction catheter around the exposed nerve to facil-

itate full coverage), cover lifting technique and also some advanced tools like Blender software that allows to create a guide for surgical procedures that involves the nerve.

Results: no specific benefits were described in using one technique over another. However, the inferior alveolar nerve preservation guarantees a high quality of life mainly when patients go through invasive surgery. Authors say by mutual agreement that CBCT evaluation and clinical experience are the basis for success.

Conclusions: inferior alveolar nerve preservation should be a primary goal during surgical procedures related to possible damage. Staying informed about state-of-the-art techniques is key.

TOOTH REPLANTATION IN ORTHODONTIC PATIENTS: CASE SERIES AND LITERATURE REVIEW

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Aim: this study aims to evaluate the clinical outcomes of intentional tooth replantation (IR) in orthodontic patients, analysing the role of the procedure within a multidisciplinary treatment approach.

Methods: three orthodontic patients treated in the orthodontic department of Dental School in Turin underwent intentional tooth replantation respectively for osseous impaction of tooth 1.5 with a delay in eruption of approximately 4 years, an odontogenic myxoma displacing tooth 2.5 and the failure of orthodontic traction for tooth 2.3. Outcomes were assessed through clinical and radiographic follow-up ranging from 13 to 20 months. A narrative review of the available literature on intentional tooth replantation was also performed.

Results: after a follow-up ranging from 13 to 20 months all three replanted teeth were clinically stable, asymptomatic and periodontally healthy. Radiographically there were no signs of root resorption, ankylosis or periapical pathology.

Conclusions: intentional tooth replantation may represent a valid option within a multidisciplinary approach to orthodontic treatment. In growing patients, the survival of replanted teeth represents a relevant clinical outcome, as it allows the preservation of bone volume, function, aesthetics and gingival profile. In adult patients, IR may serve as a tooth-preserving procedure, maintaining the alveolar site until implant rehabilitation, if required. Further studies with larger sample sizes and longer follow-up are needed to consolidate the available evidence.

COMBINED REGENERATIVE APPROACH FOR THE REHABILITATION OF THE ATROPHIC MAXILLA: AN ESTHETIC-FUNCTIONAL CLINIC CASE

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Objective: this case report aims to evaluate the effectiveness of a combined regenerative approach for the functional and aesthetic rehabilitation of severe maxillary atrophy

Materials and methods: a 72-year-old female patient underwent clinical and radiographic evaluation, including intraoral/extraoral photographs, panoramic radiography, and CBCT. Teeth 1.6 and 2.6 were extracted and processed to obtain autologous demineralized dentin matrix enriched with growth factors. Autologous membranes were prepared from peripheral blood samples. A piezosurgery-assisted split crest technique was performed in the anterior maxilla, with placement of

two implants in positions 1.2 and 2.2. Simultaneous guided bone regeneration was achieved using autologous dentin, heterologous biomaterial, and autologous membranes

Results: at 240-day follow-up, clinical and radiographic evaluation showed adequate bone regeneration, implant stability, and absence of complications. The final prosthetic rehabilitation achieved satisfactory functional and aesthetic outcomes

Conclusions: the combined regenerative approach using autologous demineralized dentin, heterologous biomaterials, and autologous membranes appears to be effective for the rehabilitation of severe maxillary atrophy.

CONTEMPORARY ADVANCES IN GUIDED BONE REGENERATION: NOVEL INSIGHTS INTO AUTOLOGOUS AND XENOGENEIC GRAFTING

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Aim: to evaluate an innovative approach for socket preservation by combining demineralized dentin and xenogeneic grafts in order to reduce post-extraction bone resorption and improve clinical outcomes.

Materials and methods: tooth extraction is associated with significant dimensional changes of the alveolar ridge, with bone loss reaching up to 60% of the initial volume. Socket preservation techniques involve the use of grafting materials to limit this resorption. Xenogeneic grafts, widely used in clinical practice, primarily act as osteoconductive scaffolds but lack osteoinductive properties. In contrast, demineralized dentin exhibits both osteoinductive and osteoconductive potential, although its clinical availability may be limited. Therefore, a

combined use of these two materials is proposed to exploit their potential synergistic effects.

Results: the combination of demineralized dentin and xenogeneic grafts may enhance alveolar ridge preservation compared to the use of xenogeneic grafts alone, due to the integration of osteoinductive and osteoconductive properties. This approach could help reduce post-extraction bone resorption and improve the quality of regenerated tissue.

Conclusions: the association of demineralized dentin with xenogeneic grafts represents a promising strategy for socket preservation, potentially improving regenerative outcomes. Further clinical studies are needed to confirm the effectiveness and predictability of this approach.

IMPLANT-SUPPORTED NASAL EPITHESES: FUNCTIONAL AND AESTHETIC OUTCOMES

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Aim: the aim of this study is to evaluate the advantages of implant-retained anchorage in the prosthetic rehabilitation of the nasal region and to assess the clinical application of osseointegrated implants for supporting nasal epitheses in post-oncological patients.

Materials and methods: pre-surgical planning was conducted using computer-aided design (CAD) software, which is essential for precise fixture localization and the preservation of adjacent anatomical structures. Two clinical cases were analyzed, involving the placement of two implants per patient. A slightly divergent emergence profile was planned to facilitate prosthetic seating and optimize clinical procedures. Definitive prostheses were fabricated using medi-

cal-grade silicone (or resin) to ensure optimal aesthetic integration.

Results: the study reports an implant survival rate of 100% over a 3-year follow-up period, confirming the reliability of osseointegrated implants in maxillofacial prosthetics. Extraoral rehabilitation restores facial aesthetics and protects underlying tissues. The integration of implants with percutaneous abutments ensures superior prosthetic retention, stability, and patient comfort.

Conclusions: for post-oncological patients, implant-supported facial prostheses represent an effective and often definitive rehabilitative strategy. This approach successfully combines realistic morphological restoration and improved quality of life with effective oncological surveillance during long-term follow-up.

MINIMALLY INVASIVE SURGICALLY ASSISTED MARPE TECHNIQUE (MIS-MARPE): AVOIDING CONVENTIONAL HORIZONTAL MAXILLARY OSTEOTOMIES – A TECHNICAL NOTE

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Aim: this study, conducted at the Maxillofacial Surgery Unit of the “Ospedali Riuniti” University Hospital of Ancona, aims to evaluate the effectiveness of maxillary expansion using a minimally invasive surgically assisted MARPE approach (SA-MARPE) in adult patients with transverse maxillary deficiency (DTMS), proposing a CBCT-based decision-making algorithm.

Methods: fourteen patients (7F, 7M; mean age 27.08 ± 5.85 years) with DTMS and completed skeletal growth were enrolled. Inclusion criteria: skeletal discrepancy requiring palatal expansion, skeletal maturity and compliance. Exclusion criteria: high anesthetic risk, immunosuppression, intravenous bisphosphonate therapy, uncontrolled diabetes, pregnancy/lactation and poor oral hygiene. CBCT analysis was performed at pre-operative (T0) and post-operative (T1) stages. In cases requiring greater expansion, a SA-MARPE approach was performed using a microimplant-assisted expander with paramedian palatal miniscrews. This configuration allows direct skeletal force transmission.

Results: comparison between T0 and T1 values showed a significant increase in transverse maxillary dimension: pre-operative (T0) deficiency values improved post-operatively (T1) according to treatment planning. The mean expansion achieved was approximately 6 mm. The SA-MARPE approach demonstrated high predictability in achieving skeletal expansion, with preservation of buccal and palatal cortical bone thickness (WALA ridge) and reduced dentoalveolar side effects.

Conclusions: SA-MARPE represents a highly effective and reliable minimally invasive approach for treating DTMS in adult patients, achieving significant skeletal expansion. CBCT-based T0–T1 assessment enhances treatment planning accuracy and outcome predictability, improving biological safety and long-term stability.

EVALUATING DIFFERENT BONE SUBSTITUTES IN MAXILLARY SINUS FLOOR ELEVATION: A LITERATURE REVIEW

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Aim: maxillary sinus lift procedures are routine in dentistry but remain challenging due to higher complication rates than other regenerative techniques. This systematic review aims to compare different bone substitutes — alloplastic, allografts, dental matrix, and bovine bone— to evaluate their effectiveness in sinus floor elevation.

Methods: a systematic search was conducted on PubMed/Central, PubMed/Medline, Web of Science, and Google Scholar following PRISMA guidelines.

Results: Tricalcium phosphate (TCP) promotes faster bone formation but is prone to volume loss, potentially exposing implant apices. Bovine bone demonstrates superior long-term volume maintenance. Among allografts, DFDBA is

more osteoinductive than FDBA, though FDBA resorbs more slowly, offering better space maintenance. Ground dentin is as osteoinductive as DFDBA and maintains volume like bovine bone. While Platelet-Rich Fibrin (PRF) improves neovascularization and soft tissue healing, it shows no long-term benefits for hard tissue. Conversely, Bone Morphogenetic Proteins (BMP) yielded promising results, especially with collagen-based biomaterials.

Conclusions: an ideal biomaterial should maintain its volume until fully replaced by newly formed bone. Since no single material meets all requirements, combining different substitutes is recommended. Dental matrix shows significant potential, though further studies are necessary.

GUIDED BONE CONSERVATION AND REGENERATION USING • CGF AND PRF ASSOCIATED WITH DIFFERENT TYPES OF SCAFFOLDS: A SYSTEMATIC REVIEW

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Aim: bone regeneration is crucial in modern oral surgery to facilitate successful implant-prosthetic rehabilitation. This systematic review explores the regenerative potential of growth factors, such as Platelet-Rich Fibrin (PRF) and Concentrated Growth Factors (CGF), combined with various scaffolds in bone augmentation procedures, including guided bone regeneration, split crest, and sinus lift.

Methods: a comprehensive search was conducted across PubMed, Web of Science, and Scopus databases using terms such as “Bone Regeneration”, “Scaffold”, “CGF”, and “PRF”. Eighteen relevant studies published in English over the last ten years were selected and analyzed for outcomes related to bone formation and stabilization.

Results: findings indicate that PRF enhances bone regenera-

tion and stabilization in sinus lift and alveolar ridge augmentation. CGF facilitates surgical techniques (e.g., “sticky bone” applications) and improves bone volume. Growth factors also demonstrate benefits in wound healing, reducing bone resorption, and enhancing post-extraction socket preservation. The review highlights the critical role of scaffolds as a structural framework and the increasing impact of growth factors on bone augmentation and soft tissue healing.

Conclusions: despite valuable insights, some studies reported no significant differences, suggesting that further research is needed. Large-scale epidemiological studies and analysis of diverse clinical applications are essential to fully understand growth factor characteristics and achieve a comprehensive comparison for standardized clinical protocols.

DEMINERALIZED VS MINERALIZED DENTIN MATRIX IN BONE REGENERATION: A SYSTEMATIC REVIEW

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Aim: this review evaluates the use of tooth matrix in bone regeneration, comparing its performance in mineralized and demineralized forms. Tooth-derived material serves as an ideal scaffold, consisting of 65% inorganic hydroxyapatite and 35% organic components, primarily Type 1 collagen and Bone Morphogenetic Proteins (BMPs). BMPs are crucial for differentiating mesenchymal cells into osteoblasts. Given their high solubility, BMPs require a carrier to maintain their osteoinductive potential, a role effectively filled by tooth-based biomaterials.

Methods: a Boolean search was conducted across PubMed/Medline, Google Scholar, and Web of Science to analyze the current scientific literature regarding the efficacy and biological behavior of different tooth matrix preparations.

Results: evidence suggests that mineralized tooth matrix resorbs slowly and may fail to trigger new bone formation. Conversely, complete demineralization can destroy dentinal tubules and reduce osteogenic potential by eliminating essential proteins. Partially demineralized tooth matrix shows the highest regenerative potential, as it preserves BMPs and collagen. These demineralized surfaces enhance osteoblast adhesion, while decalcification makes the matrix more accessible to collagenolytic enzymes, facilitating the remodeling process.

Conclusions: chemically, tooth matrix is comparable to bone but more highly mineralized. While both fully mineralized and totally demineralized matrices yield suboptimal results, partially demineralized dentin represents a promising graft material for effective bone regeneration.

CYANOACRYLATE TISSUE ADHESIVES IN ORAL SURGERY AND PERIODONTOLOGY

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Aim: Cyanoacrylate (CA) tissue adhesives have gained increasing attention as potential alternatives to conventional sutures in oral surgery and periodontology. The aim of this scoping review is to evaluate their clinical applications and effectiveness in wound closure and postoperative management.

Methods: this scoping review was conducted in accordance with the JBI methodology and PRISMA-ScR guidelines. A comprehensive literature search was performed in PubMed, Scopus, and Web of Science to identify randomized controlled trials (RCT) published between 2015 and 2025 investigating the use of CAs in oral surgical and periodontal procedures.

Results: a total of 19 studies were included. Cyanoacrylates

exhibited similar or superior outcomes to other wound closure strategies in terms of operative time, postoperative pain reduction, and early wound healing. Their use was particularly beneficial in free gingival grafts procedures and palatal donor site management. Long-chain CA formulations are associated with minimal toxicological risk, while these adhesives demonstrate intrinsic hemostatic and antimicrobial effects.

Conclusions: cyanoacrylate tissue adhesives may represent a viable alternative to sutures in selected dental surgical procedures, particularly in mucogingival grafting contexts. Further high-quality clinical studies are needed to clarify their long-term outcomes and broaden their indications in dentistry.

ARTIFICIAL INTELLIGENCE FOR INFERIOR ALVEOLAR NERVE SEGMENTATION IN CBCT IMAGING: A SYSTEMATIC REVIEW

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Aim: to evaluate the accuracy of artificial intelligence (AI) in detecting the inferior alveolar nerve in CBCT images for oral surgery and implant planning.

Methods: a literature review was conducted using PubMed, Scopus, and Google Scholar. Studies published between 2018 and 2026 were included using keywords such as “artificial intelligence and cone-beam computed tomography or cone-beam CT or CBCT”, “artificial intelligence and inferior alveolar nerve”, “artificial intelligence and mandibular nerve”. Only studies evaluating AI-based segmentation of the mandibular canal were selected. Furthermore, only articles available as free full text and published in English were included. The re-

view was conducted following PRISMA principles, and a total of 12 studies were analyzed.

Results: artificial intelligence demonstrated high performance in the identification of the inferior alveolar nerve on CBCT images, with reported accuracy often exceeding 85%. AI systems showed performance comparable to experienced clinicians while improving reproducibility and reducing operator-dependent variability.

Conclusions: artificial intelligence represents a reliable and promising tool for inferior alveolar nerve detection in CBCT imaging, potentially improving surgical safety and planning. However, further clinical validation is required before routine implementation.

EVALUATION OF HEALING IN MEDICATION-RELATED OSTEONECROSIS OF THE JAW TREATED WITH PIEZOELECTRIC INSTRUMENTS: A SYSTEMATIC REVIEW OF THE LAST TEN YEARS

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Aim: to evaluate the clinical outcomes of surgical treatments for Medication-Related Osteonecrosis of the Jaw (MRONJ) by mean of piezoelectric devices.

Methods: this systematic review was registered on PROSPERO (CRD420261344908) and conducted in accordance with PRISMA guidelines. The literature search was performed across the PubMed database and additional sources. Two independent reviewers (CS and RM) analysed the articles, selecting them based on pre-established inclusion criteria. According to the PICO framework (P: Patients with MRONJ; I: Surgical treatment performed with piezoelectric instruments; Co: Worldwide), the following research question was formulated "What are the healing outcomes in patients with MRONJ undergoing surgery with piezoelectric instruments?".

Results: eleven articles were included, analysing 502 patients with MRONJ for a total of 364 surgical procedures. The most common bone modifying agent administered were zoledronic acid the oncological group, and alendronate in the osteoporotic group. The individual studies indicated favourable soft tissue healing as early as two weeks postoperatively, accompanied by the complete resolution or significant reduction of symptoms. Subsequent follow-up at 6 and/or 12 months demonstrated complete surgical wound closure.

Conclusions: the use of piezoelectric instruments in the surgical management of MRONJ patients appears to be effective, although it should be highlighted that the analysed studies are heterogeneous, combining surgery with adjuvant therapies, including oxygen-ozone therapy, CGF or PRF.

EFFICACY OF PROPHYLACTIC ANTIBIOTICS IN PREVENTING POSTOPERATIVE INFECTIONS AFTER THIRD MOLAR EXTRACTION IN HEALTHY PATIENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Aim: to assess the efficacy and safety of systemic antibiotic prophylaxis in preventing postoperative infectious complications after surgical extraction of impacted or semi-impacted third molars in healthy patients.

Methods: a systematic review and meta-analysis of randomised controlled trials was conducted according to PRISMA. Studies comparing systemic antibiotics with placebo or no antibiotics in ASA I-II healthy patients were included. The primary outcome was postoperative surgical site infection (SSI). Secondary outcomes were alveolar osteitis (dry socket) and antibiotic-related adverse events. Pooled risk ratios (RRs) with 95% confidence intervals (CIs) were calculated using a Mantel-Haenszel fixed-effect model.

Results: eight randomised controlled trials were included, in-

volving 970 patients and 1893 surgical sites. Antibiotic prophylaxis reduced SSI risk *versus* controls (RR 0.53, 95% CI 0.33–0.86; $I^2 = 0\%$). For dry socket, four studies showed a borderline reduction (RR 0.54, 95% CI 0.29–0.99; $I^2 = 28\%$). Pain, swelling and trismus were heterogeneously reported and narratively synthesised. Some studies reported more gastrointestinal symptoms in antibiotic groups.

Conclusions: in healthy patients undergoing third molar surgery, systemic antibiotic prophylaxis may reduce the relative risk of SSI, but the absolute benefit appears modest because of the low baseline infection rate. Routine use should therefore be avoided and prescribing should be individualised, balancing potential benefit against adverse effects and antimicrobial stewardship.

VOLUMETRIC EVALUATION OF COMPLEX BONE REGENERATION USING THE FLEXIBLE CORTICAL LAMINA TECHNIQUE

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Aim: this prospective study evaluates volumetric changes in complex bone defects reconstructed with segmented flexible cortical bone sheets. Pre and post-regeneration CBCT scans were compared to quantify three-dimensional bone gain and analyze long-term stability around implants functioning for more than three years.

Methods: as part of this ongoing prospective study, patients previously treated with flexible cortical laminae for Guided Bone Regeneration (GBR) and later rehabilitated with dental implants were re-evaluated. Baseline and follow-up CBCT scans, acquired using the same device, were processed into Exocad for standardized 3D alignment. Regenerated bone volume was quantified using a dedicated segmentation software. Intraoral radiographs were also examined to monitor peri-implant crestal stability over time.

Results: preliminary prospective findings show that controlled segmentation provides reliable volumetric comparison between baseline and follow-up CBCTs. Early findings indicate consistent regenerated bone volumes and stable osseointegration of implants placed in areas previously reconstructed with flexible cortical sheets. Radiographic evaluation confirmed maintenance of the peri-implant crestal levels.

Discussion: in this prospective study, flexible cortical bone sheets demonstrated the ability to preserve space and facilitate structured 3D regeneration. Early results suggest that volumetric CBCT analysis is a valuable tool for assessing regenerative outcomes and long-term implant stability. Further enrollment and prolonged follow-up are essential to confirm these observations and develop standardized volumetric benchmarks.

TOPICAL ANTIBACTERIAL COLLAGEN SUBSTITUTE VS SYSTEMIC TREATMENT IN POST-EXTRACTION SOCKETS OF PATIENTS ON LOW-DOSE ANTIRESORPTIVE THERAPY: A SPLIT-MOUTH STUDY

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Aim: this pilot clinical study aimed to evaluate the efficacy of a gentamicin-releasing collagen substitute (PARASORB® Cone Genta) compared with systemic antibiotic therapy in post-extraction sockets of patients undergoing low-dose anti-resorptive therapy, with the purpose of reducing systemic antibiotic use and supporting antibiotic stewardship.

Methods: seventeen patients receiving low-dose bone-modifying agents (LD-BMA) and requiring at least two non-adjacent tooth extractions were enrolled in a prospective split-mouth study, with the two extractions performed 14 days apart. One site was treated with systemic antibiotics, while the contralateral site received a topical collagen substitute without systemic therapy. Follow-up was performed at 7, 14, 30 days and 6

months. Healing was assessed using an adapted version of the *IPR Wound Healing Scale*, and patient-reported outcomes were collected.

Results: no statistically significant differences were observed between treatments, with comparable healing outcomes at all time points. Both groups showed significant improvement over time. No postoperative infections or cases of MRONJ occurred. Patients reported good tolerability and a preference for topical therapy.

Conclusions: within the limitations of this pilot study, topical therapy demonstrated clinical outcomes comparable to systemic antibiotics and may represent a valid strategy to reduce systemic antibiotic exposure.

THE CONTRIBUTION OF GUIDED SURGERY FOR BIOPSIES OF JAW LESIONS USING 3D-PRINTED SURGICAL GUIDES: DIGITAL WORKFLOW

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Aim: this paper aims to assess how guided surgery can enhance accuracy, safety, and overall effectiveness in biopsy of jaw lesions, with particular focus on sample quality and complication reduction.

Methods: a fully digital workflow was adopted, based on three-dimensional imaging (CBCT) and dedicated planning software. 3D-printed surgical guides were used, featuring access windows that allowed precise targeting of the lesion. This approach enabled a focused access to the biopsy site, significantly reducing surgical invasiveness and improving intraoperative control.

Results: guided surgery allows greater accuracy in identifying the biopsy site, improving both the quality and representativeness of the sample. A reduction in the risk of damage to critical anatomical structures was observed, along with shorter operative times and decreased postoperative discomfort for patients.

Conclusions: the integration of guided surgery in bone biopsies represents a significant advancement in dentistry, increasing diagnostic predictability and effectiveness. Despite limitations related to costs and required training, this method appears to be a promising tool for modern clinical practice.

EVALUATION OF THE EFFECTIVENESS OF PIEZOELECTRIC TECHNIQUES ON THE DECONTAMINATION OF THE POST-EXTRACTION SOCKET

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Aim: post-extraction socket healing may be compromised by bacterial contamination, delaying clot stability and tissue repair. Saline irrigation has limited efficacy in biofilm removal, whereas piezoelectric cavitation may offer both mechanical and antimicrobial benefits. This study evaluated socket decontamination after extraction using cavitation and piezoelectric revision.

Methods: in this prospective trial, patients aged 18-100 years requiring at least two hopeless single-rooted teeth, ASA ≤ 3 , and good compliance were enrolled. Exclusion criteria included uncontrolled diabetes, immunosuppression, pregnancy, lactation, heavy smoking, recent oncologic therapy, and complex extractions. After atraumatic extraction, a baseline swab (T0) was collected. Sockets were randomized to Group P (Pie-

zoclean with refrigerated saline, 90 s), Group C (piezoelectric revision, 60 s), or Group F (saline irrigation, 60 s). A second swab (T1) was then obtained. Samples were cultured anaerobically, analyzed blindly, and CFUs quantified with ImageJ. Statistics used Kruskal-Wallis and Dunn tests.

Results: fifty-six sockets were analyzed (17 C, 18 F, 21 P). All groups showed T0-T1 reduction, with significant overall improvement ($p = 0.0065$). Group C differed significantly from F ($p = 0.0017$) and showed a borderline advantage over P ($p = 0.056$).

Conclusions: alveolar decontamination reduced bacterial contamination, especially with piezoelectric curettage or cavitation. Further studies are needed to confirm clinical relevance.

USE OF PLATELET-RICH FIBRIN AS AN ANTIBIOTIC CARRIER IN THIRD MOLAR SURGERY TO REDUCE POSTOPERATIVE COMPLICATIONS WITHOUT SYSTEMIC ANTIBIOTIC ADMINISTRATION: A PILOT RANDOMIZED CONTROLLED STUDY

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Aim: lower third molar surgery (3MS) is associated with various postoperative complications (PC). The application of platelet-rich fibrin (PRF) has been introduced to reduce PC. This study aimed to evaluate the effect of PRF, prepared with and without antibiotic addition, on reducing PC after 3MS.

Methods: a randomized split-mouth clinical trial was set up and 8 patients (18 to 34 years), requiring extraction of both mandibular third molars, were recruited at the Dental Clinic of the Magna Graecia University of Catanzaro. The primary predictive variable was the application of PRF, prepared with antibiotic addition (amoxicillin-sulbactam; test) and without (control) in the post-extraction socket. Antibiotics were administered systemically only in the control group. Primary outcome variable was facial swelling re-

corded with a face scanner preoperatively (T0), after two (T1) and seven (T2) days. Secondary outcome variables were trismus, pain and duration of the surgery.

Results: all patients exhibited a significant increase in facial swelling at T1, followed by a subsequent reduction from T1 to T2, with a slight persistence of edema observed at T2. No significant data emerged from the statistical analysis conducted.

Conclusions: the use of PRF as an antibiotic carrier has proven as effective as the control group in preventing PC. This approach could reduce the need for systemic antibiotic administration in oral surgery in the era of antibiotic resistance. Further studies are needed to confirm the validity of the results presented.

USE OF CONCENTRATED PLATELET-DERIVED GROWTH FACTOR IN TOOTH EXTRACTION SURGERIES AS PREVENTION OF MEDICATION-RELATED OSTEONECROSIS OF THE JAW

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Aim: the term Medication-Related Osteonecrosis of the Jaw (MRONJ) is defined as the presence of exposed bone for more than 8 weeks, without spontaneous remission, in patients currently receiving or who were previously treated with bisphosphonates or monoclonal antibodies with antiresorptive or anti-angiogenic activity, in absence of radiation exposure in the head and neck region. The aim of this study is to assess the effectiveness of Concentrated Growth Factors (CGF) in the MRONJ prevention.

Methods: a total of 125 surgical extractions, performed at the Oral Surgery Department of San Paolo Hospital (Milan) from 1 January 2023 to 30 September 2025, were considered. The protocol provided for antibiotic and antiseptic therapy starting 3 days before surgery and to be continued for the following 14 days. Immediately before the extraction, at least 10 mL of pe-

ripheral venous blood were drawn and centrifuged. One portion of the resulting buffy coat was placed within the extraction socket, whilst the other was used to create a membrane which was sutured to the non-keratinized gingival tissue to achieve primary closure.

Results: only 3 sites of MRONJ (stage I) out of 125 were reported, representing an incidence of 2.4%.

Conclusions: regarding the MRONJ incidence, there were no statistically significant differences between the use of CGF and the traditional primary closure. However, compared with the conventional technique, the CGF protocol appears to offer advantages as: improved tissue healing, reduced post-operative discomfort and preservation of the keratinized gingiva for any subsequent implant-supported restorations.

3D VOLUMETRIC ANALYSIS IN THE DECOMPRESSION OF MAXILLARY CYSTS USING CAD-CAM DEVICES

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Aim: the aim of this study is to evaluate, through 3D volumetric analysis, the reduction of odontogenic cystic lesions treated by surgical decompression using a patient-specific CAD-CAM fabricated device, and to assess the clinical outcomes at 3-years follow-up.

Methods: the protocol includes preoperative assessment using CBCT and histological examination for surgical planning. Following local anesthesia and full-thickness flap elevation, a bony window is created to aspirate the cystic content and irrigate the cavity. Intraoral digital impressions are then acquired using a scanner. CBCT DICOM data and PLY files from the impressions are integrated into dedicated CAD software for the

design of the metal framework and retention system. After fabrication and validation of a resin prototype on 3D models, the final device is produced in surgical alloy using a lost-wax casting technique.

Results: the device proved effective in reducing lesion dimensions. Patients reported improved comfort and oral hygiene, resulting in better compliance and fewer follow-ups. Radiographic evaluation demonstrated progressive bone regeneration, confirmed by 3D volumetric analysis at 3 years.

Conclusions: CAD-CAM technologies enable a personalized approach, improving clinical outcomes and patient quality of life.

CONTRIBUTION OF CBCT-DERIVED RADIOMICS AND MACHINE LEARNING TO THE CHARACTERIZATION OF OSTEOLYTIC LESIONS OF THE JAWS

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Aim: osteolytic jaw lesions are heterogeneous and share radiographic features. Radiomics from CBCT may quantitative biomarkers to aid differential diagnosis between developmental from inflammatory odontogenic cysts.

Methods: a retrospective radiomic analysis was performed on CBCT scans of osteolytic lesions of the jaws from 52 patients; after quality control, 44 jaw lesions were included (28 developmental and 16 inflammatory odontogenic cysts). Lesions were segmented into 3D Slicer, and radiomic features were extracted with PyRadiomics. Non-informative features were removed, and remaining variables were z-score normalized. Unsupervised analyses used K-means and principal component analysis (PCA). Group differences were tested with ANOVA. For supervised classification, PCA-based dimensionality reduction,

mutual-information feature selection, SMOTE oversampling, and repeated stratified 5-fold cross-validation trained Logistic Regression, Random Forest, SVM, Multilayer Perceptron, and a stacking model.

Results: 1437 features per lesion were extracted; 11 differed significantly between cyst types ($p < 0.05$), including shape descriptors and first-order/texture features from wavelet- and LoG-filtered images. Random Forest showed the best performance (AUC 0.76, accuracy 0.74, specificity 0.81, sensitivity 0.61). Unsupervised clustering did not reveal separated groups.

Conclusions: CBCT radiomics detects differences between developmental and inflammatory odontogenic cysts and, combined with machine learning, may improve preoperative characterization and improved clinical decision-making.

ASSOCIATION BETWEEN ANTIBIOTIC PROPHYLAXIS AND POSTOPERATIVE COMPLICATIONS AFTER MANDIBULAR THIRD MOLAR EXTRACTION

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Aim: antibiotic prophylaxis is commonly prescribed following mandibular third molar extraction, although its preventive effectiveness remains debated. This study aimed at evaluating if antibiotic prophylaxis reduces postoperative complications and if a routine antibiotic prophylaxis whether a more selective use, consistent with current clinical guidelines, is more appropriate.

Methods: this retrospective single-center cohort study included mandibular third molar extraction performed between 2020 and 2024. Cases requiring guideline-based antibiotic prophylaxis were excluded. Procedures were classified as simple or complex surgical extractions involving mucoperiosteal flap elevation, osteotomy and/or odontotomy. Patients were grouped according to whether postoperative antibiotic prophylaxis was prescribed. Outcomes included dry socket, bone expo-

sure, surgical site infection and postoperative pain.

Results: among 735 mandibular third molars (133 simple and 602 surgical extractions), complication rates were 2.3% and 2.8%, respectively. No statistically significant association was found between antibiotic use and postoperative complications or pain (complication rate and post-operative pain rate were respectively 4.17% and 8.3% with antibiotics and 1.8% and 7.3% without). Overall, postoperative complications were infrequent (2.3%): 2 dry socket cases, 1 bone exposure and 1 surgical site infection. The NNT to prevent one complication with antibiotic prophylaxis was 70.42.

Conclusions: routine antibiotic prophylaxis did not significantly reduce complication rates, supporting a selective and evidence-based use of antibiotics.

IMPACT OF ANTIBIOTIC PROPHYLAXIS ON POSTOPERATIVE COMPLICATIONS AND PAIN AFTER DENTAL EXTRACTIONS: A RETROSPECTIVE COHORT STUDY

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Aim: the aim of this study was to assess the prevalence of postoperative complications after dental extractions, including pain, in presence or not of antibiotic prophylaxis.

Methods: a retrospective monocentric observational cohort study was conducted at the Unit of Odontostomatology II, ASST Santi Paolo e Carlo Hospital (Milan, Italy). Dental extractions performed between 2020 and 2024 were analyzed. Patients with at least one postoperative follow-up were included; immunocompromised status, treatment with bisphosphonates or monoclonal antibodies affecting bone metabolism, and prior head and neck radiotherapy were excluded. Postoperative complications (infection, bone exposure and dry socket) and pain were recorded. Complication rates were compared between patients receiving antibiotic prophylaxis and those

who did not use Chi-square or Fisher's exact test ($p < 0.05$).

Results: a total of 2128 extractions were analyzed. The overall complication rate was 1.9% (0.52% bone exposure, 0.5% dry socket, 0.9% infection), resolving within 14 days in 94.1% of cases. No significant differences were observed in complication rate between patients receiving antibiotics (1.8%) and those who did not (1.94%). Pain occurred in 7.2% of cases and was not significantly reduced by antibiotics. Higher rates of pain and complications were observed in more invasive procedures, especially when a mucoperiosteal flap was raised.

Conclusions: routine antibiotic prophylaxis appears to not reduce significantly postoperative complications or pain, supporting a more selective prescribing approach in line with guidelines and limiting antimicrobial resistance.

EIGHTY-FOUR-MONTH CLINICAL OUTCOMES OF AUTOLOGOUS DENTIN GRAFTING WITH TOOTH TRANSFORMER® AND CONCENTRATED GROWTH FACTORS IN MAXILLARY ATROPHY: A RETROSPECTIVE STUDY OF 31 PATIENTS

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Aim: to evaluate the 84-month clinical and radiographic outcomes of a regenerative protocol combining autologous dentin grafts processed with the Tooth Transformer® device and Concentrated Growth Factors (CGFs) in patients with severe maxillary atrophy undergoing sinus augmentation with simultaneous implant placement.

Methods: thirty-one patients presenting with severe maxillary atrophy, residual crestal bone height ≥ 5 mm, and requiring extraction of at least two molars to obtain ≥ 4 g of autologous dentin were retrospectively included. Patients with systemic, infectious, or autoimmune diseases, as well as those with insufficient dentin volume, were excluded. All patients underwent maxillary sinus augmentation through a lateral window approach according to the Hilt Tatum technique. The grafting material consisted of autologous dentin granules processed with the Tooth Transformer® device and combined with CGFs

prepared using the Medifuge MF200® centrifuge. A total of 98 endosseous implants (12-14 mm) were placed simultaneously and prosthetically loaded after 6 months.

Results: at the 84-month follow-up, no implant failures or cases of peri-implantitis were observed. Clinical and CBCT evaluations demonstrated stable regenerated bone volume and the absence of peri-implant bone resorption. All patients were successfully rehabilitated with fixed prostheses within 6 months, with no reported complications.

Conclusions: within the limitations of this retrospective study, the combined use of autologous dentin processed with the Tooth Transformer® device and CGFs appears to be a safe, predictable, and effective regenerative approach for the treatment of severe maxillary atrophy. The protocol showed stable long-term outcomes, with a 100% implant survival rate at 84 months.

IMPACTED TOOTH: EPIDEMIOLOGICAL EVALUATION IN A SAMPLE OF 16 500 PATIENTS

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Aim: dental dysodontiasis is a condition in which a tooth fails to complete its eruption process, often due to the presence of a physical barrier along the eruption pathway. This is a relatively common phenomenon that has been widely reported in literature. Variations in the prevalence of impacted teeth have been observed among different ethnic populations worldwide, as well as between the maxillary and mandibular arches, whereas no clinically significant differences appear to exist between males and females. This study aims to evaluate the epidemiology and prevalence of dental dysodontiasis in a large patient population treated at the Vita-Salute San Raffaele University.

Methods: the epidemiological analysis is based on a sample of 16,500 patients who attended the Department of Dentistry

at the Vita-Salute San Raffaele University in Milan between 2018 and 2026.

Results: the results obtained from the analyzed sample show prevalence patterns consistent with the existing literature across different populations. Higher prevalence of dental dysodontiasis was observed in mandibular third molars, followed by maxillary third molars and maxillary canines with a slight predominance in the female sex.

Conclusions: dental dysodontiasis represents a relatively frequent condition with relevant clinical implications, confirming the importance of early diagnosis and appropriate management in dental practice. It is important to notice that impacted teeth can affect malocclusion, which in turn can affect dental movements, physiological occlusion and smile aesthetics.

DRY SOCKET AND IMPACTED THIRD MOLAR SURGERY: CORRELATION BETWEEN ANATOMICAL, SYSTEMIC FACTORS AND MANAGEMENT

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Aim: post-extraction dry socket is a common complication of third molar surgery, characterized by severe pain and delayed healing due to the lack of an organized blood clot. This study aimed to evaluate its incidence, investigate predisposing factors and describe the therapeutic approach in a clinical setting.

Methods: a retrospective analysis was conducted on patients undergoing surgical extraction of third molars. Data regarding degree of tooth impaction, surgical technique, and systemic factors were collected, and dry socket occurrence assessed. Diagnosis was based on clinical criteria, including postoperative pain and absence of a stable blood clot.

Results: an overall incidence of 6% (31/518 cases) was observed, with cases occurring exclusively after extraction of

mandibular third molars. A higher incidence was found in partially and totally impacted teeth compared to erupted elements (7.1% and 7.3% vs 1.7%), although this difference was not statistically significant ($p = 0.093$). No significant differences were observed between conventional rotary instruments and piezoelectric surgery ($p = 0.64$). Management was initially conservative, including intra-alveolar irrigation with chlorhexidine and application of antiseptic gel, while curettage or surgical revision was reserved for persistent or suppurative cases.

Conclusions: dry socket is a multifactorial condition influenced by surgical and systemic factors. A stepwise, minimal management approach appears effective in most cases. Further prospective studies are needed to establish standardized preventive and therapeutic protocols.

SURGICAL MANAGEMENT OF PEDIATRIC ODONTOGENIC ABSCESS ASSOCIATED WITH CELLULITIS USING CUTIMED® SORBACT RIBBON®: AN OBSERVATIONAL STUDY

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Aim: this study evaluates tissue healing following surgical treatment for pediatric odontogenic abscesses associated with cellulitis, using DACC™ coated dressings (Cutimed® Sorbact Ribbon®).

Methods: twelve pediatric patients (aged 3 to 10 years) were enrolled between January 2025 and April 2026, presenting with odontogenic abscesses and concomitant periorbital or sub-mandibular cellulitis. Patients admitted at SOSD of Odontostomatology (Ancona) followed, in addition to antibiotic therapy, two different protocols:

1. six cooperative patients underwent percutaneous drainage and packing with Cutimed® Sorbact Ribbon® (replaced every 48h for one week), followed by associated tooth extraction.
2. Six non-cooperative patients underwent tooth extraction,

surgical curettage, and cavity debridement using the DACC™coated ribbon under general anesthesia.

Clinical follow-ups were conducted monthly for three months monitoring soft tissue healing and potential adverse events.

Results: mDACC™ technology has ensured effective surgical sites decontamination binding irreversibly pathogens and exudate without pharmacological release. All 12 patients achieved complete clinical resolution and soft tissue restoration, with a mean recovery time of 1.5 months after treatment. No adverse events, secondary infections, or recurrences were observed during the follow-up period.

Conclusions: Cutimed® Sorbact Ribbon® represents a valid support in severe pediatric abscesses management. It provides a significant reduction in microbial load, ensuring effective, safe, and minimally invasive tissue healing.

SONIC TECHNOLOGY IN MAXILLARY SINUS LIFT PROCEDURES

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Aim: to evaluate sonic technology in lateral sinus elevation with simultaneous implant placement, focusing on surgical precision and soft tissue safety in a clinical case of bone atrophy in the upper left quadrant.

Methods: following the elevation of a mucoperiosteal flap, a lateral antrostomy was performed using sonic technology (5-7 kHz). The 3D orbital movement of the diamond-coated inserts allowed for selective osteotomy of the bony window, facilitating the subsequent detachment of the Schneiderian membrane with non-cutting tips. After sinus grafting with biomaterial, two implants were simultaneously placed in positions 2.6 and 2.7. The sonic system was selected for its superior tactile control and the absence of bone overheating, ensured by the handpiece's pneumatic cooling, while also

eliminating risks of electromagnetic interference (e.g., in patients with pacemakers).

Results: the use of sonic inserts enabled selective micrometric osteotomy, preserving membrane integrity even in areas of reduced thickness. The cutting precision and minimized thermal trauma supported optimal primary stability for implant placement at sites 2.6 and 2.7. The post-operative course showed excellent tissue healing, confirming the protocol's effectiveness in restoring aesthetics and function to the posterior sector.

Conclusions: sonic technology enhances lateral sinus lift safety through selective cutting, minimizing perforation risks. Millimetric precision and reduced thermal trauma ensure a minimally invasive, highly predictable procedure with accelerated healing.

COMPLEX REHABILITATION USING A NEW ZYGOMATIC IMPLANT DESIGN: A CASE REPORT

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Aim: to evaluate the Hybrid Zygoma approach (Oxy FIXO and WIN) in the rehabilitation of severe maxillary atrophy, analyzing its efficacy in ensuring immediate loading and optimizing clinical workflows.

Methods: a patient with an existing maxillary overdenture supported by four root caps (on elements 1.1, 2.1, 2.2, and 2.3) presented with severe maxillary atrophy and a request for immediate fixed rehabilitation. The protocol involved the clearance of the anchor elements and the simultaneous placement of 3 Oxy FIXO (0°) implants in the pre-maxillary sector and 2 Oxy WIN zygomatic implants with Multi-Unit Abutments (MUA) in the posterior sectors. Prosthetic rehabilitation was managed through the conversion of the existing denture into a position guide for the simultaneous recording of VDO and implant posi-

tion. This approach allowed for the delivery of a screw-retained temporary Toronto Bridge within 24 hours, ensuring immediate loading without phases of total edentulism.

Results: achieving an optimal primary stability (>45 Ncm) at all sites allowed for a successful immediate loading protocol. The procedure successfully eliminated the post-extractive edentulous phase, ensuring immediate aesthetic and functional restoration for the patient.

Conclusions: zygomatic implantology addresses posterior bone deficiency by overcoming the limitations of sinus floor elevation. The Hybrid Zygoma approach enables rapid full-arch rehabilitations, meeting patient demands for reduced treatment times and eliminating the burden of temporary edentulism.

MANAGEMENT OF RECURRENT INFERIOR LABIAL MUCOCELE: A SCALPEL SURGERY EXCISION CASE REPORT

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Aim: the aim of this work is to report the management of a recurrent lower lip mucocele via scalpel surgery in light of current treatment evidence.

Methods: a 17-year-old patient was managed at the Pediatric Oral Surgery Unit, University of Milan, with written informed consent obtained, clinical findings, operative details and follow-up recorded. The patient had no significant past medical history, no known drug allergies, and no ongoing pharmacological therapy. The patient presented with a 2x5 mm painless inferior labial swelling. Complete surgical excision was performed under local anesthesia (mepivacaine 2% with epinephrine 1:100000) using a 15C blade. Adjacent minor glands were removed to prevent recurrence, and closure was obtained via absorbable 4/0 sutures to promote healing by primary intention. Postoperative care included paracetamol 1g as needed, chlorhexidine

0,2% rinses, and hyaluronic acid gel. The specimen was submitted for histopathological examination.

Results: at 7 days the site showed uneventful healing with minimal discomfort and stable margins. The patient reported only slight, transient discomfort, resolved within 48 hours. By the 28-day follow-up, the labial mucosa showed complete functional and aesthetic restoration, with no clinical signs of residual nodularity or recurrence. Histopathology confirmed the diagnosis of a mucus extravasation phenomenon (mucocele).

Conclusions: cold-blade excision technique, including the removal of adjoining minor salivary glands, proved to be a definitive and effective therapeutic approach for the management of labial mucocele, minimizing the risk of recurrence. Further standardized studies with longer follow-up are needed.

REMOVAL OF A GIANT ODONTOGENIC INFLAMMATORY CYST GROWN IN THE MAXILLARY SINUS

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Aim: to describe the clinical management and surgical removal of a giant odontogenic cyst extending into the maxillary sinus, treatment strategy, and postoperative outcome.

Methods: a 55-year-old male patient presenting with progressive facial swelling, nasal obstruction, and discomfort in the left maxillary posterior region underwent clinical examination and radiological assessment with computer tomography. Imaging revealed a large cystic lesion (7 cm in the largest size), developing from periradicular areas of 2.6, occupying the left maxillary sinus and causing expansion of the surrounding bony walls. Surgical treatment was planned and performed through complete enucleation of the lesion, associated with extraction of the involved tooth. The excised specimen was submitted for histopathological examination and a final diag-

nosis of odontogenic inflammatory cyst was rendered. Postoperative clinical and radiological follow-up was carried out.

Results: surgery allowed complete removal of the cystic lesion with preservation of adjacent anatomical structures and resolution of sinus occupation. The postoperative course was uneventful, with progressive regression of symptoms and satisfactory healing. 1 year follow-up showed no evidence of recurrence and progressive restoration of the maxillary sinus anatomy.

Conclusions: giant odontogenic cysts are uncommon lesions that may remain asymptomatic until they reach considerable size. Accurate radiological evaluation, careful surgical planning, and histopathological confirmation are essential for proper management.

CLINICAL MANAGEMENT AND SURGICAL APPROACH OF A CASE OF GORLIN-GOLTZ SYNDROME

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Aim: Gorlin-Goltz syndrome is a rare autosomal dominant disorder characterized by multiple odontogenic keratocysts, basal cell carcinomas, and craniofacial anomalies. This report describes the diagnostic pathway and clinical management of a mandibular lesion suggestive of keratocyst in a patient with features indicative of this syndrome.

Methods: a 37-year-old female was referred for a mandibular intraosseous lesion. Medical history was unremarkable, except for multiple sebaceous scalp cysts. Clinical exam revealed percussion pain on 3.7, reduced lingual cortical consistency, and inconclusive thermal response. OPT/CBCT revealed a well-defined multilobulated osteolytic lesion associated with 3.7. Surgical treatment included 3.7 extraction, and cyst enucleation, conducted under local anesthesia. Histo-

pathological examination was conducted. Based on craniofacial features (hypertelorism, prognathism, depression of the nasal bone) and clinical findings, dermatological evaluation was recommended.

Results: follow-ups were performed at 2 weeks, 4, 9 and 17 months. Healing was uneventful; histology confirmed an odontogenic keratocyst. Mild left hemilabial paresthesia persisted and was treated with alpha-lipoic acid. Panoramic radiographic at 9 months postoperatively showed no evidence of recurrence.

Conclusions: this case highlights the importance of a multidisciplinary approach in the management of odontogenic keratocysts. Early recognition of signs suggesting Gorlin-Goltz syndrome is essential for appropriate management, and long-term follow-up.

SIMULTANEOUS LINGUAL AND LOWER LABIAL FRENECTOMY IN A SCHOOL-AGE CHILD: SINGLE-STAGE SURGICAL MANAGEMENT

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Aim: ankyloglossia and aberrant labial frenula can cause functional limitations affecting tongue mobility and speech articulation. The aim of this report is to present a case of combined lingual and lower labial frenectomy performed in a single-stage procedure, simplifying surgical management in a pediatric patient within the framework of a multidisciplinary care pathway.

Methods: a 10-year-old girl was referred before orthodontic treatment presenting with ankyloglossia and a restrictive lower labial frenulum, resulting in limited tongue mobility and a midline diastema in the lower anterior region. A simultaneous lingual and lower labial frenectomy was performed in an outpatient setting under topical and local anesthesia. Frenula were stabilized with hemostatic forceps, followed by incision and blunt dissection. Surgical sites were closed with resorbable

sutures, achieving hemostasis. The patient was discharged in stable condition. Postoperative care included tongue mobility exercises and home-based myofunctional exercise instructions to support functional recovery and prevent scar-related restriction. The patient was subsequently referred to a speech therapist for functional rehabilitation.

Results: no postoperative complications were reported. Healing was uneventful, with improved tongue mobility and satisfactory functional outcomes, allowing clearance for orthodontic treatment.

Conclusions: this case highlights the feasibility of a single-stage surgical approach for combined frenula management, safely performed in a single outpatient session in a pediatric patient.

BILATERAL SUPERNUMERARY PREMOLARS IN A PATIENT WITH NOONAN SYNDROME: CASE REPORT

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Aim: Noonan syndrome is a rare genetic disorder primarily characterized by short stature, distinctive craniofacial dysmorphisms, congenital heart defects, and an increased risk of developing childhood cancer. Intraoral manifestations include malocclusions, dental anomalies, delayed eruption, impacted teeth, development of odontomas, caries and periodontal problems.

Surgical approach must consider the risk of intraoperative bleeding related to possible hematologic alterations and antithrombotic drugs taken by patients.

Methods: a case of a 15-year-old female patient with Noonan syndrome (SOS1 gene mutation) is reported. The patient had craniofacial dysmorphism, pulmonary valve stenosis and a typical cutaneous phenotype. From a dental perspective, she had a Class III skeletal malocclusion, all upper and lower im-

pacted canines, severe mandibular crowding and one supernumerary bud located in both lower premolar regions. Upon orthodontic recommendation and after OPT and CBCT evaluations, the lingually faced supernumerary buds were firstly extracted.

Results: the procedure was performed in two different surgical sessions on an outpatient basis, under antibiotic prophylaxis for infective endocarditis, without antithrombotic treatment discontinuation, and — upon specific parental request — using anesthesia without vasoconstrictor.

Conclusions: the occurrence of supernumerary teeth in Noonan syndrome is extremely rare. Early detection is essential to reduce orthodontic risks associated with their development and eruption. Surgical management is safe and free of complications.

CRESTAL MAXILLARY SINUS LIFT WITH MAGNETIC MALLET® AND ELEVO® KIT: CASE REPORT ASSESSING OPERATIVE TIME AND INCIDENCE OF SCHNEIDERIAN MEMBRANE PERFORATION

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Aim: to evaluate operative time and incidence of Schneiderian membrane perforation in crestal maxillary sinus lift procedures performed using Magnetic Mallet® versus the Elevo® Kit, with a specific focus on surgical timing and intraoperative handling.

Materials and methods: this case report describes two crestal sinus lift procedures performed in the same patient on two adjacent posterior maxillary sites on the same side, characterized by similar residual bone height. One site was treated using Magnetic Mallet®, while the adjacent site was managed with the Elevo® Kit. Operative time was recorded from initial osteotomy to graft placement. Schneiderian membrane integrity was assessed clinically during surgery. Operator perception of ease of use and ergonomics was qualitatively documented.

Results: no Schneiderian membrane perforations were observed in either technique. Both systems demonstrated short operative times, with no substantial or clinically relevant differences between them, confirming their efficiency. However, the Elevo® Kit showed superior handling, being more intuitive and easier to use, particularly in terms of control and overall procedural flow.

Conclusions: within the limitations of this single-case report, both techniques appear safe, efficient, and comparable in terms of operative time and complication rates. The Elevo® system may offer improved usability. However, the extremely limited sample size, the lack of randomization, and the absence of statistical analysis prevent any definitive conclusions.

PIEZOSURGERY FOR APICOECTOMY WITH BONE WINDOW: A STATE-OF-THE-ART REVIEW

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Aim: apicoectomy consists of the surgical removal of an infected root apex and the periapical pathology to maintain the natural tooth. The surgical access may present some limitations related to the anatomy and need to preserve the bone. An alternative technique is the bone lid technique. This study reviews current literature on the piezosurgical bone lid technique in endodontic surgery.

Methods: a comprehensive review was conducted via PubMed, Scopus, Cochrane, and Embase (2016–present) using MeSH terms related to endodontic surgery: piezoelectric bone lid approach, bone lid placement, radiographic follow-up and healing processes. Case series, case reports, comparative studies and randomized control trials were taken into consideration.

Results: thirteen articles were selected. The bone lid technique offers enhanced surgical access while minimizing bone

loss. The success rate, defined as tooth survival, is reported to be 89–100%. The selective cutting action of piezosurgery improves safety and precision over burs, preventing nerve injuries (0% vs 4%) and reducing Schneider's membrane perforations to 20% (compared to 47% with conventional drilling). Additional benefits include enhanced visibility and reduced postoperative pain. Complications like bone-lid necrosis were rare (3.6%) and mainly linked to lid displacement. Management of this issue involves the use of fixation methods like screws and membranes. Complete bone healing at 12 months radiographical follow-up was present in 93.8–100% of cases.

Conclusions: the bone lid technique performed with piezoelectric surgery is a safe and precise access for apicoectomy procedures, with minimal complications.

MAXILLARY SINUS LIFT WITH LATERAL APPROACH, IN PRESENCE OF PSEUDOCYST OR MUCOUS RETENTION CYST: A SYSTEMATIC REVIEW

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Aim: to evaluate whether maxillary sinus pseudocysts or mucous retention cysts affect complications or implant survival after lateral sinus floor elevation.

Methods: a systematic search of MEDLINE via PubMed and Scopus was performed according to PRISMA guidelines. Studies including patients undergoing lateral sinus lift in the presence of pseudocysts or mucous retention cysts were considered. Observational studies, case series, case reports, cohort studies, and randomized controlled trials were included. Data on lesion management, complications, and implant survival were extracted. Inter-reviewer agreement was assessed using Cohen's kappa coefficient.

Results: eighteen studies were included. Management strategies comprised aspiration or removal during sinus lift, de-

layed lesion removal before surgery, and leaving the lesion in situ. Implant survival ranged from 90.9% to 100%, with a low incidence of complications. Schneiderian membrane perforations healed spontaneously. Immediate and delayed approaches were effective, while leaving lesions in situ did not appear to negatively affect outcomes in selected cases. The included studies showed heterogeneous methodological quality, and the available evidence should be interpreted with caution.

Conclusions: maxillary sinus pseudocysts and mucous retention cysts are not an absolute contraindication to lateral sinus floor elevation. Management should be individualized according to lesion size, sinus status, and patient factors.

CLINICAL EFFICACY AND PREDICTABILITY IN ALVEOLAR BONE REGENERATION USING SYNTHETIC BIOMATERIALS: A SYSTEMATIC REVIEW

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Aim: the management of alveolar bone loss represents a key challenge in implant and prosthetic dentistry. Despite being the gold standard, autologous bone grafts present notable limitations, fostering growing interest in synthetic biomaterials such as BCP, β -TCP, nanocrystalline hydroxyapatite, and bioactive glass.

Methods: PRISMA guidelines were followed to conduct this systematic review. In March 2025, a comprehensive literature search was performed across PubMed, MEDLINE, Embase, and Google Scholar. Eleven clinical studies (randomized and non-randomized) met the inclusion criteria. Due to heterogeneity in study design and reported outcomes, meta-analysis could not be achieved. Assessed outcomes included bone volume preservation, residual biomaterial, implant stability, histological integration, and postoperative complications.

Results: bone preservation rates of 85-95% were reported

with synthetic biomaterials, with outcomes comparable to xenografts and other grafting materials in terms of bone regeneration and implant stability. Material-specific trends emerged: β -TCP and BCP were associated with improved resorption control and maintenance of ridge dimensions, whereas bioactive glass was linked to faster integration and remodeling. Incorporation of bioactive agents (rhBMP-2, rh-PDGF-BB, or platelet-rich plasma) improved new bone formation.

Conclusions: synthetic biomaterials offer predictable outcomes similar to xenografts in socket preservation and ridge augmentation, with advantages including easy handling, no donor-site morbidity, and potential for bioactive enhancement. Larger standardized trials with long-term follow-up are required to confirm these results and guide optimal material selection in alveolar bone regeneration.

CLINICAL PERFORMANCE AND COMPLICATION PROFILE OF RESORBABLE BIOPOLYMERS IN ORAL SURGERY: A SYSTEMATIC REVIEW

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Aim: resorbable biopolymers are increasingly explored in dental regenerative surgery due to their biodegradability, elimination of secondary removal procedures, and potentially reduced immunogenicity. While promising, uncertainties persist regarding their clinical performance and complication rates. PEG-based membranes have shown regenerative outcomes comparable to porcine collagen, though with a higher incidence of soft tissue healing issues. Similarly, polycaprolactone (PCL) and dextrin-derived hydrogels demonstrate favorable handling and bone regeneration potential, but their long-term predictability across sites remains unclear.

Materials and methods: a systematic review protocol was registered in PROSPERO and conducted following PRISMA guidelines. A comprehensive search of PubMed, Medline, Scopus, and Cochrane databases (June–December 2024) identified randomized controlled trials assessing synthetic resorbable biopolymers in bone regeneration. Study quality and

risk of bias were evaluated using the Cochrane Risk of Bias tool.

Results: eleven RCTs involving 188 patients were included. Evidence indicates that polymers such as polylactic acid (PLA), PCL, and PEG effectively support new bone formation. PEG membranes demonstrated comparable outcomes, and occasionally superior, to porcine collagen membranes. Additionally, 3D-printable polymers showed encouraging results for site-specific regeneration.

Conclusions: synthetic resorbable biopolymers appear safe and effective for guided bone regeneration, achieving outcomes comparable to conventional biomaterials. Advances such as 3D printing and bioactive coatings may further enhance performance. However, the incidence of soft tissue complications highlights the need for long-term studies to optimize materials and clinical protocols.

SURGICAL MANAGEMENT AND FUNCTIONAL REHABILITATION OF ANKYLOGLOSSIA

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Aim: the aim of this literature review is to analyse current surgical approaches for the management of ankyloglossia and to evaluate the role of functional rehabilitation in improving clinical and functional outcomes.

Methods: a literature search was conducted in PubMed, Embase and Cochrane databases using the keywords ankyloglossia, lingual frenectomy, frenotomy, myofunctional therapy and tongue-tie surgery. Clinical studies, randomized trials and reviews on surgical management and functional rehabilitation were included. Outcomes analysed were tongue mobility, oral function, speech, feeding and postoperative results.

Results: the literature describes multiple surgical approaches for ankyloglossia. In addition to conventional scalpel techniques, diode, Nd:YAG, CO₂ and Er:YAG lasers are increasing-

ly used, offering advantages such as reduced bleeding, less postoperative discomfort, and faster healing. Other methods, such as electrosurgery, quantum molecular resonance (QMR) and atmospheric plasma, aim to minimize tissue trauma and enhance recovery. Regardless of the technique, surgery consistently improves tongue mobility and oral function. However, postoperative myofunctional therapy is crucial to optimize neuromuscular coordination and reduce recurrence.

Conclusions: scientific literature demonstrates that surgical treatment is the most effective approach for ankyloglossia, while myofunctional therapy alone shows limited efficacy: the best outcomes are achieved by combining surgery with functional rehabilitation. Further studies are needed to standardize treatment protocols.

SURGICAL INDICATIONS FOR ANKYLOGLOSSIA VS AN OBJECTIVE AND MULTIDISCIPLINARY DIAGNOSTIC PROTOCOL

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Aim: anatomical variations of the lingual frenulum are common but do not always correlate with functional deficits. This study aims to establish an objective diagnostic framework to improve patient selection and differentiate benign traits from pathological conditions requiring surgery (frenotomy, frenectomy, or frenuloplasty), ensuring reliable post-operative recovery.

Methods: a systematic review was performed using PubMed and Scopus up to March 2025. The focus was on surgical indications, quantitative evaluation metrics, and integration of myofunctional therapy in pre- and post-surgical care.

Results: lingual frenulum assessment is now a collaborative effort among dentists, speech pathologists, and pediatric specialists. Historical data indicate procedures often fail when

based solely on visual inspection. Recent protocols (2023) combine Coryllos and Tabby scales into a functional matrix, integrating static tongue positioning, dynamic kinematics, compensatory mandibular mechanics, and chronic indicators such as dental impressions. Standardized scoring translates symptoms-from breastfeeding difficulties to malocclusions and TMD-into treatment classes, minimizing diagnostic bias and medico-legal risks.

Conclusions: surgery for ankyloglossia should be the final step of a coordinated diagnostic process. Standardized, objective methodologies prevent over-treatment and secondary complications, such as breastfeeding issues or periodontal damage. Ongoing clinical research is essential to establish these functional protocols as a global standard of care.

LATERAL PERIODONTAL CYST AND BOTRYOID VARIANT: DIFFERENTIAL DIAGNOSIS AND TREATMENT STRATEGIES

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Aim: to provide an updated overview of lateral periodontal cyst (LPC) and its botryoid variant (BOC), with a focus on differential diagnosis, treatment strategies, and the application of a diagnostic algorithm in clinical management.

Methods: a narrative review of recent literature, including a reference systematic review, was conducted to analyze diagnostic criteria, therapeutic approaches, and recurrence patterns. A clinical case of LPC treated with enucleation and guided bone regeneration is also presented.

Results: LPC typically appears to be a well-defined radiolucent lesion associated with vital teeth, while BOC may exhibit

more complex, multilocular features and more aggressive behavior. Accurate differential diagnosis from other odontogenic lesions, such as odontogenic keratocysts and lateral radicular cysts, is crucial. Enucleation remains the treatment of choice, with adjunctive strategies considered for larger or multilocular lesions.

Conclusions: integrating clinical, radiographic, and histopathological findings is essential for appropriate management. BOC requires particular caution due to its higher recurrence risk. Early recognition, careful treatment planning, and long-term follow-up can significantly improve patient outcomes.

CARDIOVASCULAR SAFETY OF LOCAL ANAESTHETICS IN ORAL SURGERY

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Aim: this study aimed to review the current literature on the cardiovascular safety of vasoconstrictor-containing local anaesthetics in oral surgery, focusing on dosages, safety thresholds, drug interactions, and risk-reduction strategies.

Methods: three systematic reviews published between 2021 and 2023 were selected based on predefined inclusion and exclusion criteria. The reviews analyzed exclusively randomized controlled trials (RCTs) covering a broad spectrum of cardiovascular conditions and provided both quantitative and qualitative assessments of cardiovascular risk associated with vasoconstrictor use in dental procedures.

Results: local anaesthetics containing low-concentration epinephrine (1:80,000; 1:100,000; 1:200,000) were not associated

with clinically significant hemodynamic changes in patients with controlled arterial hypertension and/or coronary heart disease. Variations in blood pressure and heart rate were modest, transient, and clinically irrelevant. No increase in major cardiovascular events, including myocardial infarction, stroke, or death, was observed.

Conclusions: current evidence supports the cardiovascular safety of vasoconstrictor-containing local anaesthetics in patients with controlled hypertension and/or coronary heart disease, provided appropriate preoperative assessment, recommended dosages, safe injection techniques including preemptively placing an intravenous line, and vital sign monitoring are ensured.

AUTOLOGOUS DENTIN-DERIVED BIOMATERIALS *VERSUS* CONCENTRATED GROWTH FACTORS (CGF): A SYSTEMATIC REVIEW IN THE ERA OF TOOTH TRANSFORMER® TECHNOLOGY

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Aim: bone regeneration remains a major challenge in oral and maxillofacial surgery, particularly in severe alveolar atrophy and post-pathological defects. Two autologous biomaterials have gained interest: dentin grafts processed with Tooth Transformer® and Concentrated Growth Factors (CGF). Despite both promoting bone regeneration through different mechanisms osteoconduction for dentin and bioactive stimulation for CGF their comparative efficacy is still unclear.

Materials and methods: this systematic review followed PRISMA 2020 guidelines. PubMed/MEDLINE, Scopus, and Web of Science were searched for English-language studies (2010–2025). Included studies were RCTs, prospective/retrospective clinical trials, and case series (≥5 patients). Outcomes

included bone volume, density, histological bone formation, healing time, implant survival, and complications.

Results: from 1,004 records, 10 studies were included after screening. Both biomaterials showed high biocompatibility and favorable regenerative outcomes. Dentin grafts demonstrated greater volumetric stability, while CGF enhanced early healing and angiogenesis. Heterogeneity limited direct comparison.

Conclusions: both approaches are safe and effective for bone regeneration. Evidence suggests complementary rather than competitive roles, highlighting the need for standardized trials to evaluate long-term outcomes and potential synergistic use.

ARTIFICIAL INTELLIGENCE IN DENTAL RADIOLOGY: CLINICAL AND MEDICO-LEGAL IMPLICATIONS IN ORAL SURGERY. A NARRATIVE REVIEW

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Aim: to assess the reliability of artificial intelligence (AI) in evaluating the relationship between third molars, radiolucent lesions and critical anatomical structures in dental radiology, and its clinical and medico-legal implications in diagnosis, predictability and surgical decision-making.

Methods: three clinical settings of AI use in OPT and CBCT were evaluated: non-use, use without considering outputs, and conscious integration. The search was conducted on PubMed and for original articles, reviews, meta-analyses, and case series matching the following keywords and associations: oral surgery, artificial intelligence, oral radiology, accuracy, predictability.

Results: certified AI systems show high accuracy, sometimes comparable to traditional methods. Limitations occur with

low-quality images, artifacts and anatomical variability, requiring supervision. AI reached 72.32% accuracy, outperforming surgeons (52.68–69.64%); combined with clinical evaluation it rose to 88.06%, confirming a supportive role. Medico-legally, non-use does not imply liability but may be relevant in preventable harm; uncritical use or ignoring outputs may constitute negligence. AI also aids detection of radiolucent lesions and surgical planning, and predicts third molar eruption, reducing overtreatment.

Conclusions: the accuracy of AI in dentistry has been demonstrated, but IA should support, not replace, clinical judgment. Responsible use requires certified software, critical evaluation, training, proper documentation and regulations. Future integration may help define the standard of care.

COMPARING ARTIFICIAL INTELLIGENCE (CHATGPT, GEMINI, DEEPSEEK) AND ORAL SURGEONS IN DETECTING DRUG-DRUG INTERACTIONS BETWEEN DENTAL PERIOPERATIVE PRESCRIPTIONS AND CHRONIC MEDICATIONS IN IMPACTED THIRD MOLAR EXTRACTION

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Aim: patients undergoing oral surgery are frequently polymedicated and perioperative prescriptions (analgesics, corticosteroids, antibiotics) may generate clinically relevant drug–drug interactions (DDIs). This prospective simulation-based comparative diagnostic-accuracy study evaluated whether large language models (LLMs) can support DDI detection.

Methods: five LLMs (ChatGPT-5, DeepSeek-Chat, DeepSeek-Reasoner, Gemini-Flash, and Gemini-Pro) were compared with a panel of experienced oral surgeons in 500 standardized oral-surgery cases based on realistic chronic therapies and postoperative regimens. For each case, models identified DDIs and graded severity using a Lexicomp-based A–X scale; D/X interactions were considered actionable. Primary outcomes were exact agreement with surgeon consensus and ordinal concordance; secondary outcomes included sensitivity, specificity, error pattern and response latency.

Results: performance varied substantially across models, revealing different safety profiles in DDI detection. DeepSeek-Chat achieved the highest exact agreement with surgeons (50.6%) and perfect specificity (100%), but showed low sensitivity (18%), missing 82% of actionable D/X alerts. In contrast, ChatGPT-5 reached the highest sensitivity (98.0%), identifying nearly all clinically relevant interactions, but with lower specificity (56.7%) and a higher rate of false-positive warnings. Median response time was 3.6 s for the fastest model *versus* 225 s for expert review.

Conclusions: these findings indicate that current LLMs can deliver rapid, structured DDI screening in oral surgery but exhibit distinct safety trade-offs between missed critical interactions and alert overcalling. They should therefore be used as supervised decision-support tools rather than replacements for clinical judgment.

OSTEORADIONECROSIS AFTER DENTAL EXTRACTIONS IN PATIENTS TREATED WITH HEAD AND NECK RADIOTHERAPY: A PROSPECTIVE STUDY

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Aim: to evaluate osteoradionecrosis (ORN) incidence in head and neck cancer (HNC) patients undergoing tooth extraction (TE) after radiotherapy (RT).

Methods: this prospective study included patients treated with volumetric modulated arc RT (VMAT). TE was performed in case of severe periodontitis or restorative impossibility. ORN was defined as exposed bone in an unhealed socket without cancer recurrence. The specific radiation dose received by each extraction site was calculated reviewing the RT plans.

Results: a total of 56 patients were included (mean follow-up: 6 years), with 232 TE. ORN occurred in 16 sites (6.9%), affecting 7 patients (12.5%). Multivariate analysis identified the following independent risk factors: mean alveolar radiation dose, mandibular location, periodontitis, mucoperiosteal flap elevation.

Conclusions: while literature reports ORN rates between 2% and 22%, this study found a 12.5% patient-level incidence (6.9% per site). The findings suggest that radiation dosage and surgical technique significantly impact ORN risk. Further research should focus on preventive strategies to be implemented in high risk cases.

NEUROMUSCULAR CHANGES IN SURGICAL ORTHODONTIC TREATMENT: A COMPARATIVE STUDY OF SKELETAL CLASS II AND CLASS III PATIENTS

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Aim: to evaluate neuromuscular adaptations during surgical orthodontic treatment through a comparison of functional changes in skeletal Class II and Class III patients.

Methods: eighty adult patients (37 males, 43 females) treated at the University of Milan were included in the study. Neuromuscular activity was assessed using surface electromyography (EMG) of the masseter and anterior temporalis muscles. Mandibular kinematics and range of motion were evaluated using electrokinesiography (EKG). Recordings were obtained at different stages of treatment. Statistical analysis was performed using Student's t-test for independent samples to compare Class II and Class III groups.

Results: at baseline, Class II patients showed higher EMG activity than Class III subjects. After treatment, this pattern reversed, indicating an improvement in neuromuscular balance. Maximum mouth opening was initially greater in Class II patients but differences disappeared after treatment. Protrusive mandibular movement was also greater in Class II subjects at baseline, with a progressive reduction in these differences during treatment.

Conclusions: functional monitoring represents an important component of surgical orthodontic treatment. The combined use of EMG and mandibular kinematic analysis may help identify dysfunctional patterns, promote neuromuscular balance, and contribute to long-term treatment stability while reducing the risk of relapse.

USE OF PEEK HEALING CAPS FOR SOFT TISSUE MANAGEMENT AROUND ZIRCONIA IMPLANTS

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Aim: in implant-prosthetic practice, immediate placement of healing abutments guides peri-implant soft tissue maturation. However, undisturbed healing on zirconia surfaces may promote a more physiological maturation. The aim of this study is to describe a protocol based on initial free healing followed by conditioning with PEEK healing abutments to optimize the emergence profile.

Methods: a 51-year-old healthy female presented with multiple missing teeth. Clinical and CBCT evaluation confirmed adequate bone volume and keratinized mucosa at sites 14 and 15. After a crestal envelope flap, two zirconia implants were placed. Healing caps were intentionally omitted to allow free soft tissue healing directly on zirconia. After 6 months, PEEK caps were inserted for secondary soft tissue conditioning, followed by impressions, PM-

MA temporaries, and definitive monolithic zirconia crowns cemented with dedicated implant cement.

Results: free healing on zirconia promoted physiological soft tissue maturation, with increased tissue volume and stable mucosal architecture. Secondary conditioning with PEEK healing abutments, a biocompatible CAD/CAM-processable polymer, improved emergence profile definition and peri-implant mucosal sealing, enabling more precise prosthetic contouring.

Conclusions: delayed peri-implant soft tissue conditioning with PEEK caps after spontaneous zirconia-guided healing represents a simple and effective clinical strategy. This approach may improve peri-implant tissue volume, biological stability, and aesthetic outcomes by respecting soft tissue maturation timing.

USE OF ALVEOLINE IMPLANT DESIGN IN POST-EXTRACTION SITES

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Aim: immediate implant placement in post-extraction sites is challenging due to primary stability, socket preservation, and soft tissue management. Second-generation zirconia alveolar implants (Alveo Line) enhance socket adaptation through a socket-filling design and the possibility of implant customization.

Methods: a 65-year-old patient presented with trauma affecting tooth 2.2, which was diagnosed radiographically with an apical horizontal fracture and considered hopeless. Atraumatic flapless extraction was performed, followed by immediate placement of a zirconia Alveo Line implant (Bredent). The implant features a conical-cylindrical geometry, self-tapping double-thread, microstructured surface, and a wide collar designed to fill the extraction socket. The possibility of intraoperative customization allowed better adaptation to the alveolar

morphology. A digital CAD/CAM workflow enabled fabrication of an immediately loaded provisional crown.

Results: primary stability was achieved, allowing immediate loading. Follow-up showed successful osseointegration with no radiographic bone loss. The implant surface promoted stable soft tissue adhesion, resulting in a favorable emergence profile and satisfactory aesthetic outcome. Reduced plaque affinity and good biocompatibility supported healthy peri-implant tissues.

Conclusions: second-generation zirconia alveolar implants represent a reliable option for immediate post-extraction rehabilitation. Their design and the possibility of customization enhances adaptation to the socket and supports both biological integration and aesthetic results.

ORAL TONGUE CARCINOMA IN SITU WITHOUT RISK FACTORS: A 20-YEAR RECURRENT CASE MANAGED WITH A MORPHOLOGY AND FUNCTION-PRESERVING CONSERVATIVE APPROACH

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Aim: the aim of this study is to define the pivotal role of an appropriate conservative approach in the management of a case of recurrent carcinoma in situ, in order to optimally preserve lingual morphology, function, and mobility.

Methods: patient presented to our attention in 2005 with an ulcerative lesion located on the left lateral tongue margin. An excisional biopsy was performed. Histopathological examination revealed mild dysplasia. A close follow-up protocol was established. In addition, the patient underwent dental management consisting of smoothing of dental margins. An occlusal splint with a protective flange was also provided. During a semiannual follow-up over a 20-year period, a total of seven biopsies were required. Histological findings at each recurrence demonstrated varying degrees of dysplasia, ranging from mild to severe. In one instance, a diagnosis of

carcinoma in situ with limited margins was made. Upon observing a new morphological change suggestive of malignancy and clinically consistent with carcinoma, a multidisciplinary approach was adopted. In collaboration with the Department of Maxillofacial Surgery, a more radical surgical excision was performed.

Results: despite the multiple surgical interventions performed over time, the patient has optimally preserved tongue morphology, functionality.

Conclusions: the present study aims to highlight the clinical relevance of an appropriate conservative approach. These outcomes therefore support the critical importance of a properly tailored conservative approach in the treatment of recurrent lingual carcinoma, allowing preservation of both structural integrity and full functional capacity of the organ.

SCHNEIDERIAN MEMBRANE PERFORATION, MANAGEMENT AND RESOLUTION IN A CASE OF MAXILLARY SINUS LIFT: A CASE REPORT

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Aim: the Schneiderian membrane (SM) is fundamental for osseointegration during maxillary sinus lift. Individual anatomical variables, such as membrane thickness, V-shaped sinus conformation, and antral septa, are primary causes of perforation. Additionally, vascular complications involving the extraosseous posterior superior alveolar artery can occur. This study aims to present a case where arterial anatomy and antral septa led to membrane perforation.

Methods: a 53-year-old male smoker with total maxillary edentulism underwent bilateral sinus lift. Materials used included OsteoBiol collagen membranes and Raptos Citagenx heterologous bone graft mixed with CGF (Concentrated Growth Factors).

Results: during dissection near the artery, the SM was perforated, requiring an enlargement of the surgical window. An osseous fragment distal to the artery and the presence of an antral septum caused a second perforation during elevation. A collagen membrane was placed to protect the SM and isolate the perforations. The graft was then inserted using CGF to ensure stability and promote regeneration.

Conclusions: the simultaneous presence of an artery and antral septa significantly increases the risk of membrane damage. A detailed preliminary CBCT analysis is essential. When clinicians encounter this specific anatomy, the possibility of damaging the membrane increases significantly, requiring extreme caution.

3D-PRINTED STEREOLITHOGRAPHIC MODELS IN DENTAL CLINICAL PRACTICE FOR MANDIBULAR THIRD MOLAR EXTRACTION: SURGICAL WORKFLOW OPTIMIZATION AND COMPLICATION REDUCTION. A CASE REPORT

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Aim: Stereolithography (SLA) converts DICOM data from CBCT scans into physical replicas by polymerizing photosensitive resin layer-by-layer. In clinical practice, SLA models facilitate the visualization of complex anatomies, enabling precise preoperative planning and surgical simulation. Furthermore, they enhance multidisciplinary collaboration and the doctor-patient relationship, improving communication, patient compliance, and informed consent.

Methods: a 28-year-old male required the extraction of mandibular third molars for orthodontic reasons. Element 3.8 presented partial bone-mucosal impaction, while element 4.8 showed total impaction. To mitigate surgical risks, preoperative planning was conducted using a 3D-printed mandibular model. This replica allowed for direct visualization of the anatomical relationship between the molar roots and the mandib-

ular canal. Surgical extractions were successfully performed by simulating maneuvers on the SLA model, optimizing the osteotomy and luxation phases.

Results: the patient experienced a routine healing process without postoperative complications. Notably, no neurosensory deficits or paresthesia were reported in the territories innervated by the inferior alveolar nerves (IAN), confirming the accuracy of the 3D-guided preoperative planning and surgical execution.

Conclusions: the integration of SLA models into oral surgery represents a significant advancement. Despite the learning curve and initial costs, these models improve surgical precision, reduce operative times, and minimize intraoperative risks. Studying patient-specific anatomy in a controlled environment significantly enhances the prognosis and safety of complex extractions.

NAVIGATED IMPLANT SURGERY FOR PROSTHETIC REHABILITATION IN EDENTULOUS PATIENTS

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Aim: to present a clinical case of immediate implant-prosthetic rehabilitation of a completely edentulous mandible performed using dynamic navigation, highlighting the feasibility and accuracy of prosthetically driven implant placement.

Methods: a patient presenting with hopeless mandibular dentition due to advanced periodontal disease underwent extraction of the remaining mandibular teeth and was scheduled for full-arch implant-supported rehabilitation. CBCT and intraoral scans were acquired and integrated within a 3D digital workflow to design the prosthetic set-up and define optimal implant positioning. The digital treatment plan was transferred to the X-Guide dynamic navigation system (X-Nav Technologies). After calibration and registration, implant placement was performed under real-time dynamic navigation guidance. An im-

mediate full-arch provisional prosthesis was delivered after surgery, and the definitive prosthetic restoration was provided after adequate soft-tissue healing.

Results: dynamic navigation enabled accurate transfer of the virtual plan to the surgical field, with implant placement matching the preoperative design. The workflow allowed immediate full-arch mandibular rehabilitation in a complex edentulous case demonstrating feasibility, reproducibility, and intraoperative flexibility.

Conclusions: dynamic navigated implant surgery may represent a reliable adjunct in immediate full-arch rehabilitation of edentulous mandibles, enabling precise and predictable implant placement through prosthetically driven planning and real-time guidance.

AI-DRIVEN DIGITAL WORKFLOW OPTIMIZATION: AUTOMATED SEGMENTATION OF A SUPERNUMERARY TOOTH IN THE 2.4 REGION

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Aim: to demonstrate how AI-driven automated segmentation can serve as a valuable tool for clinicians in the surgical planning and management of supernumerary teeth.

Methods: a CBCT scan of a patient presenting with an impacted supernumerary tooth in the 2.4 region was analyzed. The segmentation of teeth, bone, and neural structures was performed using deep learning-based software. This enabled an accurate simulation of the impacted tooth's morphology and the surrounding anatomy, thereby simplifying the surgical extraction procedures. Notably, no preliminary manual segmentation was required.

Results: the AI-driven 3D rendering of the supernumerary tooth was achieved in significantly less time compared to manual segmentation. The high anatomical accuracy enabled a precise as-

essment of the spatial relationships, thereby minimizing surgical invasiveness and reducing intraoperative risks. The postoperative course was optimal, characterized by excellent soft tissue healing and highly favorable healing at the suture sites.

Conclusions: although, to date, AI-driven automated segmentation of impacted teeth is not considered a predictable practice, except for impacted third molars, its integration in this case streamlined the surgical procedure and optimized outcomes by reducing the digital workflow. Furthermore, it enhanced accessibility by making advanced 3D planning user-friendly even for clinicians with limited CAD expertise, and it increased overall predictability and clinical safety through an immediate, objective spatial visualization that effectively eliminates human bias.

RATIONALE FOR THE SURGICAL TREATMENT AND MANAGEMENT OF AN IMPACTED PREMOLAR IN A GROWING PATIENT: A CASE REPORT

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Aim: the aim of the present case report is to describe the surgical management of an impacted mandibular second premolar in a growing patient, focusing on risk assessment and preservation of adjacent anatomical structures.

Methods: a 13-year-old female patient was referred to Oral Surgery Department of Dental School in Turin for orthodontic-surgical evaluation of an impacted tooth 3.5. Panoramic radiography revealed incomplete root formation and lack of space for eruption. CBCT was used to assess the three-dimensional position of the tooth and its relationship with the mental nerve. FMBS and FMPS < 20% were achieved before surgery. Based on clinical and radiological findings, surgical extraction was planned. A full-thickness triangular buccal flap

with papilla preservation was performed. After identification of the mental nerve, minimal osteotomy and odontotomy were carried out to reduce bone removal. Suturing was performed using horizontal internal mattress and interrupted stitches with 5/0 Vicryl.

Results: healing was uneventful, with 2 to 10 points on VAS in the first two days. At follow-up visits, pulp vitality of adjacent teeth was preserved, as confirmed by cold testing. Sensory function in the mental nerve distribution was also maintained.

Conclusions: careful preoperative planning and a minimally invasive surgical approach allow safe management of impacted premolars in young patients, ensuring preservation of both pulp vitality and neurosensory function.

THE PROSTHETICALLY DRIVEN “ONE ABUTMENT ONE TIME” APPROACH IN THE MANAGEMENT OF A POST-EXTRACTION IMPLANT FAILURE IN THE AESTHETIC ZONE

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Aim: this case report describes the rehabilitation of the 1.1 site following a post-extraction implant failure. Aesthetic and functional restoration was achieved through guided surgery, meticulous management of peri-implant soft tissues, and immediate loading, resulting in a stable, minimally invasive outcome.

Methods: the patient presented with implant mobility in the 1.1 position. Digital prosthetic planning and surgical guide fabrication were performed by matching CBCT data with intraoral scans. The clinical protocol involved a mixed-thickness flap using the “Split-Full-Split” technique to expose the bone defect while preserving the integrity of adjacent soft tissues. A connective tissue graft was harvested from the palate and placed at the surgical site; a hyaluronic acid-based viscoelastic re-epithelializing gel was applied to the donor site. Following implant placement, a connector base was immediately in-

stalled. A digitally designed provisional crown was screwed in during the same session. Intraoral radiographs were taken post-operatively and at the 3-month final delivery.

Results: simultaneous management of hard and soft tissues promoted stability of peri-implant volumes. The application of the palatal gel reduced post-operative discomfort and accelerated re-epithelialization. Radiographic follow-up confirmed the maintenance of marginal bone levels. Immediate restoration preserved the papillary architecture and ensured a natural emergence profile.

Conclusions: prosthetically driven digital planning, combined with advanced soft tissue management and the use of biomaterials, represents an effective and predictable protocol for resolving complex implant failures in the aesthetic zone. This approach offers excellent aesthetic and functional results while minimizing patient post-operative discomfort.

INCIDENCE AND RISK FACTORS OF MANDIBULAR FRACTURES ASSOCIATED WITH THIRD MOLAR EXTRACTION: SYSTEMATIC REVIEW WITH 10-YEAR RETROSPECTIVE DATA

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Aim: the present study aims to analyze the risk factors for mandibular fractures associated with the extraction of third molars, with particular attention to their correlation with risk factors and resolutions.

Materials and methods: a review was conducted using the major search engines Pubmed, Scopus and Web of Science. Then, 2125 patients undergoing lower third molar avulsion over a 10-year period were retrospectively evaluated.

Results: according to recent literature, mandibular fracture during third molar extraction has an incidence between 0.0046% and 0.0075%, which is more prevalent in the postoperative period. Associated risk factors are degree of inclusion, excessive application of force, failure to prepare for surgery, reduced bone strength and patient age.

Analysis of our clinical series shows 2 cases of mandibular fracture, with an incidence of 0.09% respectively in the surgical and post-surgical phases, respectively. The observed risk factors are attributable to deep inclusion, advanced age, very poor bone quality resulting from the alveolar infectious process.

Conclusions: in our practice, a conservative therapeutic approach was adopted, promoting intermaxillary locking as the primary stabilization method. Mandibular fractures have emerged as a rare complication attributable to iatrogenic causes, although predictable through adequate preoperative analysis and the adoption of atraumatic techniques. The risk factors we observed are in line with those proposed in the literature.

INCIDENCE AND RISK FACTORS OF NEUROLOGICAL INJURIES AFTER THIRD MOLAR EXTRACTION: SYSTEMATIC REVIEW AND 10-YEAR RETROSPECTIVE STUDY

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Aim: the present study aims to analyze the different types of nerve injuries associated with the extraction of third molars and their extent, with particular attention to their clinical course. Special focus is placed on the involvement of the sensory components of the fifth cranial nerve, particularly the inferior alveolar nerve.

Materials and methods: a review was conducted using the major search engines PubMed, Scopus and Web of Science. A total of 2125 patients undergoing lower third molar avulsion over a 10-year period were retrospectively evaluated.

Results: the literature shows neurological damage with an incidence of 0.4% and 5% with a frequency of anatomic lesion between 0.4% and 17%, which hesitate in permanent functional damage in 1-3% of cases. The causes are generally re-

lated to the incongruous use of rotating or cutting instruments that can cause lacerations, overheating, mechanical compression or traction on the nerve.

Our results show a total of 160 cases of dysesthesia (7.6%), 16 cases of anesthesia (0.76%), and 8 cases of paresthesia (0.38%) with evidence of complete resolution 2-3 months apart.

Conclusions: the adoption of a rigorous clinical and radiological approach, based on accurate diagnosis supported by the use of dedicated equipment and software, together with the application of atraumatic surgical techniques like piezo, is crucial in preventing neurological complications. In all cases, the sensory alterations were transient, with progressive regression leading to complete resolution of the clinical condition.

IS ANTIBIOTIC PROPHYLAXIS NECESSARY FOR TOOTH EXTRACTIONS IN DIABETIC PATIENTS? A RETROSPECTIVE COHORT STUDY

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Aim: diabetes mellitus is associated with impaired immune response and delayed healing, increasing the risk of post-operative complications after tooth extraction. Although antibiotic prophylaxis is commonly used to mitigate these risks, its effectiveness in diabetic patients remains controversial. This study aimed to assess post-extraction complications in diabetic patients with or without antibiotic prophylaxis.

Methods: diabetes mellitus is associated with impaired immune response and delayed healing, increasing the risk of post-operative complications after tooth extraction. Although antibiotic prophylaxis is commonly used to mitigate these risks, its effectiveness in diabetic patients remains controversial. This study aimed to assess post-extraction complications

in diabetic patients with or without antibiotic prophylaxis.

Results: out of 175 extractions, only two complications occurred (1.1%), both post-extractive site infections in different patients. Thirty patients (17.1%) received antibiotic prophylaxis, and one complication occurred in this group (NNT = 37.8). Post-operative pain was reported in 4.6% of extractions. Overall, antibiotic prophylaxis did not reduce the risk of complications.

Conclusions: within the limitations of this retrospective cohort study, antibiotic prophylaxis showed no significant benefit in reducing complications or post-extraction pain. However, the small sample size requires cautious interpretation, and larger studies are needed.

IMPACT OF BIOLOGICAL AND SURGICAL VARIABLES ON DENTAL AUTOTRANSPLANTATION OF INCLUDED CANINES

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Aim: the canine tooth has a quite high incidence of inclusion (1-5%). Although orthodontics is usually the most appropriate treatment choice, dental autotransplantation emerged as a valid alternative for some cases. Therefore, this study aims to analyse the impact of different intraoperative variables on autotransplantation treatment outcomes.

Methods: a retrospective analysis was conducted on 25 autotransplanted canines. Variables such as gender, age, jaw, extraction time, extralveolar time, and postoperative treatment were analyzed. The data were processed using logistic regression, with significance set at $p < 0.05$.

Results: the statistical analysis showed that the extra-alveolar time was the only factor significantly associated with surgical

success ($B = 2.419$ $p = 0.046$). The model showed an explanatory power of 21.6%, suggesting that, although speed of execution is crucial, the remaining 78.4% of the outcome depends on other factors (root maturation, systemic variables). The remaining variables analyzed did not show significant associations.

Conclusions: this study demonstrated a direct correlation between reduced extralveolar time and the likelihood of tooth survival. Despite the limited sample size, the results emphasise the need for a rapid and precise surgical management, providing a solid basis for future prospective studies aimed at optimising recovery protocols for canines that cannot be treated orthodontically.

DISTAL DEFECTS AT SECOND MOLARS FOLLOWING THIRD MOLAR EXTRACTION: HEALING OUTCOMES

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Aim: the extraction of impacted third molars is one of the most frequent procedures in oral surgery. Proper surgical approach and meticulous pre-operative planning are essential to prevent post-operative complications, assess the risk-benefit ratio, and select the appropriate surgical instruments. This study aims to evaluate the distal periodontal healing to the second molar following the extraction of both upper and lower impacted third molars, comparing the clinical outcomes with existing scientific literature.

Methods: a group of patients was selected for a minimum 2-year follow-up. Clinical cases with different anatomical features and positions were analyzed. Parameters such as Probing Pocket Depth (PPD), Bleeding on Probing (BOP), and Clinical Attachment Level (CAL) were evaluated pre-operatively

and during periodic follow-ups (at one week, one month, and every six months post-surgery). Additionally, patients were enrolled in a professional oral hygiene maintenance protocol every 3, 6, or 12 months.

Results: following a transient 1-week post-operative increase, PPD values significantly improved, dropping from ~4.1 mm to ~3.5 mm at the 2-year mark in surgical groups (flap/osteotomy). Consistent IQR and SEM values demonstrate long-term clinical stability. Non-smokers with initial PPD > 3 mm achieved superior outcomes compared to smokers.

Conclusions: the findings confirm that meticulous surgical technique and rigorous post-operative maintenance allow for the successful preservation of the periodontal health of the second molar after third molar avulsion.

PERFORMANCE EVALUATION OF A LINEAR HYALURONIC ACID DEVICE IN THE CLINICAL HEALING OF POST-EXTRACTION SOFT TISSUES

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Aim: the study evaluated the clinical efficacy of a medical device based on linear hyaluronic acid and amino acids in promoting the healing of post-surgical oral wounds. The research specifically analyzed the improvement of the Clinical Healing Score (CHS) and the acceleration of wound closure through digital morphometric analysis.

Methods: a monocentric, split-mouth interventional study was conducted on 29 patients requiring the extraction of at least two teeth with comparable anatomical and clinical characteristics. In each patient, one post-extraction site was treated with the hyaluronic acid device (test site), while the contralateral site received no treatment, allowing for spontaneous healing through blood clot formation (control site). Standardized follow-up assessments were performed at 7 (V2), 14 (V3), and 28 days (V4). Healing was quantified via CHS (0-5 scale) and

through digital morphometric measurement of the residual wound area using ImageJ® software.

Results: at 7 days (primary endpoint), treated sites demonstrated significantly higher CHS compared to controls (mean difference +1.13; $p < 0.0001$). Morphometric analysis at V2 showed a significantly reduced residual area in treated sites (6.54 mm²) compared to controls (9.76 mm²; $p = 0.002$). These superior healing outcomes remained statistically significant at both 14 and 28 days, confirming a faster and more efficient tissue regeneration process in the test group.

Conclusions: topical application of linear hyaluronic acid significantly accelerates early tissue repair and enhances the quality of clinical healing in post-extraction sites. The results demonstrate that the device is highly effective in optimizing the initial post-operative inflammatory and regenerative phases.

BEYOND IMPLANT FLAPLESS SURGERY: IMPROVING BUCCAL SOFT TISSUE WITH CONNECTIVE TISSUE PUNCH GRAFTING

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Aim: the aim of this study was to evaluate the effectiveness of a connective tissue punch grafting (CTPG) technique during flapless implant surgery compared with conventional flapless implant placement in enhancing the peri-implant soft tissue profile.

Methods: systemically healthy, non-smoking patients with fully healed implant sites were enrolled and allocated to test or control group. In the test group, a 4.2 mm punch graft was harvested, de-epithelialized, stored in saline solution, and inserted into a buccal partial-thickness pouch around the healing abutment, secured with 6-0 resorbable sutures. The control group received conventional flapless implant placement without soft tissue augmentation. Digital intraoral scans were obtained at baseline and 3 months and superimposed for analy-

sis. Buccal gingival thickness (GT) and buccal keratinized tissue width (KTW) were measured.

Results: both buccal GT and KTW increased in the test group compared with controls. GT showed greater changes, with a mean gain of 0.670 mm in the test group and -0.042 mm in controls. KTW increased by 0.297 mm in the test group *versus* 0.165 mm in controls. The CTPG technique demonstrated more consistent and predictable improvements in gingival volume and profile.

Conclusions: CTPG during flapless implant surgery represents a minimally invasive and predictable approach for peri-implant soft tissue enhancement, providing more favorable buccal outcomes than conventional procedures.

INDEX VALIDATION FOR THE EVALUATION OF WOUND HEALING FOLLOWING ERUPTED TOOTH EXTRACTION

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Aim: the healing of the alveolar process can be assessed using several different scales; however, the absence of standardization limits the objective evaluation of the various aspects of post-extraction wound healing.

The primary objective of this study was to validate the wound healing assessment scale proposed in a previous paper in a larger sample, with the ultimate goal of enabling the application of a novel index for the objective evaluation of wound healing following erupted tooth extractions in clinical practice.

Methods: ASA I and II patients requiring a single erupted tooth extraction (without adjacent extraction sites) were enrolled and re-examined at 7, 14, and 21 days post-extraction using the novel index. Patients undergoing extraction due to periodontitis were

excluded from the study. At each follow-up visit, a score ranging from 0 to 10, based on dichotomous variables (0-1), was recorded. Additional clinical parameters (e.g., wound closure, tissue color, and presence of complications) were also evaluated.

Results: nineteen patients were enrolled in the study, 14 females and 5 males. In the expanded cohort, healing scores increased significantly from day 7 to 21, with good/excellent healing in all cases, rare early complications (5.3%), and progressive socket size reduction (mean reduction: 56.9%).

Conclusions: the updated data further support the index as a clinically useful tool for monitoring post-extraction wound healing. Nevertheless, larger cohorts are still required to confirm its reliability and broader validity.

DETERMINANTS OF DENTAL PULP STEM CELL VIABILITY FOLLOWING TOOTH EXTRACTION: A CLINICAL AND SURGICAL ANALYSIS

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Aim: to investigate clinical and surgical factors influencing the success of dental pulp stem cell (DPSC) harvesting following tooth extraction.

Methods: thirty-two dental extractions were included. Pulp tissue was aseptically retrieved after extraction, properly transported, and processed for DPSC isolation. Variables analyzed included patient age, sex, dental developmental stage, tooth position, jaw location, skeletal maturation, and the execution of odontotomy. Statistical evaluation was performed using Kruskal–Wallis and Mann–Whitney U tests.

Results: successful DPSC isolation was achieved in 14 of 32 cases. Higher success rates were observed in younger patients (mean age 14.8 years), although the difference was not statistically significant ($p > 0.05$). Dental developmental stage

significantly influenced outcomes ($p = 0.025$), with the highest success in dental germs (67%), followed by open apex (22%) and closed apex teeth (14%). Odontotomy was associated with complete failure (100%) and showed statistical significance ($p = 0.011$). No significant associations were found with sex, tooth position, jaw location, or skeletal maturation. Mandibular teeth demonstrated a higher success rate (45%) compared to maxillary teeth (33.3%), without statistical significance.

Conclusions: DPSC harvesting appears to be influenced primarily by odontogenic developmental stage and surgical invasiveness. Immature teeth represent the most reliable source for stem cell isolation. Further studies on larger scale are needed to confirm these findings and refine surgical protocols.

DRUG DELIVERY IN ORAL SURGERY: *IN VITRO* STUDY ON THE ANTIMICROBIAL EFFICACY OF ADVANCED PLATELET-RICH FIBRIN (A-PRF) ENRICHED WITH AMOXICILLIN AND METRONIDAZOLE

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Aim: antibiotics are among the most frequently prescribed drugs in dentistry, used for therapeutic and prophylactic purposes. Local drug delivery, through drug delivery systems (DDS), represents an effective strategy to minimize the side effects and toxicity associated with systemic therapies, while ensuring enhanced therapeutic efficacy. This study aims to assess the potential of Advanced Platelet-Rich Fibrin (A-PRF) as a DDS for antibiotics.

Methods: different concentrations of amoxicillin (AMX) and metronidazole (MTZ) were preliminarily tested for their impact on A-PRF clot formation, with 0.5 mg/mL selected for subsequent experiments. Blood samples from healthy volunteers were supplemented with antibiotics and centrifuged to form clots. Antibiotic-enriched A-PRF clots were immersed in phos-

phate-buffered saline (1x PBS) and analyzed at 24 h, 72 h, 7 days, and 14 days.

Results: AMX showed a consistent release (mean: 19.9 ± 4.8 ng/mL at 24 h) over 14 days, while MTZ demonstrated greater variability (mean: 12.8 ± 4.5 ng/mL at 24 h). AMX release remained constant over the 14-days, with no significant variations among patients. In contrast, MTZ displayed a progressively lower release over time. Microbiological analysis revealed bacterial growth inhibition zones for *Fusobacterium nucleatum* (AMX: 23 mm, MTZ: 28 mm) and *Prevotella intermedia* (AMX: 34 mm, MTZ: 30 mm) at 24 h.

Conclusions: these findings suggest that A-PRF can act as an effective local antibiotic delivery system, maintaining sustained antimicrobial activity and potentially reducing the need for systemic antibiotics.

THERAPEUTIC ATTITUDE OF ITALIAN DENTISTS TOWARDS ENDODONTICALLY TREATED ELEMENTS IN PATIENTS AT RISK OF MRONJ

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Aim: there is a variety in the therapeutic attitude of dentists about how to approach endodontically treated first inferior molars with apical disease in patients at risk of Medication Related Osteonecrosis of the Jaws (MRONJ).

Methods: a questionnaire with 69 questions included both personal and clinical questions. 32 hypothetical clinical-radio-logical scenarios with anamnestic information were collected and subjected to the participants who were asked to choose a specific therapeutic plan. The data were analyzed with both descriptive statistics and logistic regression on Excel and SPSS IBM Statistics.

Results: the choice of extraction/retreatment was analyzed in relation to the MRONJ risk. Different factors influenced the choice. In presence of symptoms, correct root canal filling, oncohematological pathology, large apical lesion (diameter > 5 mm), long lasting professional experience and regular occupation to endodontics, there was a positive association with extraction compared to retreatment. Furthermore 21.0% of respondents believed a CBCT would be useful for assessing the case.

Conclusions: medical history influences the therapeutic attitude in patients at MRONJ risk. CBCT is considered useful for assessing the case by a minority of the participants.

REIMPLANTATION OF AN IMPACTED TOOTH AS A THERAPEUTIC OPTION IN GROWING PATIENTS: A CASE REPORT

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Aim: dental reimplantation is the surgical transfer of a tooth within the same patient. It is a valid option in growing patients when implants or fixed prostheses are contraindicated, and preservation of natural teeth is preferred. This case report describes the management of impacted teeth 37 and 38 associated with a cystic lesion, followed by reimplantation of tooth 37 to restore function and arch continuity.

Methods: a 13-year-old patient presented with a cystic lesion involving teeth 37 and 38. CBCT showed tooth 37 impacted and mesio-inclined, and tooth 38 impacted due to dysodontiasis. Under general anesthesia, an intrasulcular mucoperiosteal flap from tooth 34 to the mandibular ramus was performed, followed by osteotomy, atraumatic luxation and extraction of teeth 37 and 38,

enucleation of the osteolytic lesion, and immediate reimplantation of tooth 37 in its correct position.

Results: a 3-year follow-up with quarterly check-ups showed that teeth 36 and 37 maintained vitality, with no mobility or pain on percussion. Radiographic evaluation demonstrated proper integration of the reimplanted tooth with surrounding periodontal tissues, preservation of bone levels, and absence of pathological signs.

Conclusions: dental reimplantation is a reliable and minimally invasive alternative to more complex rehabilitative treatments, allowing preservation of function, maintenance of alveolar bone, and satisfactory aesthetic outcomes in growing patients.

14-YEAR OUTCOMES OF HORIZONTAL RIDGE AUGMENTATION USING CORTICAL-CANCELLOUS ALLOGRAFT BLOCKS: A CASE REPORT

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Aim: to evaluate 14-year outcomes of horizontal alveolar ridge augmentation using cortical-cancellous allograft blocks in a patient with severe anterior maxillary bone deficiency.

Methods: a healthy male with severe horizontal bone deficiency (zones 12-22) and bilateral sinus pneumatization underwent a two-stage protocol. Two posterior implants (14, 24) were placed to provide fixed provisional support. A provisional prosthesis was delivered at 10 months; the next month ridge augmentation was performed with two PUROS® allograft blocks (ZimVie) fixed with titanium screws; gaps were filled with allograft chips and deproteinized bovine bone (Bio-Oss®, Geistlich) and covered with a resorbable pericardium membrane (Heart®). Eight months later, two implants (11, 21) were placed in the regenerated site via computer-guided surgery

(Co-Diagnostix Gonyx®), and a definitive prosthesis was delivered six months thereafter.

Results: at 14-year follow-up, clinical and radiographic examination demonstrated stable peri-implant hard and soft tissues. Peri-implant mucositis at the anterior implants was managed with chlorhexidine gel; the prosthesis was successfully relined and restored.

Conclusions: cortical-cancellous allograft blocks combined with a particulate allograft–xenograft mixture and a resorbable membrane can predictably restore horizontal bone deficiency and support osseointegrated implants for 14 years. Preliminary placement of posterior implants for fixed provisional support during regeneration is a clinically relevant strategy for patients unable to tolerate removable prostheses.

CALCIFYING CYST ASSOCIATED WITH A COMPLEX ODONTOMA IN A PEDIATRIC PATIENT: CASE REPORT

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Aim: this case report describes a calcifying cyst associated with a complex odontoma in a 13-year-old patient. The lesion was located in the maxilla, resulting in the delayed eruption of teeth 2.3, 2.4, and 2.5, and the absence of 6.3, 6.4, and 6.5. The report aims to outline the clinical management of this condition.

Materials and methods: a decision was made to enucleate the lesion to promote the spontaneous eruption of the impacted teeth into the dental arch under general anesthesia; the biopsy specimen was then sent for histopathological examination to the pathology department. A space maintainer was placed at 6 months, and at 18 months, surgical-orthodontic recovery of tooth 2.4 was performed.

Results: we will continue to monitor the orthodontic traction of tooth 2.4 and the correct positioning of teeth 2.3 and 2.5 within the dental arch.

Conclusions: calcifying odontogenic cyst (COC) is a developmental cyst derived from the dental lamina. It is a very rare, ameloblastoma-like lesion, representing approximately 0.3-0.8% of all odontogenic cysts. Its etiology remains unknown. While previously classified as an odontogenic tumor, the current 2022 classification categorizes it as an aggressive cystic lesion. It is frequently associated with an odontoma, a benign radiopaque tumor. Calcifying cysts, much like odontomas, are neoplasms that — while appearing aggressive — are capable of displacing and retaining dental elements. Since impacted teeth erupt spontaneously in 30–60% of cases following excision, their extraction is discouraged. In the event of failure to erupt, surgical-orthodontic recovery is recommended instead.

BILATERAL MENTAL NERVE AGENESIS: CLINICAL MANAGEMENT AND SENSORY FOLLOW-UP AFTER IMPLANT-PROSTHETIC REHABILITATION

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Aim: bilateral agenesis of the mental nerve is an extremely rare congenital anomaly. This case report aims to describe the clinical management and sensory outcomes following prosthetic-implant rehabilitation in a patient with this condition.

Methods: a patient with confirmed bilateral mental nerve agenesis underwent thorough clinical and radiographic evaluation, including CBCT imaging to assess mandibular anatomy and confirm the absence of the mental foramina. Baseline sensory function was normal. A minimally invasive implant-supported prosthetic protocol was implemented to restore oral function while preserving neural structures. Surgical planning focused on careful implant positioning to avoid damage to possible accessory neural branches. Postoperative follow-up included neurological assessments and pa-

tient-reported sensory outcomes over 12 months.

Results: the patient exhibited no initial hypoesthesia. After implant-supported rehabilitation, sensory testing remained normal and progressive functional adaptation to the prosthesis was observed. The patient reported satisfactory masticatory function during follow-up visits. No implant-related complications or adverse effects on mandibular function occurred.

Conclusions: prosthetic-implant rehabilitation appears feasible in patients with bilateral mental nerve agenesis when baseline sensation is intact. Careful preoperative planning and multidisciplinary management are essential to ensure optimal functional outcomes and preservation of neural integrity in such rare congenital conditions.

ALVEOLAR RIDGE PRESERVATION USING A COLLAGEN MATRIX AND FIBRIN-FIBRONECTIN-BASED SEALING SYSTEMS: A CASE REPORT

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Aim: the aim of this case report was to evaluate the effectiveness of two alveolar ridge preservation techniques compared with spontaneous healing 2 months after tooth extraction.

Materials and methods: a 56-year-old woman with a non-contributory medical history presented with teeth 1.4, 1.6, and 1.7 showing severe dento-periodontal compromise and scheduled for extraction. The socket of tooth 1.4 was treated with resorbable collagen sponges coated with human fibrinogen and thrombin (Spongostan®) plus tissue adhesive (Tisseel®); the socket of tooth 1.6 was treated with human fibrinogen- and thrombin-based tissue adhesive (Tisseel®); the socket of tooth 1.7 was left to heal spontaneously. At the end of surgery, each socket was sealed with an equine type I collagen matrix (Condress®, Smith & Nephew S.r.l., Monza, Italy), stabi-

lized with sutures. Linear changes in the residual ridge were radiographically assessed using DICOM/STL image analysis software (RealGUIDE, Cantù, Como, Italy).

Results: both ridge preservation techniques mitigated post-extraction horizontal bone resorption better than spontaneous healing and maintained socket architecture. In addition, collagen matrix placement according to socket seal principles promoted an evident increase in keratinized mucosa after 8 weeks, creating favorable conditions for implant placement.

Conclusions: the alveolar ridge preservation techniques analyzed were more effective than spontaneous healing in limiting horizontal bone resorption at the most coronal buccal and palatal portions of the post-extraction socket.

QUANTITATIVE 3D ASSESSMENT OF ALVEOLAR RIDGE PRESERVATION USING INTRAORAL SCANS

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Aim: to quantitatively assess post-extraction alveolar ridge volumetric changes after ARP using intraoral scans.

Methods: a 24-year-old female presented with residual roots at teeth 1.6 and 2.6. Atraumatic extractions were performed, followed by ARP using a low-resorbable osteoconductive biomaterial and a barrier membrane. STL files were aligned and segmented to define regions of interest. Volumetric changes were assessed through 3D superimposition and deviation mapping using CloudCompare.

Results: high volumetric stability was observed at treated sites. Superimposition showed minimal horizontal ridge reduction with preservation of the buccal contour. Healing was uneventful. Deviation maps demonstrated reduced bone remodeling compared to spontaneous healing patterns reported in the literature.

Conclusions: digital intraoral scanning combined with 3D analysis is a precise, non-invasive, and reproducible method for monitoring post-extraction changes. ARP effectively limited ridge resorption, supporting integration with digital workflows.

COMPOUND ODONTOMAS ASSOCIATED WITH IMPACTED TEETH: A CASE SERIES

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Aim: compound odontomas are benign odontogenic tumors frequently associated with impacted teeth. This case series describes the clinical and radiographic features of compound odontomas and discusses their surgical management, particularly regarding the removal of mechanical obstacles to eruption.

Methods: four patients (3 males, 1 female; age range 7–28 years) underwent panoramic radiography followed by computed tomography (CT) for diagnosis and treatment planning. Lesions were distributed in both jaws and associated with impacted teeth. All patients underwent surgical enucleation; in one case, an orthodontic attachment was placed intraoperatively to allow subsequent traction of the impacted tooth 11. Histopathological examination confirmed the diagnosis in all cases.

Results: teeth impaction may be caused by a solid obstacle such as odontomas. In these cases, tumor surgical enucleation removed the barrier to eruption. In growing patients, this approach may facilitate spontaneous eruption or permit orthodontically guided eruption when required as in one of the reported cases. No intra- or postoperative complications occurred. Histological examination is considered mandatory.

Conclusions: compound odontomas are frequently associated with eruption disorders and require preciseradiographic evaluation for appropriate management. Early surgical enucleation is essential to remove mechanical obstruction and should be integrated into an interdisciplinary approach aimed at facilitating spontaneous permanent tooth eruption.

PRE-SURGICAL ENDODONTIC TREATMENT OF TEETH ADJACENT TO BENIGN OSTEOLYTIC LESIONS: IS IT NECESSARY? A CASE SERIES

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Aim: management of vital teeth adjacent to osteolytic jaw lesions is controversial, particularly regarding the need for pre-surgical root canal treatments (RCTs). This study evaluates whether pre-surgical RCT is advisable, through a systematic review of the literature and a case series.

Methods: a multi-database search was set, using twenty key-word pairs as entry terms. Only English literature, published from 2000, focusing on humans was considered. Of 1367 papers, 15 met the inclusion criteria. Data were extracted into an Excel table and assessed quality using the JBI checklist. Five clinical cases were analysed to evaluate pulp vitality before and after enucleation.

Results: pre-surgical RCT was performed in 3 out of 15 papers. In most, despite variations in surgical techniques, tooth

vitality was preserved without pre-surgical RCTs. One study reported a high rate of pulp necrosis, suggesting a possible benefit of prophylactic RCT. In this case series, 10 teeth were associated with osteolytic jaw lesions: 9 vital and 1 non-vital prior to surgery. After enucleation, 8 remained vital, while 2 did not respond to cold test.

Conclusions: management of vital teeth adjacent to osteolytic lesions is contentious, with limited evidence. The need for RCT remains debated, with no consensus on its presurgical utility. Conservative approaches, such as marsupialization with enucleation, may favor long-term pulp vitality preservation. Based on current evidence and clinical experience, pre-surgical RCT does not appear necessary for managing teeth adjacent to osteolytic jaw lesions.

CLINICAL APPLICATION OF 3D-PRINTED MODELS AND COMPUTER-GUIDED SURGERY IN MOLAR AUTOTRANSPLANTATION: A CASE SERIES

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Tooth autotransplantation is a surgical procedure that replaces compromised teeth while preserving the periodontal ligament (PDL), essential for function and aesthetics. Main challenges include potential PDL damage during extraction, adaptation of third molar to the recipient site, and extra-alveolar time. Digital technologies such as CBCT, virtual simulation, and 3D printing enable precise planning, reducing errors and operative time. In this case series, 11 patients (mean age: 25 +/- 5.2 years) presented with chronic infection affecting the upper left first molar. The first molars were indicated for extraction and were subsequently by the third molars. After CBCT acquisition, a digital model of the third molar and recipient site was created for simulation and 3D printing. Atraumatic extraction and guid-

ed site preparation allowed immediate insertion of the third molar, with extra-alveolar time under 30 seconds. The tooth was stabilized and monitored clinically and radiographically. Results showed good integration, physiological mobility, and no complications at one year, with intact PDL and proper bone healing. This approach combines minimally invasive surgery and digital technologies, improving precision, stability, and long-term prognosis.

In conclusion, digitally guided tooth autotransplantation is a reliable and minimally invasive approach that enhances surgical precision while preserving periodontal ligament vitality. The favorable one-year outcomes suggest promising functional and biological success, although further long-term studies are needed.

REPORT OF 104 MRONJ CASES OVER 7 YEARS OF OBSERVATION, 2019-25

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Aim: to report the ONJ cases referred to the Dental School of Brixia from January 2019 to December 25.

Methods: a retrospective analysis of 104 ONJ cases was performed, collecting data on drug exposure, underlying pathology, cause of ONJ, treatment, staging and recurrence.

Results: ONJ occurred in 67.3% of women and 32.7% of men. Patients were mainly aged over 70 years: 33 were 70-80 years old (31.7%) and 34 were over 80 (32.7%). The most frequently involved drugs were zoledronic acid (38.9%), denosumab 120 mg monthly (30.6%), alendronic acid (16.7%) and denosumab 60 mg half-yearly (8.3%). The main indications were carcinoma (49.5%), osteoporosis (29.1%) and multiple myeloma (18.4%). The leading causes were tooth extractions (30.1%), decubitus (28.2%), spon-

taneous cases (11.7%) and peri-implantitis (10.7%). Stage III was the most frequent (26.9%), mainly associated with zoledronic acid and denosumab 120 mg monthly, whereas denosumab 60 mg half-yearly was linked only to low-stage lesions. Alendronic acid was associated with all stages. Surgical ambulatory treatment was the most common approach (41.5%), followed by periodic control (32.1%) and maxillofacial surgery (21.7%).

Conclusions: the findings are consistent with the literature. Appropriate drug modulation may reduce ONJ occurrence in patients receiving denosumab 60 mg half-yearly, careful follow-up of edentulous patients may reduce decubitus-related cases, and close collaboration with the maxillofacial department remains essential for optimal management.

IMPLANT-PROSTHETIC COMPLICATIONS IN ORAL CANCER PATIENTS: 5-YEARS FOLLOW-UP OF CLINICAL OUTCOMES AND MANAGEMENT STRATEGIES

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Background: prosthetic rehabilitation is essential for oral cancer patients, who often undergo highly disabling surgeries affecting facial appearance, self-perception, psychological wellbeing, and quality of life. Speech and eating may also be impaired, and reconstructive surgery or radiotherapy (RT) can add discomfort.

Aim: to identify and discuss the most frequent prosthetic complications and outline site-specific rehabilitation strategies.

Methods: review of limited literature and retrospective analysis of 147 patients in 5 years of experience in a single regional center. Rehabilitation timing, tumor staging, RT, type of primary reconstruction, and prosthetic solutions were considered.

Results: implant-prosthetic rehabilitation is a crucial component of treatment but is not without complications. Complication rates are influenced by tumor stage, RT, type of reconstruction, comorbidities, timing of rehabilitation (immediate vs delayed, 6-12 months), loading protocols, and ancillary soft tissue procedures.

Conclusions: careful planning of reconstruction and prosthetic rehabilitation is essential to minimize complications and improve patient outcomes. Site-specific, standardized protocols are recommended to optimize functional and aesthetic results.