UPDATE ON RESEARCH AND CLINICAL GUIDELINES IN DENTISTRY 2026: VOL 1

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The purpose of the column is to highlight significant research findings, advancements, and clinical guidelines in dentistry, as published in the leading high-impact dental and medical Journals in 2025/2026.

1. Insights into soft tissue augmentation around teeth and dental implants

A Review of Evidence-Based Literature

Field: Periodontal & Peri-implant Plastic Surgery

Clinical and practical significance:

- When indicated, soft tissue graft substitutes (STGS) are a reliable alternative to autogenous grafts, with the added advantage of reducing morbidity and surgical complexity.
- Soft tissue augmentation effectively enhances root coverage, keratinized mucosa width, and mucosal thickness at both teeth and implant sites.

Key findings & recommendations:

- ***Autogenou***s soft tissue grafts are generally regarded as the gold standard for increasing keratinized mucosa, mucosal thickness, and soft tissue height.
- Selection of soft tissue graft substitutes should be guided by a balance of clinical efficacy, cost, patient donor site morbidity, and anatomical considerations (i.e., restricted tissue availability).
- The connective tissue graft is widely regarded as the "gold standard" for the treatment of gingival recession defects. However, STGS can improve root coverage outcomes.
- At implant sites, apically positioned flap and bilayer collagen matrix - either alone or combined with a strip gingival graft – can effectively augment keratinized mucosa.
- STGS can lead to meaningful gains in mucosal thickness and supra-crestal tissue height at implant sites.

Reference: Tavelli L, Thoma D, Vinueza MEG, et al. Soft Tissue Substitutes: Current Biomaterials and Indications at Teeth and Implant Sites. Journal of Periodontal Research (2025): 1–44, https://doi.org/10.1111/jre.70066.

2. Effectiveness of pulpotomy compared with pulpectomy for irreversible pulpitis in primary teeth

A systematic review and meta-analysis

Field: Pedodontics, Endodontics

Clinical significance:

- Pulpotomy appears to be an effective, minimally invasive treatment alternative to pulpectomy in primary teeth with irreversible pulpitis.

Key findings

- Pulpotomy is a conservative alternative in irreversible pulpitis in the absence of clinical signs of swelling or radiographic evidence of furcation radiolucency.
- There is no significant difference in the clinical outcomes between the two treatments.

Reference: Chawla S, Singhal R, Namdev R, et al. Effectiveness of pulpotomy compared with pulpectomy for irreversible pulpitis in primary teeth: A systematic review and meta-analysis. Journal of Dentistry, 2026; 166: 106329. https://doi.org/10.1016/j.jdent.2026.106329.

3. Use of Cone-Beam Computed Tomography (CBCT) in Endodontics

American Association of Endodontics and American Association of Oral and Maxillofacial Radiology Revised Joint Position Statement

Field: Endodontics / Maxillofacial Radiology

Clinical and practical significance:

To highlight recommendations on the application of CBCT during various stages of endodontic treatment, incorporating current evidence-based advancements.

Key findings:

- Although intraoral and panoramic radiography are still extremely relevant, complex anatomy and surrounding structures can render interpretation of planar images difficult. – CBCT scans provide clinicians with the ability to assess the relationship of anatomic structures in three dimensions.
- CBCT scans should not be used routinely for endodontic diagnosis or for screening purposes in the absence of clinical signs and symptoms.
- CBCT scans should only be used when dental practitioners have reasonably concluded that the need for imaging cannot be met by lower-dose 2D radiography.
- Clinicians should always exercise independent judgment tailored to the unique conditions and individualities of each patient.

Reference: Sousa Melo SL, Fayed MI, Gohel A, et al. AAE and AAOMR Joint Position Statement: Use of Cone-Beam Computed Tomography in Endodontics 2025 Update. Journal of Endodontics 2026; 52(1): 4-13. https://doi.org/10.1016/j.joen.2025.09.008

4. Immediate full-arch mandibular rehabilitation supported by four implants (All on Four Concept)

A retrospective study with 20-25 years of follow-up.

Field: Dental Implantology

Aim of the Study:

To evaluate the long-term clinical and radiographic outcomes of immediate full-arch rehabilitation supported by four implants (two axial anterior implants and two tilted posterior implants).

Key findings

- The cumulative survival rate for implants and prostheses was 90% and 92%, respectively.
- The immediate function of full-arch rehabilitation is a safe and reliable protocol in the long term.
- Smoking and previous failure of a contiguous implant may be associated with an increased risk of biological complications.

Reference: De Araújo Nobre M, Loes A, Ferro A, et al. Immediate full-arch mandibular rehabilitation supported by four implants: A retrospective study with 20 to 25 years of follow-up. Journal of Dentistry, 2025; 106286 (In Press) https://doi.org/10.1016/j.dent.2025.106286

5. What is the most cost-effective local anaesthetic in lower molars with irreversible pulpitis

A systematic review, meta-analysis, and cost-effectiveness evaluation

Field: Endodontics

Clinical significance:

"This review bridges the gap between clinical efficacy and affordability, providing clinicians with clear, evidence-based guidance for anaesthetic selection in one of the most challenging endodontic scenarios."

Key points and recommendations:

- There is no significant difference in the efficacy among Lidocaine 2%, Articaine 2%, Bupivacaine 0.5%, and mepivacaine 2% for the inferior alveolar nerve block in irreversible pulpitis cases.
- Lidocaine 2% with epinephrine was the most cost-effective anaesthetic option.
- Articaine's higher cost, despite its superior tissue diffusion advantages, limits its routine first-line use and potential for adverse effects.
- Efficacy, safety, and cost must always be weighed during anaesthetic selection.

Reference: De Carvalho LF, Castilho Dugaich AP, de Melo Schiefler AM, et al. Is there a direct relationship between the cost and effectiveness of local anaesthetics in lower molars with irreversible pulpitis? Systematic review, meta-analysis and cost-effective evaluation. Journal of Dentistry, December 2025; 163: 106175. https://doi.org/10.1016/j.dent.2025.106175

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