Compiled by Johan Hartshorne[1] and Hugo Johan Kotzé[2]

Purpose: 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 2026.

1. Orifice barriers in endodontics – improving coronal seal - A Systematic Review

Field: Endodontics

Clinical and practical significance:

- Coronal leakage is a major cause of failure in root canal-treated teeth.
- An orifice barrier is placed coronally after root canal treatment to provide a secondary seal against microbial ingress and improve the coronal seal.

Key findings:

- Some studies suggest that orifice barriers placed apical to radicular cracks may improve the success and survival of root canal-treated teeth.
- Teeth with cracks extending along the pulpal floor or around canal orifices may benefit from specialist endodontic assessment and treatment under magnification.
- Overall, the available clinical evidence supporting the use of orifice barriers remains low to very low certainty, highlighting the need for further well-designed clinical studies.

Reference: Wylie ME, Fernando JR, Parashos P, et al. Clinical efficacy of orifice barriers in endodontics: a systematic review. J Dent. 2026;167:106556. https://doi.org/10.1016/j.jdent.2026.106556

2. Clinical effectiveness of bulk-fill composite resins - A Scoping Review and thematic analysis

Field: Restorative Dentistry

Clinical and practical significance:

- Bulk-fill composite resins were developed to allow greater depth of cure while reducing polymerization shrinkage stress and procedural chair time compared with conventional incremental layering techniques.
- These materials enable placement in thicker increments, simplifying restorative procedures and reducing technique sensitivity.

Key findings

- Clinical survival and longevity were generally comparable to conventional incremental composite restorations.
- Polymerization-induced stress remains a limitation for both bulk-fill and conventional composite materials.
- Most reported failures were associated with material fracture or tooth cracks rather than adhesive debonding.
- Long-term success appears to depend more on the adhesive protocol and clinical technique than on the material itself.

Reference: Caracas-de-Araújo AP, da Silva-Filho JE, Cardoso-Oliveira AB, et al. Clinical effectiveness of bulk-fill composite resins in restorative dentistry: a scoping review and thematic analysis. J Dent. 2026;167:106557. https://doi.org/10.1016/j.jdent.2026.106557

3. Evidence on the effectiveness of anti-erosive dentifrices on protecting enamel and dentine - An Umbrella Review of Systematic Reviews

Field: Preventive Dentistry

Clinical and practical significance:

- Erosive tooth wear is a progressive and irreversible loss of dental hard tissue affecting both enamel and dentine. Preventive management commonly includes dentifrices formulated with agents such as sodium fluoride, stannous ions, or biomimetic minerals.
- These formulations aim to improve resistance to acidic challenges, limit mineral loss, and support remineralization of tooth surfaces.

Key findings:

- Toothpastes containing fluoride generally demonstrate greater protection against erosive tissue loss compared with non-fluoridated formulations.
- Dentifrices containing stannous ions consistently showed stronger anti-erosive effects than conventional sodium fluoride or sodium monofluorophosphate products.
- Biomimetic and calcium-based technologies (e.g., nano-hydroxyapatite or CPP-ACP) appear promising, although current evidence remains inconsistent and largely experimental.
- Most studies were based on in vitro or in situ models with short follow-up periods; long-term clinical relevance remains uncertain.

Reference: Gómez-González V, Díaz-Dosque M, Fernández CE, et al. A comprehensive evidence synthesis of anti-erosive dentifrices: an umbrella review of systematic reviews. J Dent. 2026;106608. https://doi.org/10.1016/j.jdent.2026.106608

4. 5-Year cumulative implant survival rate in patients with history of periodontitis - A Retrospective Multicentre Cohort Study of 3555 Implants

Clinical and practical significance:

- This multicentre study evaluated the 5-year survival of bone-level, internal connection, sandblasted and acid-etched (SA) implants and identified patient- and site-related risk factors associated with implant failure.
- Periodontitis-related tooth loss, GBR, and supportive periodontal treatment (SPT) compliance can potentially affect affects implant longevity, emphasizing individualized risk assessment and continuous maintenance care.

Key findings

- A 5-year cumulative survival rate of 98.8% at the implant level and 99.0% at the patient level.
- History of tooth loss due to periodontitis significantly increased the risk of implant failure.
- Implants placed without GBR had a lower risk of failure compared to those with GBR
- Implants placed in sites requiring guided bone regeneration (GBR) showed a higher risk of failure, likely reflecting the compromised nature of these sites.
- Regular supportive periodontal therapy (SPT) significantly improved implant survival, particularly in patients with a history of periodontitis.
- The most common cause of implant removal was early osseointegration failure (67%), followed by peri-implantitis.

Reference: Lee D, Ahn S, Park JY, et al. Supportive periodontal therapy improves implant survival in patients with a history of periodontitis: A retrospective multicenter cohort study of 3555 implants. Clin Oral Implants Res. 2026. https://doi.org/10.1111/clr.70103

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5. New and emerging dental therapies for sleep disorders - Synthesis of the 2024 American Academy of Dental Sleep Medicine Consensus Evidence Report

Field: Dental Sleep Medicine

Clinical and practical significance:

- Dentists play an increasingly important role in the screening and management of sleep-disordered breathing, including obstructive sleep apnoea (OSA) and snoring.
- The intent was to provide a broader understanding of potential emerging dental preventive, curative, and management approaches for sleep health and disorders, especially for dentists with less exposure to sleep medicine.

Key findings:

- Currently, no emerging dental therapy can be recommended as a first-line alternative to established treatments for OSA.
- Established treatments include mandibular advancement devices, positive airway pressure therapy, and maxillomandibular advancement surgery.
- Some interventions, including myofunctional therapy, orthodontic expansion, and laser therapies, may have adjunctive roles in selected patients but lack strong evidence as stand-alone treatments.
- Evidence does not support orthodontic extractions as a causal factor in obstructive sleep apnoea.
- Laser therapies and frenum release procedures are discouraged due to insufficient evidence and potential morbidity risks.

Reference: Simmons M, Sheats R, Meira e Cruz M. Emerging dental therapies for sleep disorders: Evidence synthesis from the American Academy of Dental Sleep Medicine 2024 consensus. J Am Dent Assoc. 2026;157(1):10–19. https://doi.org/10.1016/j.adaj.2025.10.010

6. Sleep-disordered breathing and orthodontics - An American Association of Orthodontists White Paper Update

Field: Orthodontics / Dental Sleep Medicine

Clinical and practical significance:

- Sleep-disordered breathing (SDB), including obstructive sleep apnoea (OSA) and habitual snoring, is a medical disorder that can have significant health consequences if left untreated.
- This American Association of Orthodontists white paper update reviews the current evidence and clarifies the appropriate role of orthodontists in the multidisciplinary management of SDB.

Key findings:

- Sleep-disordered breathing represents a spectrum ranging from habitual snoring to obstructive sleep apnoea; early detection in dental practice is important, but diagnosis must be made by a physician.
- Current evidence does not support orthodontic interventions, such as maxillary expansion or functional appliances, as preventive or stand-alone treatments for SDB.
- Craniofacial phenotypes cannot reliably identify the presence of SDB, and ankyloglossia is not considered an aetiological factor in its development.
- CBCT and cephalometric airway analysis are not suitable for diagnosing SDB or assessing treatment outcomes.
- Validated screening questionnaires can assist in identifying patients at risk, who should then be referred to a physician for definitive diagnosis.
- There is no evidence that orthodontic extractions or distalising mechanics increase the risk of sleep-disordered breathing.
- Effective management requires interdisciplinary collaboration between dentists, orthodontists, sleep physicians, and other healthcare professionals.

Reference: Palomo JM, Cohen-Levy J, Flores-Mir C, et al. Sleep-disordered breathing and orthodontics: An American Association of Orthodontists white paper update. Am J Orthod Dentofacial Orthop. 2026. https://doi.org/10.1016/j.ajodo.2026.01.014

7. Risk Stratification of Oral Epithelial Disorders (OED) and its potential for malignant transformation - Retrospective Cross-Sectional Study

Field: Oral Medicine

Clinical and practical significance:

- Potentially malignant oral disorders (PMDs) are associated with an increased risk of malignant transformation.
- The presence and severity of oral epithelial dysplasia (OED) remain one of the most important predictors of malignant potential.
- Identifying clinical or patient-related features associated with more severe dysplasia may support risk-based management of PMDs, guiding decisions on biopsy, follow-up frequency, and early intervention.
- This study evaluates the relationship between clinical and demographic characteristics of PMDs and the severity of OED using the WHO 5th edition classification criteria.

Key findings:

- Sixty participants with potentially malignant disorders were assessed. The most frequent PMD was leukoplakia (73.3%), followed by leukoerythroplakia (18.3%), proliferative verrucous leukoplakia (PVL, 6.7%), and erythroplakia (3.3%).
- All participants presented with oral epithelial dysplasia (OED), classified as mild in 53.3%, moderate in 30.0%, and severe in 16.7%. Overall, the PMD type was not significantly associated with dysplasia severity, although certain lesions tended to present with higher grades.
- Among the clinical characteristics evaluated, lesion heterogeneity and involvement of the floor of the mouth were most strongly associated with moderate-to-severe dysplasia.
- In descriptive terms, PMDs were more commonly observed in individuals over 40 years of age and were frequently associated with tobacco and alcohol use, although these factors were not significantly related to dysplasia severity in this study.
- The most frequently affected anatomical sites included the gingiva/alveolar mucosa, buccal mucosa, floor of the mouth, ventral surface of the tongue, and lateral border of the tongue.

Reference: de Almeida Lima Borba Lopes A, Marques LC, Corrêa YPM, et al. Factors associated with oral epithelial dysplasia in oral potentially malignant disorders: World Health Organization fifth edition criteria. J Oral Maxillofac Surg. 2026. https://doi.org/10.1016/j.joms.2026.02.011

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