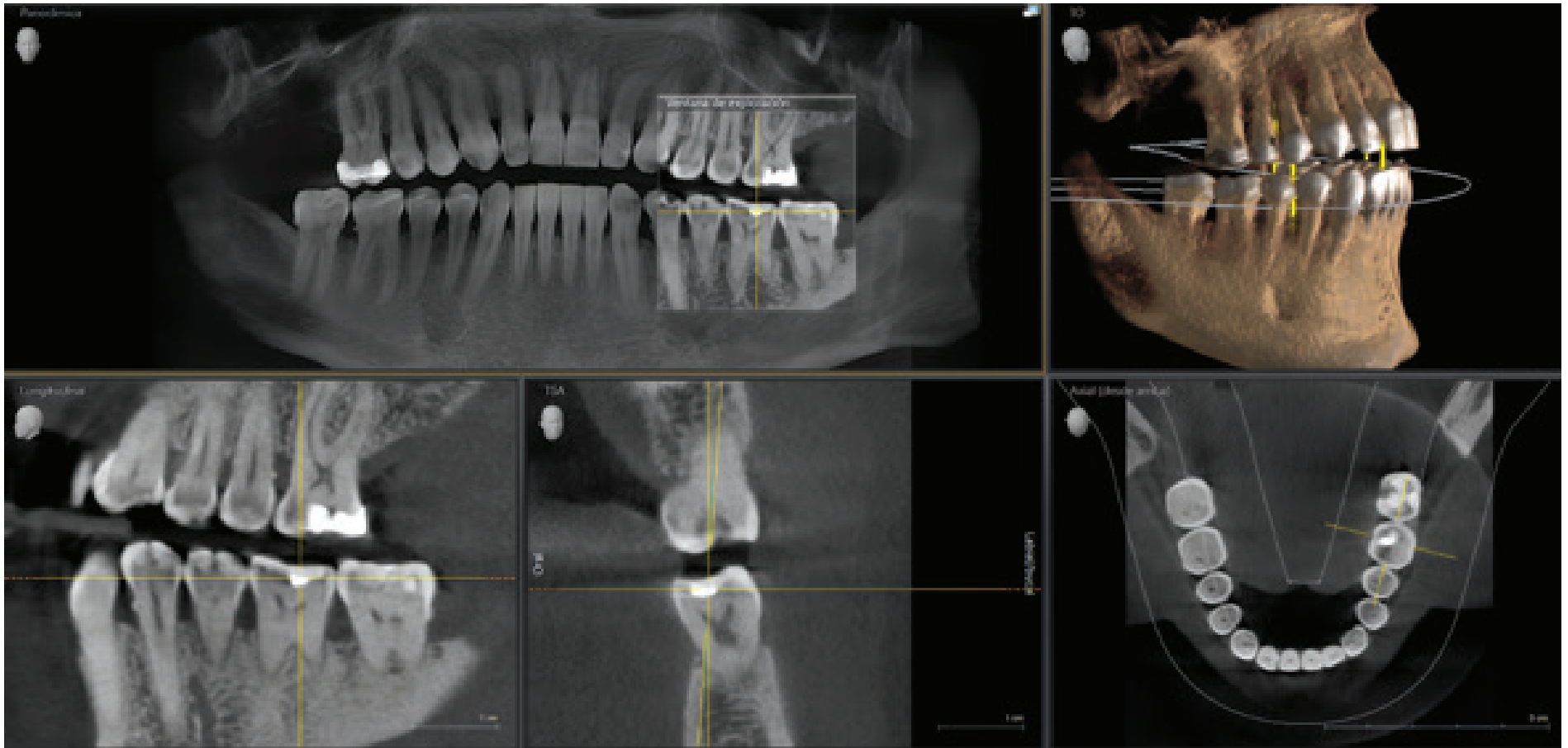




UNVEILING THE INVISIBLE:

THE PIVOTAL ROLE OF CBCT IN MODERN ENDODONTICS



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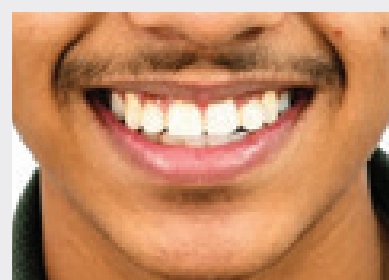
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CASE REPORT: Management of White Spot Lesion Using Resin Infiltration Technique



A 25-year-old female patient, reported to the clinic with a chief complaint of white discoloration in the upper front tooth region for the past 15 years. She expressed significant esthetic concern regarding the whitish appearance of her maxillary anterior teeth, particularly affecting her smile confidence. **Contd... (Page 2)**

Orthodontic Management of Severe Crowding in an Adolescent: A CASE REPORT



A 14-year-old patient presented with a chief complaint of irregularly arranged teeth affecting aesthetics & confidence. Clinical & radiographic evaluation revealed severe crowding in both arches. An extraction-based orthodontic approach was planned. Teeth 14, 25, 34, & 42 were extracted to facilitate alignment. **Contd... (Page 3)**

Remember to stay tuned for more exciting articles on Dentistry and Beyond Dentistry!

UNVEILING THE INVISIBLE:
THE PIVOTAL ROLE OF CBCT IN MODERN ENDODONTICS



In conventional endodontics, diagnosis and treatment planning have long relied on two dimensional (2D) periapical radiographs and panoramic imaging. While useful, these modalities suffer from superimposition, distortion, and limited ability to reveal complex anatomical variations. In recent decades, Cone Beam Computed Tomography (CBCT) has emerged as a powerful three-dimensional imaging modality that overcomes many of the shortcomings of 2D imaging, especially in challenging cases.

Working of CBCT

CBCT employs a cone-shaped X-ray beam that rotates around the patient's head, capturing numerous projection images from multiple angles. These are reconstructed into a volumetric 3D dataset, from which cross-sectional slices can be viewed in any orientation. It offers high spatial resolution with relatively low radiation dose compared to medical CT. In endodontics, small

field-of-view (FOV) scans are preferred to minimize exposure & improve resolution.

Applications of CBCT in Dentistry

- Implant planning – evaluating bone volume & proximity to vital structures.
- Oral & maxillofacial surgery – assessment of cysts, tumors, fractures, impacted teeth.
- Orthodontics – tooth position, root inclinations, skeletal relationships, airway assessment.
- Periodontics – evaluation of alveolar bone defects & furcation involvement.
- TMJ imaging – condylar morphology & osseous changes.
- Airway analysis – evaluation in sleep apnea & airway obstruction.
- Endodontics – diagnosis and treatment planning in complex root canal systems.

Specific Role of CBCT in Endodontics

CBCT has become transformative in endodontics for diagnosis, planning, intraoperative guidance, and follow-up. It helps detect periapical lesions, root canal anatomy, resorption defects, fractures, and procedural mishaps.

- Detection of periapical lesions undetectable on 2D radiographs.
- Assessment of root canal morphology & accessory canals.
- Localization of resorption defects (internal/external).

- Identification of root fractures and missed canals.
- Guidance in retreatment and management of procedural errors.
- Evaluation of healing outcomes and volumetric lesion changes over time.

Advantages of CBCT in Endodontics

In the field of endodontics, CBCT is now increasingly recognized as an essential adjunct – not as a replacement for conventional radiography, but as a complement in challenging or ambiguous cases. Its ability to visualize root canal anatomy, periapical lesions, resorptive defects, and procedural mishaps in 3D offers clinicians a new dimension in diagnosis, planning, and evaluation.

- Three-dimensional imaging without anatomical superimposition.
- High diagnostic accuracy for complex cases.
- Improved treatment planning and visualization.
- Facilitates guided and minimally invasive procedures.
- Objective assessment of healing during follow-up.

Disadvantages of CBCT

Like any other investigative test, CBCT also has certain limitations which must be discussed:

- Higher radiation dose than

- conventional radiography.
- Artifacts from metallic restorations or gutta-percha.
- Limited soft tissue contrast.
- High cost and limited availability.
- Requires skilled interpretation & carries risk of overdiagnosis.

Case Examples

These CBCT outlines help us to diagnose crack lines , craze lines, fractures, accessory canals, incomplete obturations, apical portal exits, split canals which cannot be diagnosed through OPG or RVG. Incomplete obturation Accessory canals and apical portal exits Craze lines and cracks

Conclusion

CBCT has revolutionized endodontic imaging by providing detailed 3D visualization of root and periapical structures. It enhances diagnostic precision, guides clinical procedures, and supports objective healing assessment. However, due to radiation exposure, cost, and potential artifacts, its use must be justified and guided by the ALARA principle. When applied judiciously, CBCT significantly elevates the standard of endodontic care.

CASE REPORT:
Management of White Spot Lesion Using Resin Infiltration Technique

A 25-year-old female patient, reported to the clinic with a chief complaint of white discoloration in the upper front tooth region for the past 15 years. She expressed significant esthetic concern regarding the whitish appearance of her maxillary anterior teeth, particularly affecting her smile confidence.

Background: White Spot Lesions

White spot lesions (WSLs) are characterized by opaque, chalky white areas on enamel caused by subsurface porosity. These lesions occur due to alterations in enamel mineralization, leading to increased light scattering. Common causes include dental fluorosis, early enamel caries, post-orthodontic demineralization, and enamel hypoplasia. In fluorosis specifically, excessive fluoride intake during enamel formation disrupts ameloblast activity, resulting in hypomineralized enamel. Clinically, this presents as diffuse opacities, ranging from faint white streaks to more pronounced chalky patches depending on severity.

Clinical Examination and Diagnosis

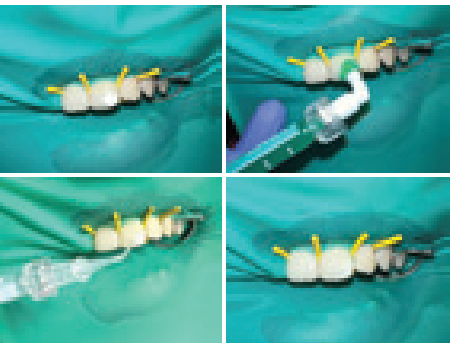
On examination, diffuse opacity was noted on tooth 21. The lesion appeared smooth and non-cavitated, with no signs of active caries. Based on clinical presentation & patient history, a diagnosis of moderate dental fluorosis was made.

Treatment Planning

Considering the patient's age, esthetic concerns, and the non-cavitated nature of the lesion, a minimally invasive approach was planned. Resin infiltration using a low-viscosity infiltrant (Icon) was selected. This technique works by penetrating the porous enamel & altering its refractive index, thereby masking the white opacity without removing significant tooth structure.

Clinical Procedure

Pre-operative photographs were taken for documentation. The teeth were cleaned thoroughly and isolated using a rubber dam to ensure a dry working field.



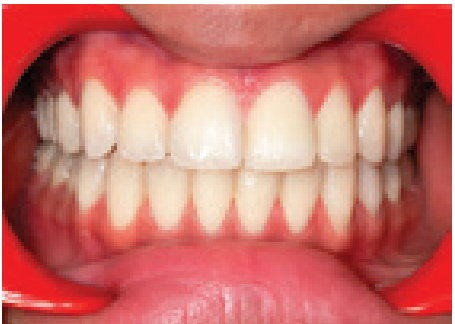
- **Etching:** The affected enamel surface was etched using 15% hydrochloric acid gel for 2 minutes to remove the superficial hypermineralized layer.
- **Rinsing and Drying:** The surface was rinsed with water for 30 seconds & dried using compressed air.
- **Ethanol Application:** 100% ethanol was applied for 30 seconds to achieve dehydration and enhance

resin penetration. At this stage, the lesion temporarily disappeared, confirming the suitability of infiltration.

- **Resin Application:** The low-viscosity resin infiltrant was applied onto the etched surface and allowed to penetrate for 3 minutes without agitation.
- **Excess Removal and Curing:** Excess material was removed using gauze, followed by light curing for 40 seconds.

Post-operative photographs were taken, showing a significant improvement in the esthetic appearance of the tooth.

Outcome and Discussion



The patient was highly satisfied with the outcome, as the white opacity was effectively masked, restoring a more natural tooth appearance. Resin infiltration is a highly conservative technique that preserves enamel integrity while providing immediate esthetic results. It is particularly effective in treating superficial and subsurface lesions such as fluorosis and early enamel demineralization.

Conclusion

White spot lesions, especially those caused by fluorosis, can significantly impact a patient's smile aesthetics. Resin infiltration offers a predictable, minimally invasive solution that bridges the gap between non-invasive and restorative treatments. Early diagnosis and appropriate case selection are key to achieving optimal results.

Dr. M. Snowyel Jesu Jensen, MDS
CONSULTANT ENDODONTIST

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Orthodontic Management of Severe Crowding in an Adolescent:
A Case Report



Abstract
A 14-year-old patient presented with a chief complaint of irregularly arranged teeth affecting aesthetics & confidence. Clinical & radiographic evaluation revealed severe crowding in both arches. An extraction-based orthodontic approach was planned. Teeth 14, 25, 34, and 42 were extracted to facilitate alignment. Fixed mechanotherapy was carried out in a phase-wise manner, resulting in well-aligned arches, functional occlusion, & improved smile aesthetics. Post-treatment retention was achieved using fixed lingual retainers to ensure stability.

Introduction
Dental crowding is one of the most common orthodontic problems seen in

adolescents. Early intervention during growth allows for effective correction with stable outcomes. Extraction therapy remains a reliable approach in cases of severe crowding where space management is critical.

- Case Presentation**
- Patient Details**
- **Age:** 14 years
 - **Chief Complaint:** Irregular teeth and poor smile aesthetics
- Clinical Findings**
- Severe anterior crowding in maxillary and mandibular arches
 - Rotations and displacement of multiple teeth
 - Compromised arch form & alignment



- Diagnostic Workup**
A comprehensive evaluation was performed, including:
- Clinical examination
 - Lateral cephalogram (to assess skeletal relationship)
 - Orthopantomogram (OPG) (to evaluate dental structures & root morphology)

The findings confirmed significant space deficiency requiring an extraction-based approach.

- Treatment Objectives**
- Relieve crowding in both arches
 - Achieve proper alignment & leveling
 - Establish ideal overjet and overbite
 - Improve smile aesthetics and facial harmony
 - Attain stable functional occlusion

- Treatment Plan**
- Extraction of 14, 25, 34, and 42
 - Fixed orthodontic treatment using pre-adjusted edgewise appliances
 - Sequential alignment, space closure, and finishing
 - Retention using fixed lingual retainers

- Treatment Progress (Phase-wise)**
- Phase 1: Alignment and Leveling**
- Initiated with light nickel-titanium (NiTi) archwires
 - Gradual correction of rotations and displacement
 - Relief of anterior crowding
- Phase 2: Space Management & Closure**
- Controlled space closure following extractions
 - Use of stainless steel archwires for stability
 - Maintenance of anchorage and arch coordination

- Phase 3: Finishing and Detailing**
- Final settling of occlusion
 - Adjustment of overjet and overbite
 - Achievement of proper intercuspation

- Results (Post-treatment)**
- Intraoral Outcomes**
- Well-aligned maxillary and mandibular arches
 - Complete resolution of crowding

- Ideal overjet and overbite
- Stable Class I occlusion with good intercuspation

- Extraoral Outcomes**
- Improved smile aesthetics
 - Enhanced facial harmony
 - Increased patient confidence

- Retention**
To maintain the achieved results:
- Fixed lingual retainers were placed in both arches
 - Oral hygiene instructions were reinforced
 - Regular follow-up visits were advised

Discussion
Extraction-based orthodontic treatment remains a predictable & effective approach for managing severe crowding. Proper diagnosis & biomechanical planning are essential to achieve optimal results without compromising periodontal health. This case demonstrates how timely intervention during adolescence can lead to excellent functional and aesthetic outcomes.

Conclusion
This case highlights the successful correction of severe crowding in a 14-year-old patient through a structured, phase-wise orthodontic approach. The use of strategic extractions, systematic mechanotherapy, & appropriate retention ensured a stable and satisfactory outcome, emphasizing the importance of individualized treatment planning in orthodontics.

Dr. Suhas Adabala
CONSULTANT ORTHODONTIST

6+ years of experience in braces and aligners, treating a wide range of orthodontic cases.



CHAIRSIDE CHRONICLES: COMIC EDITION



Behind every perfect smile is a dentist who deserves one too. Stay tuned for your next dose of chairside reality.

CLINICAL DISCUSSION CONTEST



CASE SCENARIO

A 13-year-old female patient presented with a complaint of discoloration in the upper left central incisor (21) for the past 2 years.

HISTORY

- History of dental trauma 5 years ago
- No associated pain or swelling
- Discoloration noticed gradually over time

CLINICAL EXAMINATION

- Tooth 21 shows greyish discoloration
- No tenderness on percussion
- No mobility
- Surrounding soft tissues appear normal
- Tooth is likely non-vital on pulp testing

RADIOGRAPHIC EXAMINATION

- Wide open apex in relation to 21
- Presence of periapical radiolucency
- Findings suggest incomplete root development with periapical pathology



Now it's your turn
What is your diagnosis?
How would you manage this case?

Submit your answers
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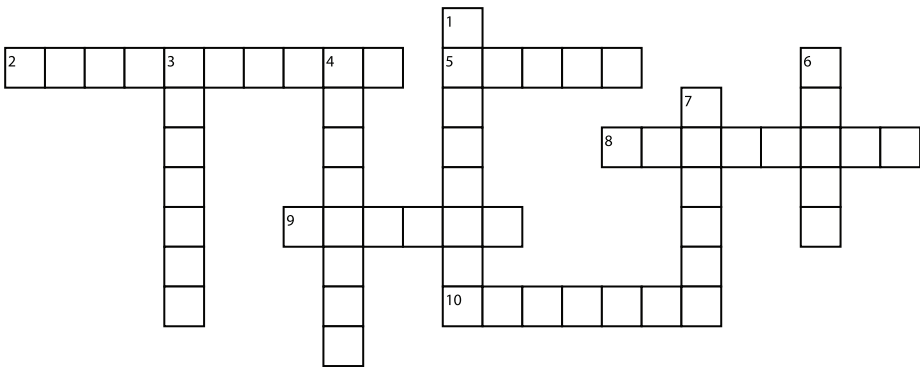


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Showcase
your clinical
reasoning

DENTAL CROSSWORD



Across

- Cell responsible for enamel formation
- Classification system used to describe dental anomalies or malocclusion
- Gap between upper front teeth
- Most commonly impacted tooth
- Highly mineralized zone in enamel caries

Down

- Lobes seen on newly erupted incisors
- Increased horizontal distance between upper and lower front teeth
- Condition where mulberry molars are seen
- Improper union of palatine shelves
- Tooth with the longest root

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