

Innovations in Oral Cancer Diagnosis: Advancements and Challenges

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Abstract

Oral cancer, encompassing malignancies affecting the oral cavity, presents associated challenges in the field.

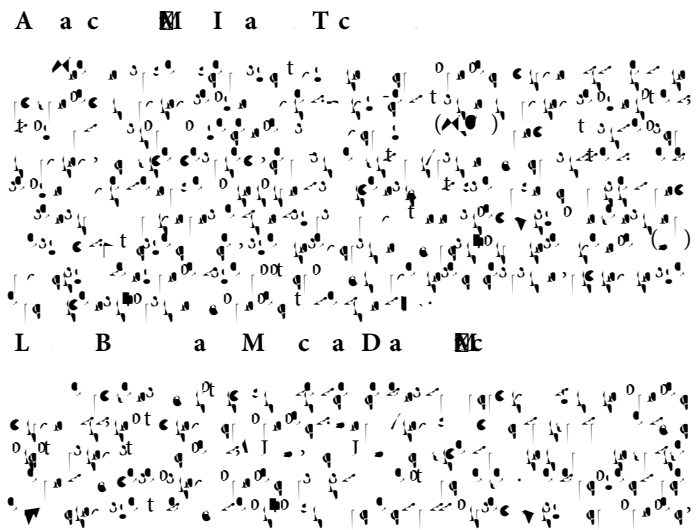
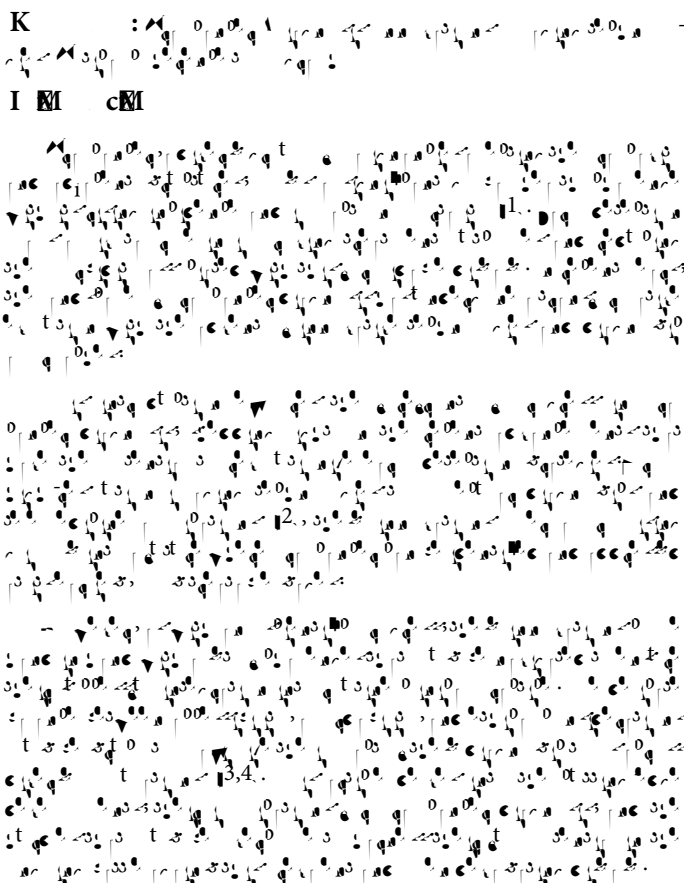
Advancements in imaging technologies, such as optical coherence tomography and multispectral imaging, enable high-resolution, real-time visualization of oral tissues, facilitating the identification of subtle abnormalities. Integration of artificial intelligence algorithms enhances accuracy in image interpretation, contributing to early identification of potentially malignant lesions.

Liquid biopsies and molecular diagnostics offer a paradigm shift by analyzing blood or saliva samples for circulating tumor cells, DNA, or RNA. This non-invasive approach explores specific biomarkers associated with oral cancer, though challenges include refining sensitivity and addressing variations in biomarker expression.

Salivary diagnostics, utilizing biomarkers in saliva as indicators of malignancy, present a non-invasive and easily accessible method for routine screening. Challenges include standardizing collection methods and interpreting diverse biomarker profiles.

Telemedicine and remote monitoring, incorporating digital images and video conferencing in teledentistry, enhance accessibility to specialized care, particularly in remote or underserved areas. Challenges include ensuring data security, addressing technology disparities, and navigating ethical considerations.

While these innovations hold promise for early detection and personalized care, challenges in cost, accessibility, specialized training, ethical considerations, patient acceptance, and regulatory frameworks hinder widespread adoption. As research progresses, collaborative efforts and regulatory frameworks hinder widespread adoption. As research progresses, collaborative efforts and regulatory frameworks hinder widespread adoption. As research progresses, collaborative efforts and regulatory frameworks hinder widespread adoption.

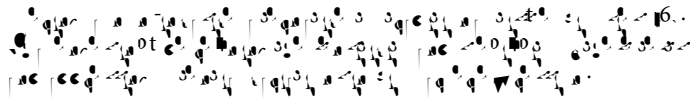


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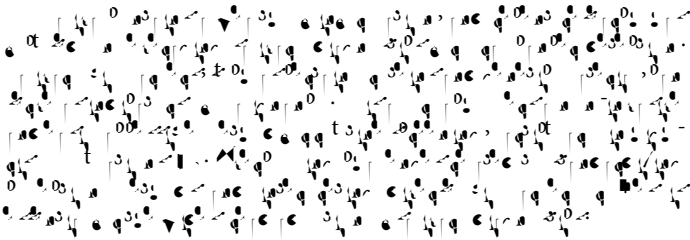
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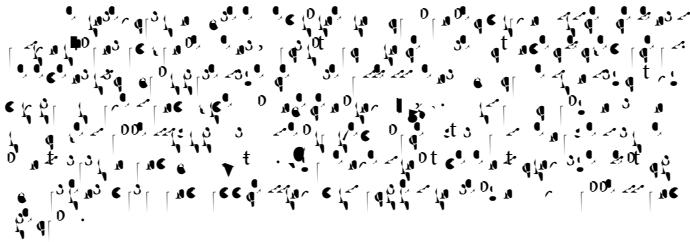
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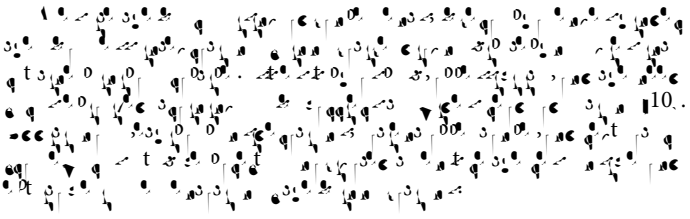
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