DIAGNOSTIC ERRORS IN ORAL AND MAXILLOFACIAL SURGERY

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Diagnosis, as a cognitive process, is governed by strict rules and principles. In medicine, diagnostics holds a unique status because its object of study is a human patient possessing a distinct physiological structure and a complex set of health challenges. The objective of diagnosis in this context is to determine the appropriate scope and nature of therapeutic interventions. Accurate diagnosis serves as the foundation for effective and well-founded treatment.

Medical diagnostics differs from technical and other cognitive fields due to its specific nature: it does not always grant direct access to the patient's internal pathological status. Instead, a physician relies heavily on clinical diagnostic methods such as inspection, palpation, percussion, and measurements to evaluate a patient's health status indirectly. However, junior clinicians occasionally neglect their basic clinical diagnostic skills, over-relying on laboratory, radiological, and other advanced diagnostic modalities [1–5].

This article aims to systematize and analyze the underlying causes of potential diagnostic errors encountered in oral and maxillofacial surgical practice.

To establish an accurate diagnosis, a clinician must possess profound knowledge of symptoms, which serve as the primary raw material for diagnostic reasoning. It is crucial to understand that no single symptom definitively indicates a unique disease entity. The same symptom may manifest across various pathologies, albeit with different probabilities. Consequently, diagnostics cannot be reduced to a simple checklist of symptoms; it demands deep analytical evaluation to detect even the most subtle clinical nuances. A critical factor here is the clinician's ability to take a meticulous medical history and effectively utilize the gathered anamnestic data to guide the diagnostic process.

Supplementary diagnostic methods provide highly valuable data. Modern clinical practice increasingly incorporates formulas, algorithms, and specialized software designed to diagnose, prognosticate, and manage pathologies of the maxillofacial region. However, it is vital to recognize that these automated diagnostic systems have a substantial drawback: they are incapable of accounting for the unique, individual baseline characteristics of a patient. Therefore, despite their immense utility, they must serve strictly as auxiliary tools for the clinician.

Diagnostic work remains the core competence of physicians across various specialties, including oral and maxillofacial surgeons. Throughout the diagnostic process, a clinician may experience doubt, hesitation, or commit errors. While digital systems do not make procedural errors, their diagnostic conclusions are not always precise or universally applicable.

Classification of Diagnostic Errors

Diagnostic errors can be classified into two broad categories:

Subjective errors: Those linked to the clinician's individual traits, cognitive biases, or oversight, falling under the clinician's direct responsibility.

Objective errors: Those arising from external factors independent of the clinician's actions. Objective difficulties—such as limited initial clinical data or an exceptionally complex clinical presentation—can inevitably lead to misdiagnosis, meaning the clinician does not bear sole fault. Understanding the causes and conditions under which these errors transpire is vital to minimizing their occurrence.

Various diagnostic missteps can arise during the evaluation of maxillofacial pathologies, specifically:

Deficit in Professional Knowledge: This stems from incomplete mastery of specific disease symptomatology during medical training or a lack of updated knowledge regarding specialized pathologies, such as those presenting in patients with substance use disorders

or HIV infection. Recently, there has been a rise in literature addressing the clinical presentation, diagnosis, and treatment of oral manifestations in patients with substance dependence, particularly regarding osteonecrosis of the jawbones. Conversely, literature regarding similar jaw pathologies in HIV-positive patients remains insufficient, and the accessibility of this data to general practitioners is suboptimal [6–13].

Negligence in History-Taking and Data Analysis: Rushing, carelessness, or a lack of diligence during anamnesis and clinical examination pose severe threats. This is especially dangerous in patients with underlying inflammatory processes or occult malignant tumors of the maxillofacial region, where a delayed or missed diagnosis often carries fatal consequences.

Inadequate Manual Diagnostic Skills: Errors occur when a clinician ignores or poorly executes basic physical examination techniques like palpation. Consequently, vital diagnostic markers (such as tissue density, mobility, and fluctuation) go unnoticed, which is a critical failure when differentiating between acute inflammatory conditions and neoplasia.

Technical Errors and Misinterpretation of Results: These involve procedural errors during radiological, instrumental, or laboratory investigations, as well as the incorrect interpretation of findings by the attending surgeon. It is fundamental to remember that definitive diagnoses must always correlate with the clinical picture. For instance, when evaluating a biopsy specimen, the final diagnosis must be established through a holistic, integrated analysis of both morphological and clinical data.

Clinical Overconfidence: Overconfidence frequently drives clinicians to hasty and inaccurate conclusions. While this is particularly characteristic of junior oral surgeons, experienced specialists are not immune to such lapses. For example, a clinician examining a patient in an outpatient setting might overconfidently promise a simple, rapid tooth extraction. In reality, the procedure may prove highly complex, requiring an atypical surgical extraction utilizing a dental handpiece, chisels, or mallets, and in some cases,

necessitating the intervention of a senior surgical colleague. Furthermore, overconfidence can lead a clinician to perform advanced procedures in an ambulatory environment that are strictly indicated for inpatient operating rooms (e.g., removing tumors of the parotid gland or sialoliths deep within the Wharton's duct of the submandibular gland).

Cognitive and Confirmation Biases: These errors manifest when a clinician relies blindly on unverified findings from recent isolated publications, lectures, or promotional guidelines that have not been robustly validated in wider clinical practice.

Logical Fallacies: Surgeons frequently make logical errors due to underdeveloped clinical reasoning skills and an inability to draw valid, systematic conclusions from collected diagnostic data. The diagnostic process must be built on structured logic; otherwise, a misdiagnosis is inevitable.

Atypical Clinical Presentations: Diseases manifest with high variability; the "textbook" clinical signs are rarely encountered in real-world practice. Unusual forms of a disease reflect the individual physiological characteristics of the host organism. A clinician must be capable of identifying these atypical presentations to establish a timely diagnosis and deliver appropriate care.

Conclusion

Diagnostic failure in oral and maxillofacial surgery can severely prolong treatment, result in permanent disability, or lead to patient mortality. This risk is profoundly high in cases involving aggressive deep-neck space infections and malignant tumors. Maxillofacial surgeons, like all medical professionals, are susceptible to errors. However, mistakes must be approached intellectually—by investigating their root causes and striving to prevent replication. A clinical error is a painful but invaluable experience that serves as a lesson for the attending surgeon, their colleagues, students, and ultimately, future patients. Peer review and open team discussions regarding complications enhance the overall quality of healthcare. Every patient's diagnosis is a unique nexus between the individual patient and the surgeon's knowledge, clinical acumen, powers of observation,

and capacity to synthesize data. Medical diagnostics is not a mechanical algorithm; it is a profoundly creative, scientific process.

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