

Oral Rehabilitation of an Asthmatic Patient - Case Report

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Abstract

Asthma is a chronic inflammatory airway disorder that can significantly influence oral health, salivary function and prosthodontic outcomes due to both disease-related and medication-induced changes. A 25-year-old African American female with a medical history of asthma managed with albuterol was evaluated for oral rehabilitation. The case file contained demographic and medical details but no recorded intraoral findings, periodontal charting, radiographs or occlusal assessments. Current evidence shows that asthma and inhaler use may lead to xerostomia, mucosal fragility, increased periodontal inflammation and altered bone metabolism, all of which impact prosthesis retention, comfort and long-term stability. Effective rehabilitation of asthmatic patients requires understanding of medication effects, mucosal tolerance, airway considerations and the need for conservative, biologically compatible prosthodontic approaches. Interdisciplinary coordination and tailored treatment planning remain essential to ensure safe and predictable outcomes in patients with asthma.

Keywords: Asthma; Oral rehabilitation; Prosthodontics; Albuterol.

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Introduction

Asthma is a chronic inflammatory disorder of the airways characterised by variable airflow obstruction, bronchial hyperresponsiveness and episodic respiratory symptoms such as wheezing, dyspnoea and chest tightness [1]. It is recognised globally as one of the most prevalent chronic diseases, with increasing incidence across numerous age groups due to environmental, genetic and lifestyle-related factors. The long-term inflammatory burden of asthma, along with the recurrent need for pharmacological management, directly and indirectly influences oral health and presents unique challenges during dental and prosthodontic treatment.

A substantial body of literature highlights the relationship between asthma medications and detrimental oral consequences. Inhaled corticosteroids and β_2 -agonists, the cornerstone therapies for asthma, have been shown to decrease salivary flow rate, reduce buffering capacity and alter the oral microbiome, creating a cariogenic and acidic intraoral environment [2]. These changes predispose patients to an increased risk of dental caries, gingivitis, erosion and opportunistic infections such as candidiasis [3]. In addition,

repeated inhaler use may lead to xerostomia, mucosal dryness and changes in salivary pH, all of which affect the comfort, retention and hygiene of removable prostheses [4]. Recent epidemiological studies have reported significantly higher caries experience, plaque accumulation and gingival inflammation among asthmatic individuals compared to non-asthmatics, particularly in cases with prolonged disease duration and extensive medication history [5,6]. The severity of asthma has also been linked to the degree of oral disease manifestation, suggesting that systemic inflammatory load and therapeutic regimens collectively influence oral tissue health [7].

Beyond soft tissue effects, asthma has been increasingly associated with impacts on alveolar bone metabolism. Systemic inflammatory mediators involved in chronic asthma, including interleukins and tumor necrosis factor- α , may contribute to altered bone turnover, accelerated alveolar bone loss and compromised bone density—factors that have important implications for dental implants and long-term stability of prosthetic rehabilitation [8,10]. Inhaled corticosteroids further complicate this scenario by

affecting mucosal integrity and enhancing the risk of oropharyngeal candidiasis, which can complicate denture use and require careful prosthesis design to minimise mucosal trauma [9].

From a prosthodontic standpoint, patients with asthma constitute a medically compromised group requiring personalised preventive and rehabilitative care. Dental professionals must consider the patient's respiratory triggers, optimal chair positioning, and timing of appointments, stress-reduction strategies and medication interactions. The presence of xerostomia, mucosal fragility or bone density alterations may necessitate modifications in impression techniques, occlusal schemes, prosthesis material selection and follow-up schedules [10]. Consequently, successful oral rehabilitation in asthmatic patients depends on careful interdisciplinary planning, a strong understanding of asthma-related oral manifestations and the integration of minimally traumatic, biologically compatible prosthodontic approaches.

Case Report

The patient is a 25-year-old African American female with a documented medical history of asthma. Her current medication includes albuterol, as recorded in the case file. No additional systemic conditions or medications were noted. Extraoral examination sections were listed but contained no recorded findings, and no information was provided regarding facial symmetry, lymph nodes, and muscles of mastication or temporomandibular

joint status. Intraoral examination details were not entered in the document. The file did not contain descriptions of the oral mucosa, dentition status, caries, restorations, soft tissue health, or prosthetic condition. Static occlusal evaluation headings were present, but no occlusal relationships, centric contacts or wear facets were described.

Dynamic occlusal evaluation sections—including right working, right non-working, left working, left non-working, and anterior guidance—were included in the template but contained no documented findings. Radiographic sections were also present but did not include images or interpretations. Periodontal charting for maxillary and mandibular arches was listed, but no probing depths, gingival descriptions or periodontal findings were recorded. The post-operative section appeared in the file but contained no narrative, indicating no documented procedures or outcomes.

The repeated occlusal evaluation dynamic sections at the end of the file similarly contained no clinical entries, leaving occlusal functional assessment undefined.

Thus, based entirely on the information extracted from the uploaded case document, the patient profile consists of a 25-year-old asthmatic female using albuterol, with no recorded extraoral, intraoral, occlusal, radiographic or periodontal findings. The case file provides a structural template but no clinical data outside of demographic and medical history.



Figure 1: Extra oral Exam



Figure 2: Intraoral Exam:

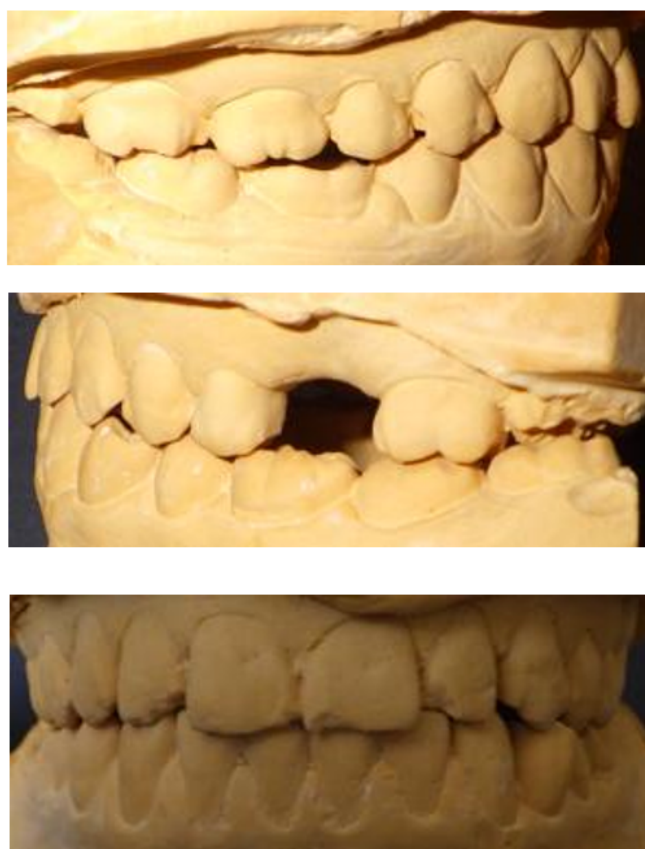


Figure 3: Occlusal Evaluation – Static



Right Working



Non-Working

Figure 4: Occlusal Evaluation – Dynamic



Left Working



Non-Working

Figure 5: Occlusal Evaluation – Dynamic



Figure 6: Occlusal Evaluation – Dynamic (Anterior Guidance)

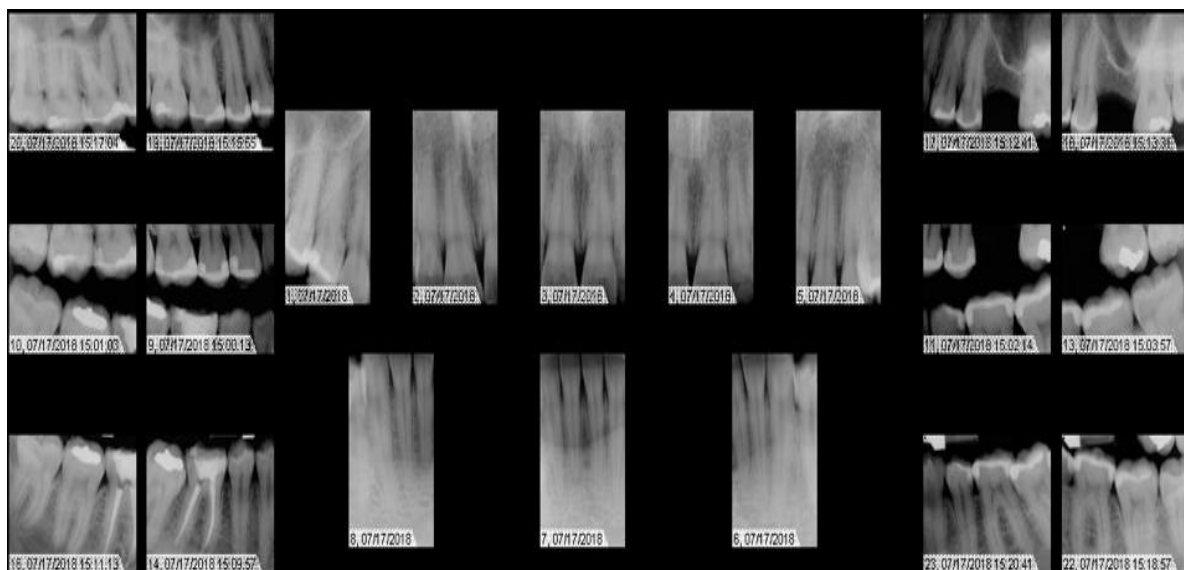


Figure 7: Radiographs

Probing Depth	2	2	2	3	1	3	2	1	3	2	1	2	3	1	3	3	1	3	2	1	3	2	1	2	2	2	2	2	1	2	2	1	3	2	1	3	3	1	1					1	1	2	1	2																																																																																																																																																																																																																
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Figure 8: Periodontal Charting: Maxilla

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Figure 9: Periodontal Charting: Mandible

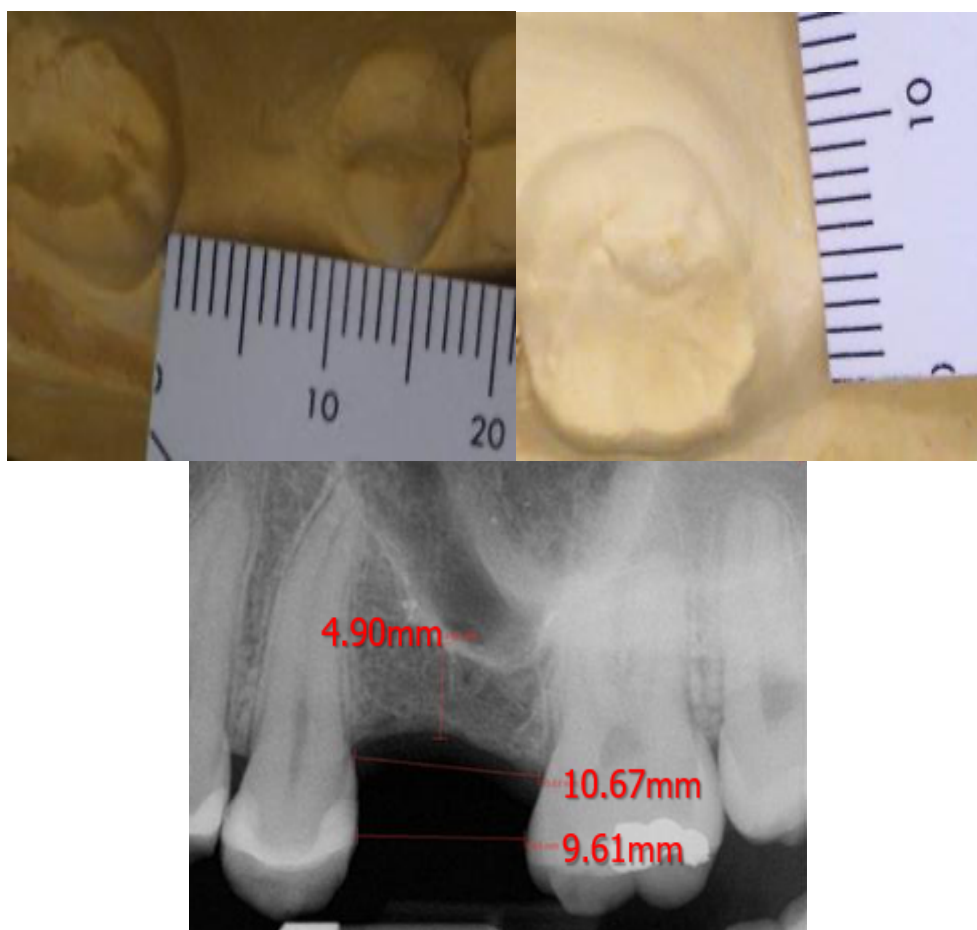


Figure 10: Post-Operative



Right Working side



Non-Working side

Figure 11: Occlusal Evaluation Dynamic



Left Working side



Non-Working side

Figure 12: Occlusal Evaluation Dynamic



Figure 13: Occlusal Evaluation Dynamic (Anterior Guidance)

Discussion

Asthmatic patients present unique prosthodontic and oral rehabilitation challenges due to medication-induced xerostomia, mucosal sensitivity and airway hyper-responsiveness.

Recent literature highlights that inhaled β_2 -agonists and corticosteroids alter salivary composition, reduce lubrication and increase mucosal fragility,

significantly impacting prosthesis tolerance and comfort in affected individuals [11]. The chronic inflammatory burden associated with asthma has also been shown to influence periodontal tissue responses, with studies reporting higher levels of inflammatory cytokines and oxidative stress markers that may predispose patients to periodontal instability, which can further complicate the retention and stability of prostheses [12]. From a

functional standpoint, xerostomia-related changes in soft tissue resiliency and compromised lubrication can adversely affect denture adaptation, as reduced saliva volume limits cohesive and adhesive forces necessary for prosthesis retention. Recent assessments of prosthodontic outcomes in medically compromised respiratory patients demonstrate the need for meticulous selection of materials, impression techniques and occlusal schemes to minimise mucosal irritation and maintain neuromuscular balance [13].

Furthermore, chronic asthma has been associated with alterations in bone density and trabecular patterning due to systemic inflammatory mediators and long-term steroid exposure, factors that may influence the prognosis of implants or fixed prostheses in young adults [14]. Interdisciplinary recommendations emphasise coordination between dental practitioners and pulmonologists to ensure well-controlled asthma before elective dental procedures, as poorly controlled airway hyperreactivity may increase the risk of intraoperative complications and reduce tolerance to prolonged appointments [15]. These findings collectively highlight the importance of a tailored, minimally traumatic, and medically coordinated oral rehabilitation plan for asthmatic patients.

Conclusion

Oral rehabilitation in asthmatic patients requires an approach that recognises the influence of medication use, systemic inflammation and airway responsiveness on oral tissues, occlusion and prosthetic adaptation. Consideration of xerostomia, mucosal fragility, periodontal health and bone quality is essential for selecting appropriate prosthodontic techniques and materials. Interdisciplinary care and preventive strategies enhance treatment safety and optimise long-term prosthetic outcomes in patients with asthma.

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