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Research Article

Denture-Induced Massive Hyperplasia Associated with Candidiasis: A Case Report with Histopathological Examination

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Abstract

Introduction: *Denture-induced hyperplasia is a prevalent reactive mucosal lesion caused by continuous mechanical trauma in patients treated with complete removable dentures. It represents one of the most common oral mucosal pathologies encountered in edentulous populations and is strongly associated with prolonged denture use, nocturnal wearing, inadequate prosthetic maintenance, and Candida albicans colonization.*

Case Presentation: *A diabetic 68-year-old male patient with total edentulism presented to the University Dental Clinic, Tirana, with the main complaints of gingival redness, lack of denture retention and stability, and pain during mastication. The patient had been wearing the same dentures continuously for 25 years, including during sleep, and denture hygiene was poor. On clinical examination, a large lobulated hyperplastic mass was detected in the anterior maxillary vestibular and palatal region, along with diffuse mucosal changes suspicious for Candida albicans colonization.*

Treatment: *An excisional biopsy and a Candida culture test were performed under local anesthesia. Histopathological examination revealed hypertrophic tissue proliferation associated with connective tissue fibrosis and epithelial morphological alterations, with zones of inflammatory cell infiltration. No signs of epithelial dysplasia or malignancy were observed. Culture confirmed Candida albicans colonization. The patient received local antifungal therapy (miconazole and nystatin) and oral antiseptic rinses. One month after excision, surgical complete healing was confirmed, and new total removable dentures were applied with corrected extension and improved stability.*

Follow-up: *At six months and one-year follow-up, no recurrence of the lesion was observed at the excisional region, and no signs of Candida colonization were clinically apparent despite the central palatal region. The patient reported substantially improved mastication, comfort, and overall quality of life.*

Conclusion: *This case highlights the importance of histopathological examination for the correct diagnosis and the exclusion of dysplastic changes, the role of Candida albicans as a secondary colonizer in denture-related lesions, and the critical need for proper denture maintenance, nocturnal removal, and regular professional follow-up to prevent recurrence. Consistent adherence to prescribed pharmacological therapy is crucial for the management and regression of the lesion.*

Keywords: *Denture hyperplasia; Candida albicans; histopathological examination; inflammatory fibrous hyperplasia; removable dentures; oral mucosal lesions.*

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1. INTRODUCTION

Denture-induced fibrous hyperplasia, also referred to as epulis fissuratum or inflammatory fibrous hyperplasia, is a reactive mucosal lesion that develops in response to chronic mechanical irritation from ill-fitting or outdated removable prostheses [1,2]. It is among the most frequently encountered pathological conditions of the oral mucosa in edentulous patients, with prevalence estimates ranging from 15% to 65% depending on the population studied and the diagnostic criteria applied [2,3,4]. The lesion is characterized by the proliferation of fibrous connective tissue, typically manifesting as a firm, pedunculated or sessile mass covered by normal or slightly erythematous mucosa, most commonly located in the vestibular sulcus adjacent to the denture border [1,5].

The pathogenesis is primarily mechanical: ill-fitting denture flanges exert repeated low-grade trauma on the adjacent mucosa, stimulating fibroblastic proliferation and chronic inflammatory infiltration [1,6]. Contributing risk factors include prolonged continuous denture wearing, nocturnal use, inadequate prosthetic maintenance, poor oral hygiene, and advanced patient age [2,3,5]. Histopathologically, the lesion demonstrates hyperplastic stratified squamous epithelium, a dense fibrous stroma with areas of hyalinization, and a variable degree of chronic inflammatory cell infiltration predominantly composed of lymphocytes and plasma cells, with scattered mast cells [1,7]. Importantly, the presence of epithelial dysplasia or malignant transformation must be excluded through histopathological examination, as clinical appearance alone is insufficient for definitive diagnosis [4,8].

Candida albicans colonization represents a common secondary finding in denture-related oral mucosal lesions, particularly in patients with poor denture hygiene and continuous prosthesis use [9,10,11]. Candida species contribute to mucosal inflammation and may modify the histopathological appearance of the lesion, and their presence has been associated with more pronounced inflammatory infiltration and papillary surface changes [12]. Consequently, microbiological assessment and antifungal management represent integral components of the comprehensive treatment of denture-related hyperplasia [12,13,14].

Diabetes mellitus represents a significant predisposing factor for denture-associated candidiasis and hyperplastic mucosal lesions due to impaired immune response, altered salivary composition, and increased Candida colonization [14,20].

Surgical excision remains the treatment of choice for denture-induced fibrous hyperplasia, with subsequent prosthetic rehabilitation essential to prevent recurrence [6,7,8]. Various surgical modalities have been employed, including conventional scalpel excision, CO_2 laser, diode laser, electrocautery, and plasma rich in growth factors-assisted surgery, each with specific advantages regarding hemostasis, wound healing, and postoperative morbidity [6,8,11,13,15]. Following excision, tissue conditioning and the fabrication of new, appropriately extended prostheses are necessary to eliminate the causative mechanical stimulus [16].

We report a case of massive denture-induced fibrous hyperplasia with concurrent *Candida albicans* colonization in a 68-year-old diabetic male patient who had worn the same complete removable dentures continuously for 25 years. The case is presented with emphasis on the histopathological findings, multidisciplinary management, and the critical importance of pharmacological compliance and regular prosthetic follow-up.

2. CASE PRESENTATION

2.1 Patient History and Clinical Presentation

A 68-year-old diabetic male patient with total edentulism presented to the Department of Oral Surgery, University Dental Clinic, Tirana, Albania, with primary complaints of persistent gingival redness, lack of denture retention and stability, and pain during mastication. Medical history was significant for type II diabetes mellitus, managed with oral hypoglycemic agents. The patient reported wearing the same maxillary and mandibular complete removable dentures continuously for 25 years, including during sleep, and disclosed poor denture hygiene practices with infrequent cleaning. He had not attended routine dental follow-up since the original denture delivery.

Extraoral examination was unremarkable. Intraoral examination revealed a large, lobulated, hyperplastic fibrous mass located in the anterior maxillary vestibular and palatal region, extending bilaterally from the right to the left canine area and encroaching onto the hard palate Figure 1. The lesion was mobile on palpation, covered by mildly erythematous mucosa especially in the regions of maximum denture contact. Diffuse mucosal erythema and a lobular surface texture of the hard palate were also observed, raising clinical suspicion of *Candida albicans* colonization. The existing dentures demonstrated significant loss of retention, unstable occlusion, and visibly worn, ill-adapted flanges with inadequate extension.

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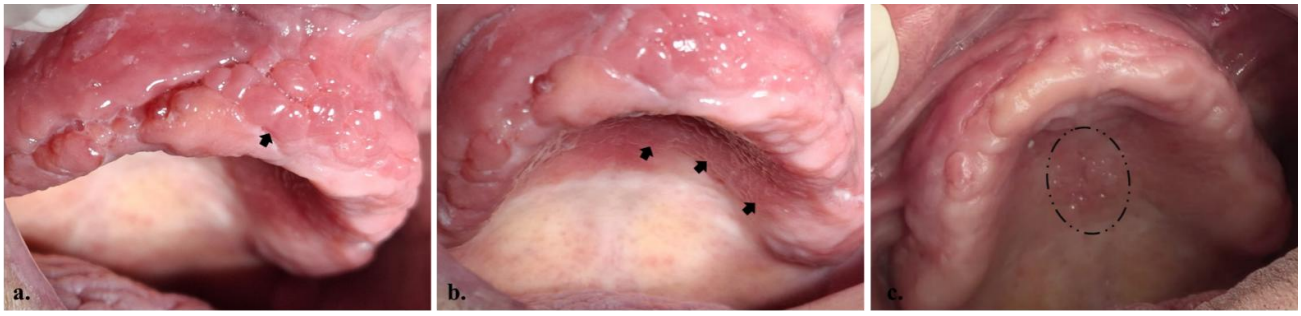
Figure 1. Intraoral images



Intraoral images **a.** preoperative image, **b.** preoperative image palatal view, **c.** postoperative image at the one-year follow-up.

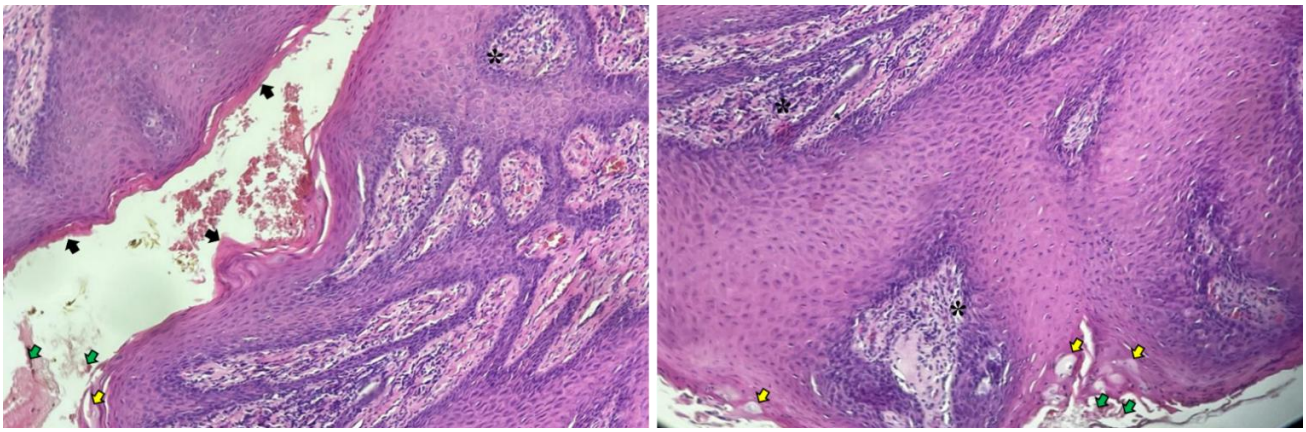
Black arrow: Lobulated hyperplastic fibrous mass. **Circle:** Lobular hyperplastic lesion.

2.2 Investigations

Following clinical assessment, an excisional biopsy of the hyperplastic mass was performed under local anesthesia (articaine 4% with epinephrine 1:100,000). The excised specimen was submitted for routine histopathological examination with hematoxylin and eosin staining (H&E). Concurrently, a Candida culture swab was obtained from the oral mucosa and submitted to the microbiology laboratory. Panoramic radiography was performed to exclude any underlying bony pathology; no osseous involvement was identified.

Histopathological examination of the excised specimen revealed: Hypertrophic tissue associated with connective tissue fibrosis and epithelial morphological alterations. An increase in the size of the dermal papillae was observed. Furthermore, hyperkeratosis and the presence of necrotic cells were noted in the superficial stratum Figure 2. The presence of diffuse infiltration of inflammatory cells (predominantly lymphocytes and plasma cells) indicates a reactive condition. No evidence of epithelial dysplasia or malignant transformation was identified. Microbiological culture confirmed the presence of Candida albicans colonization.

Figure 2. Microscopic image of excisioned lesion



Microscopic image of excisioned lesion whith H&E staining

Black arrow: epithelial hyperkeratosis. **Yellow arrow:** necrotic cells. (*) Diffused inflammatory cells. **Green arrow:** Fungal hyphaes.

2.3 Treatment

Based on the histopathological and microbiological findings, a comprehensive treatment plan was established. The antimibrobial susceptibility testing was conducted and the patient resulted sensitive to myconasol and nystatin Table 1. As a result local antifungal therapy was prescribed, comprising miconazole 20 mg/g gel applied directly to the denture-bearing mucosa and topical application of nystatin 10^5 UI suspension on the denture surface was recommended to prevent recurrence caused by residual fungal hyphae, combined with oral antiseptic rinses. Strict pharmacological compliance was emphasized, along with instructions for denture removal during sleep, daily cleaning with an appropriate denture cleanser, and overnight storage in nonabrasive cleaning solution.

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The surgical site heal was assessed at 2 weeks postoperatively, at which time complete mucosal healing was confirmed and no residual hyperplastic tissue was evident at the excisional site. It is important to emphasize that surgically, the main part of the lesion was excised for biopsy; however, subsequent tissue recontouring following histopathological diagnosis was declined by the patient. Following complete healing, new complete removable dentures were fabricated with corrected flange extension, appropriate border molding, and improved occlusal stability to eliminate the causative mechanical stimulus and restore masticatory function.

Table 1. Antifungal susceptibility profile of the isolated *Candida albicans* strain.

Antifungal Agent	Susceptibility
Amphotericin B (Fungizone)	R
5-Fluoorocytosine	R
Clotrimazole	R
Econazole	R
Fluconazole (Fungostatin)	R
Itraconazole	R
Ketoconazole (Fungoral)	R
Nystatin	S
Miconazole (Dactarin)	S

R = Resistant; S = Sensitive.

3. FOLLOW-UP AND OUTCOME

The patient was followed up at one month, six months, and one year after surgery. At the one-month review, complete mucosal healing was confirmed with no residual hyperplastic tissue at the excisional site. At the six-month follow-up, no recurrence of the lesion was observed at the excisional region, and no clinical signs of Candida colonization were apparent. The patient reported substantially improved mastication, comfort, and overall oral health-related quality of life with the new prostheses.

At the one-year follow-up, the excisional region remained recurrence-free. However, despite significant overall regression, an isolated lobular hyperplastic lesion associated with Candida colonization persisted in the central palatal region Figure 1c. This residual lesion was directly attributable to the patient's continued nocturnal use of the prosthesis and incomplete adherence to the prescribed antifungal regimen. The residual lesion is under ongoing monitoring, and reinforcement of pharmacological compliance and nocturnal prosthesis removal has been reiterated.

4. DISCUSSION

The present case illustrates a complex case presentation of denture-induced fibrous hyperplasia resulting from 25 years of continuous prosthesis wear without professional follow-up. The clinical and histopathological features observed are consistent with those described in the established literature on this condition [1,2,3,18]. The presence of epithelial hyperkeratosis within the oral mucosa is considered a protective adaptive response to chronic mechanical irritation and persistent Candida colonization. In denture-associated lesions, continuous friction and the favorable microenvironment beneath the prosthesis promote epithelial thickening and excessive keratin production. In the histopathologic evaluation, hyperkeratosis is frequently accompanied by epithelial hyperplasia, inflammatory infiltrate, and fungal hyphae infiltration, supporting the reactive and chronic nature of the lesion. Furthermore, the detection of necrotic epithelial cells indicates ongoing cellular injury caused by inflammatory stress and direct fungal pathogenicity. *Candida albicans* hyphae are capable of penetrating epithelial layers, disrupting intercellular junctions, and inducing necrotic cell death through toxin-mediated epithelial damage. These findings reinforce the synergistic role of mechanical trauma and candidal infection in the pathogenesis of denture-related oral mucosal lesions [19,20].

The extent of the lesion, occupying the anterior maxillary vestibule bilaterally and extending onto the hard palate, reflects the cumulative effect of sustained mechanical trauma over an exceptionally prolonged period and underscores the clinical consequences of inadequate prosthetic maintenance and the absence of routine dental review [5,7]. Diabetes mellitus in this patient may have further contributed to impaired mucosal defense and enhanced susceptibility to Candida colonization, which is a recognized association in the literature [12,20].

The histopathological examination was an essential step in the diagnostic workup of this case. Although the clinical appearance of denture-induced fibrous hyperplasia is often characteristic, tissue diagnosis is mandatory to exclude epithelial dysplasia or malignant transformation, which, while uncommon, has been documented in association with chronic mucosal irritation [3,18,21]. In the present case, histopathological examination confirmed the benign and reactive

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nature of the lesion. The presence of hyperkeratosis, hypertrophic tissue proliferation with connective tissue fibrosis, increased dermal papillae, necrotic cells in the superficial stratum, and a predominantly diffuse inflammatory infiltrate is consistent with chronic mechanical irritation and Candida co-colonization, as described by Kiuchi et al. [1] and Craăiĥoiu et al. [22].

The concurrent *Candida albicans* colonization identified in this case is a commonly reported secondary finding in denture-related mucosal lesions, particularly among patients with continuous denture use, poor hygiene, and systemic conditions such as diabetes that impair mucosal immunity [9,10,12,19]. Candida species are opportunistic pathogens that colonize denture surfaces and the adjacent mucosa, contributing to persistent mucosal inflammation [20,23]. The diffuse palatal erythema and lobular surface texture observed clinically were consistent with denture stomatitis associated with Candida colonization. Treatment with local antifungal therapy (miconazole and nystatin) alongside surgical excision and improved denture hygiene was appropriate; the persistence of the residual palatal lesion at one year was directly attributable to incomplete pharmacological compliance, emphasizing the critical importance of consistent adherence to prescribed therapy [9,12,14].

Surgical excision was conducted, consistent with established management guidelines [1,13,15]. Scalpel excision was performed given the size and extent of the lesion, allowing complete removal with clear margins and adequate specimen quality for histopathological analysis. Alternative surgical approaches including CO_2 laser, diode laser, and electrocautery have demonstrated comparable outcomes in terms of healing and recurrence rates, with specific advantages regarding hemostasis and reduced postoperative discomfort [11,13,16,24]. A randomized clinical trial by Amaral et al. [13] confirmed equivalent outcomes between diode laser and scalpel excision for fibrous hyperplasia, while de Jesus et al. [11] demonstrated comparable results between diode laser and electrocautery. Mozzati et al. [15] additionally demonstrated the potential of plasma rich in growth factors to enhance wound healing following excision.

Prosthetic rehabilitation following complete healing is a critical determinant of long-term treatment success [7,16,19]. In the present case, the absence of recurrence at the excisional site at one-year follow-up supports the adequacy of the combined surgical, antifungal treatment and prosthetic approach. The persistence of a residual isolated palatal lesion is attributed to continued nocturnal denture use and pharmacological non-compliance, reinforcing that surgical success alone is insufficient when patient behavioral compliance is suboptimal. Patient education regarding denture hygiene, nocturnal removal, and the importance of regular follow-up visits is equally essential, as failure to address these behavioral factors represents a primary risk factor for lesion recurrence [2,3,5,15,23].

5. CONCLUSION

This case report documents a complex case of denture-induced massive fibrous hyperplasia with concurrent *Candida albicans* colonization in a diabetic patient, successfully managed through surgical excision, local antifungal therapy, and prosthetic rehabilitation. The case underscores four key clinical principles: first, histopathological examination is mandatory for all hyperplastic oral mucosal lesions to exclude dysplasia and malignancy; second, *Candida albicans* must be actively assessed and treated as an integral component of management; third, consistent pharmacological compliance is crucial — incomplete adherence directly results in persistence of residual lesions, as demonstrated in this case; and fourth, regular professional dental follow-up and appropriate prosthetic maintenance are essential preventive measures that can preclude the development of such advanced lesions. Clinicians should maintain a low threshold for biopsy and microbiological investigation in patients presenting with denture-related mucosal changes, particularly those with prolonged continuous denture use, poor hygiene, or systemic conditions that impair mucosal immunity.

PATIENT CONSENT: Written informed consent was obtained from the patient for publication of this case report and any accompanying clinical images.

CONFLICTS OF INTEREST: The authors declare no conflicts of interest.

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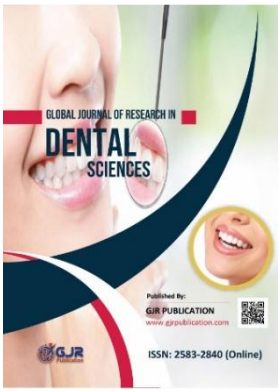

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