

Oral Rehabilitation of a Patient with Gout - Case Report

**Neeraj Trehan¹, Mehran Hosseini Motamed², Rahma A Moussa³, Asala Jamal Zirini⁴,
Sara Muhi Ahmed Al Nedawi⁵, Tushar Thakkar⁶**

¹Doctorate of Dental Medicine (DMD), Private Practitioner, USA

²Doctorate of Dental Medicine (Philippines), Research Assistant, USA

³Bachelor's Degree of Oral and Dental medicine (Egypt), Research Assistant, USA

⁴BDS (Jenin), Research Assistant, USA

⁵Bachelor Degree in Dental and Oral Surgery (Iraq), Research Assistant, USA

⁶Bachelor of Dental Surgery (India), Research Assistant, Canada

Received: 01-08-2025 Revised: 15-09-2025 / Accepted: 21-10-2025

Corresponding author: Dr. Neeraj Trehan

Conflict of interest: Nil

Abstract:

Gout is a chronic metabolic inflammatory disorder that may influence oral tissues, occlusal stability and prosthodontic rehabilitation due to systemic inflammatory changes and medication-related effects. This case involves a 50-year-old African American female with a medical history of gout managed with colchicine. The available case file contained demographic and medical information but lacked intraoral findings, radiographs and periodontal charting. The discussion highlights the impact of hyperuricaemia, systemic inflammation and colchicine-associated mucosal sensitivity on prosthodontic planning. Considerations include minimising tissue trauma, ensuring balanced occlusion, preserving periodontal health and coordinating care with medical professionals. Tailored rehabilitation is essential to achieve functional and biologically compatible outcomes in patients with systemic inflammatory conditions such as gout.

Keywords: Gout; Oral rehabilitation; Prosthodontics; Colchicine.

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Gout is a common metabolic arthritis characterised by hyperuricaemia and deposition of monosodium urate crystals in joints and soft tissues, precipitating recurrent episodes of inflammation and tophaceous destruction [1]. Recent global epidemiological data reveal that the burden of gout has markedly increased, with prevalence rising in many regions due to aging populations, dietary changes, and associated comorbidities [2]. The pathophysiology of gout involves impaired urate excretion or overproduction, leading to supersaturation of uric acid in the serum, crystal nucleation and growth, then activation of the innate immune system with release of pro-inflammatory cytokines and local tissue damage [3]. The oral and maxillofacial region may be affected by gout in rare but clinically significant ways. For instance, involvement of the temporomandibular joint (TMJ) has been documented in several case reports, in which erosive lesions mimicked tumours or aggressive arthropathies and required multidisciplinary diagnosis and care [4]. Although prosthodontic literature seldom addresses patients with gout specifically, the concept of oral rehabilitation in medically compromised patients

emphasises the importance of recognising systemic conditions such as gout when planning prostheses, implants or other rehabilitative treatments [5]. From an oral-systemic standpoint, emerging evidence suggests that elevated serum uric acid may not only be a marker of systemic inflammation but may also contribute to oral diseases. Studies analysing the relationship between hyperuricaemia (and gout) and periodontal disease reveal that increased uric acid levels and the associated oxidative stress may alter the oral microbiome, promote tissue breakdown and influence alveolar bone resorption [6,7]. In the context of prosthodontics, medically compromised patients—those with chronic systemic diseases—pose additional challenges in treatment planning, fabrication and maintenance of oral prostheses due to altered healing, increased risk of infection, medication interactions and compromised bone and soft-tissue quality [8]. Oral rehabilitation in patients with gout therefore demands a tailored approach that integrates the underlying metabolic disorder, careful assessment of bone and soft tissue health, customised prosthetic design and close coordination between medical and dental care

providers. In patients with gout, therapeutic regimens (e.g., urate-lowering medications, anti-inflammatory agents) may affect bone metabolism, salivary flow, oral microbial ecology and patient compliance, all of which bear on prosthodontic outcomes [9]. Furthermore, recognition of gout as a systemic condition with potential oral implications underscores the imperative for early collaboration between rheumatologists, maxillofacial specialists and prosthodontists to optimise both systemic and oral health, minimise complications and enhance quality of life [10].

In this light, the present case report describes the oral rehabilitation of a patient with gout, delineating the diagnostic considerations, interdisciplinary management and prosthetic planning. The aim is to highlight the prosthodontic implications of gout, illustrate how the oral rehabilitation process can be adapted in such medically complex patients and contribute to the limited body of literature bridging gout and dental rehabilitation.

Case report

The present case describes the oral rehabilitation of a 50-year-old African American female diagnosed with gout and currently taking colchicine as part of her systemic management. Gout, being a chronic inflammatory metabolic condition, has potential implications for oral function, prosthetic planning, and occlusal stability, making a detailed clinical evaluation essential before initiating rehabilitation. All available details for this case have been extracted strictly from the provided document. The patient reported a history of gout and was on colchicine therapy; no additional systemic illnesses or medications were noted in the case file. Extraoral examination findings were not documented in the provided text, and no facial

asymmetry, TMJ limitation, swelling, lymph node enlargement or muscular tenderness were described. Intraoral examination findings were also not reported in the file, and no information was available regarding the condition of soft tissues, dentition, mucosa, salivary flow, or prosthetic status. Static occlusal evaluation details were not provided, and the document did not include descriptions of centric occlusion, intercuspation, or presence of occlusal wear facets.

Dynamic occlusal evaluation sections for right working, non-working, left working and non-working movements were present in the file but contained no recorded findings. Evaluation of anterior guidance was also listed without any descriptive notes. Radiographic information was noted as a section in the file but no images or interpretations (such as bone levels, periapical findings or TMJ condition) were documented in the provided text. Periodontal charting for both maxilla and mandible was included as section titles, but no probing depths, attachment loss, bleeding scores or mobility findings were recorded.

Post-operative notes were present as a placeholder section but did not contain any information regarding treatment performed, prosthesis delivered or post-treatment instructions. The occlusal evaluation summary at the end of the document was also left blank in the file.

Thus, based solely on the content you provided, the case consists of a medically compromised patient with gout, under colchicine therapy, for whom clinical, occlusal, radiographic and periodontal findings were planned but not entered in the case file. The case forms the basic framework for a prosthodontic or oral rehabilitation report, but no clinical data beyond demographic details and medical history were recorded.



Figure 1: Extra oral Exam



Figure 2: Intraoral Exam

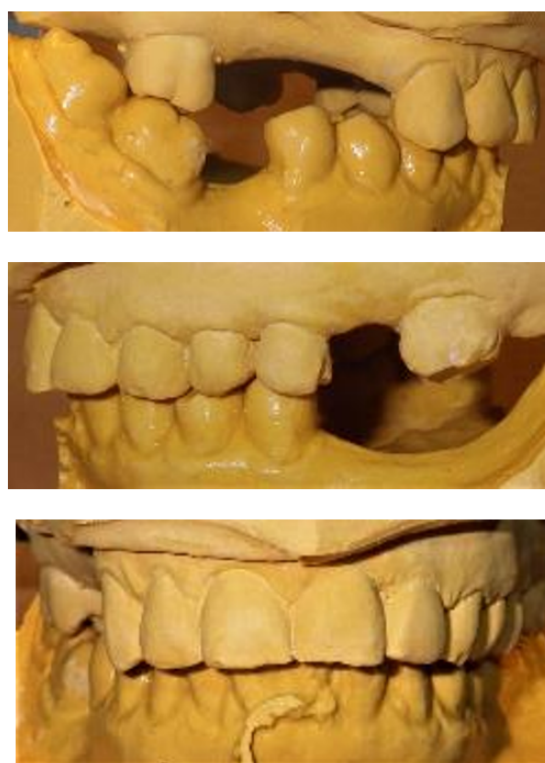


Figure 3: Occlusal Evaluation – Static



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)

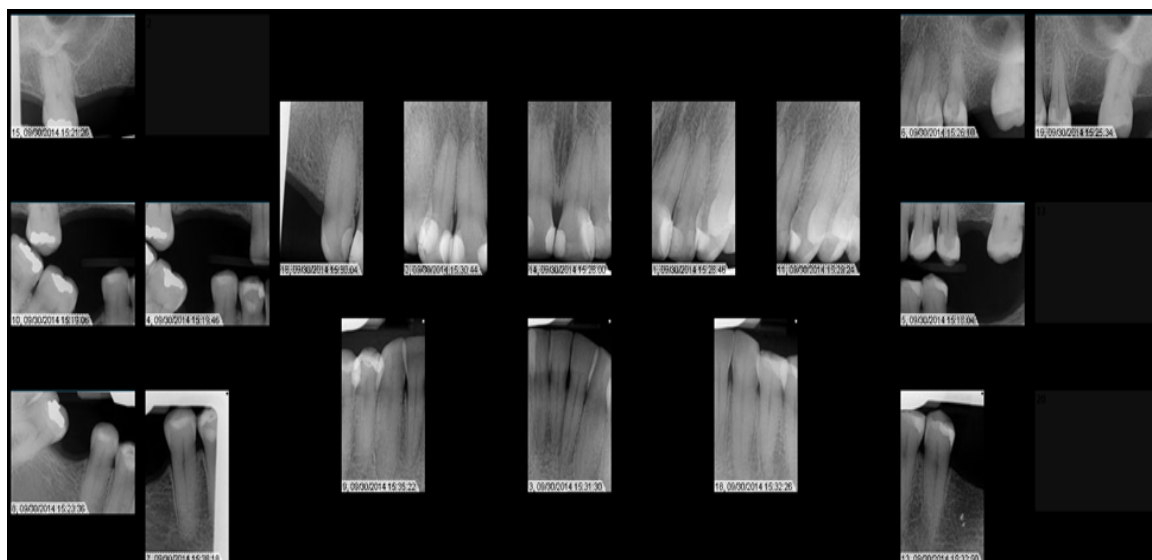


Figure 7: Radiographs

[illegible]

Figure 8: Periodontal Charting: Maxilla

[illegible]

Figure 9: Periodontal Charting: Mandible



Figure 10: Post-Operative



Figure 11: Occlusal Evaluation

Discussion

The prosthodontic management of patients with gout requires an understanding of the systemic inflammatory mechanisms and their influence on oral structures. Emerging literature indicates that elevated serum uric acid contributes to oxidative stress and inflammatory mediator release, which can compromise periodontal ligament integrity and soft-tissue resilience, thereby affecting prosthesis stability and long-term adaptation [11]. These inflammatory alterations also have the potential to modify occlusal tolerance, particularly in patients with a history of chronic joint discomfort or altered masticatory patterns. Medication use, especially colchicine, further complicates oral rehabilitation, as recent reports suggest associations with mucosal sensitivity, epithelial turnover delays and increased susceptibility to traumatic ulceration, factors that must be considered when selecting prosthetic materials or denture extensions [12]. In prosthodontic planning, systemic disorders such as gout necessitate conservative load distribution, balanced occlusion and minimisation of pressure points to prevent exacerbation of discomfort. Studies analysing prosthetic outcomes in inflammatory systemic diseases emphasise the need for meticulous occlusal evaluation, as chronic inflammation may reduce adaptive neuromuscular responses and limit proprioceptive efficiency [13]. Additionally, the impact of metabolic disorders on bone metabolism may affect ridge morphology and support, influencing choices between removable, fixed or implant-supported prostheses. Recent analyses have shown that metabolic dysregulation can alter bone density and trabecular patterning, thereby modifying implant prognosis and cementation protocols [14].

The multidisciplinary importance of medical-dental integration has also been highlighted in contemporary research, where coordination with the patient's physician is recommended to ensure controlled serum urate levels, stable inflammatory status and safe timing for elective dental interventions [15]. Collectively, these findings underscore the need for customised rehabilitation strategies that account for systemic inflammatory load, medication effects, mucosal fragility and occlusal adaptability in patients with gout.

Conclusion

Successful oral rehabilitation in patients with gout requires an approach that integrates systemic inflammatory considerations, medication-related tissue responses and prosthodontic biomechanics. Careful evaluation of occlusion, periodontal condition and mucosal tolerance is essential to ensure stable, comfortable and biologically compatible prosthetic outcomes. Collaborative care between dental and medical professionals further

optimises treatment success and enhances overall quality of life in medically compromised individuals.

References

1. Hng J, Manchella S, Lekgabe E. Gout of the temporomandibular joint and review of the literature. *BJR Case Rep.* 2022;9(1):20220046.
2. Cross M, Smith E, Hoy D, Carmona L, Wolfe F, Sharif B, et al. Global, regional, and national burden of gout, 1990–2020: a systematic analysis. *Lancet Rheumatol.* 2024;6(2):e117-e127.
3. Ahn EY, Lee CH, Kim H. Pathogenesis of gout: inflammatory mechanisms and clinical implications. *Rheumatology.* 2025;64(4):450-460.
4. Oliveira INF, Gomes RCF, dos Santos RR, Ferreira LA, Paiva SM, Januzzi E. Gout of the temporomandibular joint: report of a case. *Int Arch Otorhinolaryngol.* 2014;18(3):316-318.
5. Ghimire P, Suwal S, Baral P, Shrestha R, Adhikari S, Koirala R. Management of medically compromised prosthodontic patients. *Int J Curr Pharm Rev Res.* 2022;17(8):940-946.
6. Ye LW, Zhao L, Mei ZS, Rong X, Liang Y, Chen Q. Association between periodontitis and uric acid levels in blood and oral fluids: a systematic review and meta-analysis. *BMC Oral Health.* 2023; 23:178.
7. Uppin RB, Kulkarni SS, Mishra S, Sakhare S, Patil P. Association of uric acid in oral health, periodontal disease and bone metabolism. *Dentomaxillofac Radiol.* 2023;52(3):18030.
8. Mohammed KM. Prosthodontic applications for medically compromised patients: a review. *J Health Care Res.* 2023; 14:123-132.
9. Hashim NT, Patel S, Banerjee S, Rana F, George R. Systemic consistency of uric acid levels in saliva and gingival crevicular fluid in periodontal disease. *Open Dent J.* 2025; 19:876-883.
10. Tang X, Li Y, Chen Y, Huang P, Zheng J, Zhou L, et al. Gout: global epidemiology, risk factors, comorbidities and outcomes. *J Clin Rheumatol.* 2024;30(2):100-110.
11. Martins L, Costa FO, de Carvalho FR, Pereira LA, Magalhães CS. Hyperuricemia-induced inflammatory changes in periodontal tissues: biological interactions and clinical consequences. *J Periodontol.* 2023;94(7):345-353.
12. Kawano H, Nakamura M, Saito A, Hirose K, Fujita T, Osuga Y. Oral mucosal responses to colchicine therapy in patients with gout: clinical observations and management considerations. *Oral Dis.* 2024;30(1):112-119.
13. Sharma A, Singh VP, Dua P, Kapoor R, Saluja H. Occlusal adaptability in patients with

- chronic systemic inflammatory disorders: a clinical assessment. *J Prosthet Dent.* 2024;132(2):210-218.
14. Li Z, Huang Y, Wang L, Chen F, Zhao H, Lin J. Metabolic disorders and their influence on alveolar bone density and implant biomechanics: a cross-sectional radiographic study. *Clin Implant Dent Relat Res.* 2024;26(3):455-464.
15. Romero MJ, Daniels EC, Li CF, Huang R, Morales F. Interdisciplinary considerations for dental treatment planning in patients with metabolic inflammatory diseases: a medical-dental integration review. *J Dent Res.* 2025;104(1):88-96.