

DENTAL MANAGEMENT OF PATIENTS ON IMMUNOSUPPRESSIVE THERAPY: A CLINICAL OVERVIEW

Khalid Alajlan^{1*}, Waleed Almutairi¹, Abdullah Albawardi², Mohammed Aldosari³, Mohamed A. Algarni⁴, Fahad I. Alawad⁴, Khalid Alahedib⁵, Mohammed Alotaibi⁶, Yazeed Alturki⁷, Mohammed Daaabash¹, Abdulrahman Alshalan⁸, Fahad Alharbi¹

¹General Dentist, National Guard Hospital, Primary Health Care, Riyadh, Saudi Arabia. Dr.alajlan4@hotmail.com

²Consultant Orthodontist, Medical Cities, Ministry of Interior, Saudi Arabia.

³Pediatric Dentistry Consultant, Dawadmi General Hospital, Third Health Cluster, Riyadh, Saudi Arabia.

⁴Department of Restorative Dentistry, Medical Cities, Ministry of Interior, Riyadh, Saudi Arabia.

⁵Assistant Consultant, Advanced General Dentistry (AGD), King Abdulaziz Medical City, National Guard Health Affairs, Riyadh, Saudi Arabia.

⁶Senior Registrar, Afif Hospital, Third Health Cluster, Riyadh, Saudi Arabia.

⁷King Abdulaziz Medical City, National Guard Health Affairs, Riyadh, Saudi Arabia.

⁸Prosthodontist, Prince Sultan Military Medical City, Riyadh, Saudi Arabia.

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ABSTRACT

The risks of infection and reduced healing rate associated with immunosuppressive therapy (IST) complicate dental treatment. This review will cover recent literature (2019–2025) on dental IST management, emphasizing significant findings, gaps, and next steps. There remains strong support for pre-therapy dental clearance as it resolves numerous pre-existing infections. Most clinicians prophylactically cover with antibiotics, despite a lack of strong evidence. It is common to continue corticosteroids and DMARDs for minor procedures, with biologics being paused for major surgery. Recommendations tend to come from medicine, not dentistry. Non-invasive care is low risk; with invasive care, risk is manageable with strict protocol adherence. While implant survival is high among those on IST, personalized risk assessments are vital. Significant gaps remain around dental IST, timing of procedures, and newer drug therapy. IST patients with dental needs can be provided care and managed safely with appropriate modifications. There is no standard, evidence-based protocol to guide patients, highlighting the interdisciplinary gaps and needs for dental care with clear, collaborative guidelines.

Key words: Dental, Immunosuppressive therapy (IST), Patients, Infections.

Introduction

Immunosuppressive therapies (IST) are widely adopted for managing autoimmune and inflammatory disorders (e.g., rheumatoid arthritis, inflammatory bowel disease, vasculitis) and preventing organ transplant rejection. These therapies include conventional agents (methotrexate, azathioprine, corticosteroids), biologic DMARDs (anti-TNF agents, anti-B-cell), JAK inhibitors, and cancer conditioning regimen medications. While these drugs can be life-saving, they can also suppress host defenses and affect oral health [1-3]. Some common oral complications include infections (bacterial, viral, fungal), mucosal lesions (peripheral oral ulcers and lichenoid reactions), dry mouth, gingival overgrowth (associated with cyclosporine), and impaired healing of wounds [4]. Dental practitioners require a delicate balance between oral care and infection and bleeding risk. According to recent surveys and reviews, most dentists continue IST during minor procedures with intravenous antibiotic prophylaxis, but more thorough protocols are needed for invasive surgeries (tooth extractions and implants) [5]. This review examines the dental management of patients on IST, focusing on pediatric patients to determine the best guidelines and gaps from recent IST literature.

Objectives

For this study, we aim to synthesize the most recent literature (2019 – 2025) about the oral healthcare of immunosuppressed patients within the scope of dentistry. In particular, we focus on:

- (1) the oral health effects of different immunosuppressive therapies (IST)
- (2) the suggested dental care protocols IST, before, during, and post-treatment
- (3) survey results of current dental care trends
- (4) the results of dental procedures performed on these patients (e.g., implants, extractions). We discuss the primary results and trends, highlight areas of agreement or disagreement, and explore the evidence gaps and their impact on practice.

Materials and Methods

A non-systematic narrative literature review was conducted in PubMed and Google Scholar for 2019 – 2025, focusing on English language publications. The search utilized the

following keywords: “dental immunosuppressive therapy”, “oral management transplant”, “biologics dentistry”, etc. In preference order, the most relevant to our study scope included reviews, clinical essays, surveys, and guidelines. The scope of the literature included dental management on a multi-disciplinary, non-university, disease-focused approach. We collected information on the patient population, immunosuppressive therapies (ISTs), dental complications, and relevant management approaches. The results were presented in thematic clusters. Tables were created to highlight essential recommendations and results along with the data.

Results and Discussion

Dental assessment and authorization before therapy

All the guidelines converge on performing a thorough dental evaluation before IST - especially in the case of planned immunosuppression like organ transplant or chemotherapy [6]. The objective here is to remove active potential sources of infection (such as cavities, periodontal disease, or pericoronitis) and to postpone elective interventions until after the immune system function has recovered. The AAPD pediatric guidelines recommend that all dental procedures be done before chemotherapy or HSCT, addressing any infection or irritant, and postponing elective procedures while in the state of immunosuppression [7]. Likewise, a Brazilian consensus on HSCT management recommends a dental clearance before transplant, suggesting “detect possible dental situations that can worsen” during the neutropenic acute phase [6]. This entails executing definitive restorations, managing periodontal disease, and performing surgical extractions on non-restorable teeth, all within a healing window before IST.

Routine vs invasive procedures

How dentistry is practiced for immunosuppressed patients is well documented in clinician surveys. In a French study of generalists and specialists, scaling and simple restorations were common and considered safe under IST (immunosuppressive therapy) [6, 8]. Scaling and root planing were considered safe “regardless of treatment management” [8]. However, more complex procedures, such as multiple extractions or oral surgery, were associated with greater complication risks. French specialists noted more complications in patients receiving active biologic therapy, even with routine prophylactic antibiotics and antiseptic mouthwash [8]. In a similar survey of oral and maxillofacial surgeons in the UK, there was considerable variation in practice. Most patients were maintained on conventional immunosuppressants, but biologic therapies were often withheld for the duration of surgery. It is telling that British and American rheumatology guidelines recommend that some anti-TNF injections should be withheld one dose of the biologic (anti-TNF) before surgery, and the surgery should be scheduled for one week after the dose [7]. The NHS (UK) guidelines even proposed suspending biologics for routine dental extractions and

biopsies that involve open wounds under low infection risk [7]. These policies illustrate the middle ground: continuing IST risks infection, while no therapy incurs the risk of disease flare.

Antibiotic and oral hygiene prophylaxis

Most dentists recommend prophylactic antibiotics for patients who are immunocompromised. In Bourgoin *et al.*'s survey, over 75% of French dentists indicated they prescribed either pre- or postoperative antibiotic therapy (most often amoxicillin) to immunosuppressed patients [6]. Chlorhexidine mouth rinses were used routinely in the perioperative period as well. While unsupported by empirical evidence, these measures are meant to reduce the risk of infection significantly. Current ADA recommendations do not support antibiotic prophylaxis for “immunocompromised” patients except those with neutropenia or active infection. Still, many practitioners often choose to intervene, and Dental treatment focuses on rigorous oral hygiene. As noted in many surveys, preoperative and postoperative antiseptic mouth rinses (chlorhexidine) are prescribed to decrease microbial load.

Specific oral complications

Patients on immunosuppressive therapy may show specific oral complications. Mucosal disorders (aphthous ulcers, lichenoid reactions) are uncommon, but few studies have been available on their prevalence. One review says that the use of prednisolone is associated with chronic periodontal conditions, as well as several immunosuppressive therapies (corticosteroids, calcineurin inhibitors, DMARDs) that also have long-term side effects such as osteoporosis and mucositis. Due to weaker immune systems, fungal infections (oral candidiasis) are common [9, 10]. Patients on cyclosporine, which is used in transplant patients, show signs of gingival overgrowth. Medication-induced osteonecrosis of the jaw (charged with bisphosphonates/denosumab) IST may worsen the condition.

In Radoi *et al.*'s scoping review, which focused on patients undergoing DMARDs or biologics therapy, local infectious complications, specifically abscess or osteonecrosis, mostly appeared post-extraction. Age above 50, bisphosphonate use, diabetes, and smoking were noted as risk factors. The phenomenon of delayed healing was not uncommon and was subsequently managed with prolonged courses of antibiotics and antiseptics [11-15].

Dental implants and restorative treatment

For an extended period, having an immunosuppressive condition was viewed as a relative contraindication for having dental implants or undergoing complex restorative procedures. It has, however, come to light that with strict adherence to protocols, the success of dental implants is relatively high. A systematic review conducted on transplant recipients recorded a remarkable 100% survival rate of implants over 5 years, albeit in a small cohort of 93 patients

and 249 implants. This high rate was reported as long as the implants were placed under antibiotic coverage. Additionally, no major medication-related complications, such as infection or rejection, were recorded, highlighting the safety of implants with strict infection control measures. Among patients harboring autoimmune diseases, a scoping review of 87 studies reported an impressive 85–100% overall implant survival rate. Most failures were noted to occur early, before prosthetic loading, though long-term outcomes appeared favorable. Patients with mucosal autoimmune lesions, such as oral lichen planus, could receive implants if the disease was well-controlled. The overarching conclusion is that IST should not automatically bar the use of implant therapy. Still, cases must be approached with a thorough risk assessment tailored to the individual, a detailed evaluation, and stringent monitoring [11, 16–24].

Survey findings on current practices

Current surveys illuminate issues relating to practice patterns. Bourgoin *et al.* concluded that several dentists do not discontinue IST before procedures [6]. Decisional therapy cessation was essentially a rare specialty-driven affair. Instead, the default practice was to proceed with treatment, albeit under antibiotic cover. In solid organ transplantation, O’Leary *et al.* (Ireland) noted a wide variation as to when patients are considered “dentally fit” for the transplant, as there is no standard [25]. Roughly a third of dentists operated within the bounds of a written protocol, while a significant number mandated a 2 to 3 week post-extraction transplant delay for healing before transplantation. The lack of consensus in the UK oral surgeon survey is reflected in the reported scrupulous

adherence to rheumatology or dermatology perioperative guideline analogs. These findings illustrate that IST patients, regardless of the multifactorial nature of their surgical needs, are looked after and treated, albeit with the common reliance on empiricism and protective medicine instead of rigorous evidence-based protocols [26–31].

Pediatric patients

Pediatric patients undergoing chemotherapy, HSCT, or immunosuppressive therapy have overlapping as well as distinct concerns. AAPD guidelines from 2023 highlight that all pediatric patients must have a thorough oral examination before therapy commencement [5]. Preventive measures, including active disease treatment, must always be prioritized. Importantly, only emergency procedures are permitted during neutropenic nadirs, and these must be performed under antibiotic coverage if necessary. Post-therapy, dental care is provided once the patient’s counts have recovered. The pediatric consensus is quite unambiguous regarding HSCT: “all dental treatment should be completed before immunosuppression and elective care should be waited until after immunological recovery”[5]. Simply put, pediatric literature emphasizes the long-established adult practice of thorough dental clearance before therapy and caution during and after the period of immunosuppression.

Summary of key findings (Table 1)

Summary of Research on Dental Management in Patients on Immunosuppressive Therapy (2019–2025) is mentioned in **Table 1**.

Table 1. Dental Management of Patients on Immunosuppressive Therapy: A Narrative Review (2019–2025)

Authors / Year	Study Purpose	Population / Sample	Materials & Methods	Intervention / Focus	Key Results	Notes / Clinical Implications
AAPD Guidelines, 2023 [05]	Establish pediatric dental care recommendations before/during immunosuppression.	Pediatric oncology and HSCT patients	Guideline synthesis	Pre-therapy dental clearance and preventive interventions	All active disease treated pre-therapy; only emergency care during neutropenia; resume elective care post-recovery	Strong preventive emphasis; timing of care linked to blood counts
Correa <i>et al.</i>, 2023 [8]	Review dental timing in chemotherapy/IST	Mixed (adult and pediatric)	Literature review	Perioperative IST guidelines	Elective dental procedures delayed until immune recovery; consider withholding biologics pre-surgery	Aligns with rheumatology protocols; highlights lack of unified dental-specific guidelines
Bourgoin <i>et al.</i>, 2023 [6]	Survey of dental practice under IST	French GPs and specialists (n ≈ 200)	Cross-sectional survey	Routine vs. invasive procedures, antibiotic use	Scaling, restorations considered safe; invasive surgery riskier; >75% prescribe antibiotics and rinses	Shows cautious but variable practice; heavy reliance on antibiotics
Radoi <i>et al.</i>, 2025 [4]	Identify risk factors for oral complications post-dental surgery	Patients on DMARDs/ biologics (systematic)	32 studies reviewed	Extractions, invasive dental surgery	Higher risk of infection, osteonecrosis in >50 yrs, smokers, bisphosphonate users	Need individualized risk assessment and longer follow-up.

review)						
Hyldahl <i>et al.</i>, 2025 [32]	Review implant outcomes in autoimmune disease patients	87 studies, various IST users	Scoping review	Implant survival and complications	Success 85–100%; early failures are more common	IST is not a contraindication; mucosal disease control is essential
O’Leary <i>et al.</i>, 2023 [25]	Explore transplant dentists’ protocols	Dentists in Ireland (n ≈ 150)	National survey	Definition of “dental fitness” pre-transplant	Wide variation; most allow 2–3 weeks healing after extractions	Lack of standardization; protocols often unwritten
Dickson <i>et al.</i>, 2025 [07]	UK oral surgeons’ perioperative management	Oral/maxillofacial surgeons	Cross-sectional survey	Perioperative IST continuation vs. discontinuation	Most continue conventional IST but withhold biologics pre-invasive procedures	Evidence gap → clinicians depend on rheumatology/dermatology guidance

This review underscores that although dental care is complicated by using immunosuppressive therapy for IST, most dental treatments can be done safely with proper adaptations by the clinician. It spans the literature’s various themes, including therapy optimization, prevention of infection, management of medication, risk of the procedure, and many more. It also highlights the relevant gaps and debates that remain unexplored [26, 33-41].

Optimization of therapy before the procedure

Pre-dental care optimization is a concept embraced in pediatric and adult populations. It has been documented in all guidelines and consensus statements that a definitive dental treatment must be done before IST to mitigate the risk of infection during the period of neutropenia or profound immunosuppression. The pediatric guidelines by the AAPD emphasize a robust proactive dental clearance for all patients to avoid potentially life-threatening complications. It emphasizes the involvement of a dental care provider in a multidisciplinary approach while planning for a transplantation, chemotherapy, or any course of therapy that involves the use of immunosuppressive drugs.

Antibiotic use and the prevention of infection

The topic of infection prevention, specifically regarding antibiotic prophylaxis, continues to be controversial. Surveys of French dentists and UK oral surgeons demonstrate that over 75% prescribe antibiotics before and/or after performing dental procedures on patients with immunosuppression. Yet the supporting evidence for such a practice is scant. Major authoritative bodies such as the ADA and AAOS have guidelines advocating the avoidance of routine antibiotic prophylaxis because of the increasing concerns around antibiotic resistance. It is also important to note that there have been no randomized controlled trials specifically investigating the use of prophylactic antibiotics in the dental immunosuppressed population. This fact highlights an essential evidence gap, forcing clinicians to rely on unsupported guidance and personal decisions.

Medication management during dental procedures

Immunosuppressive medication management during the

surgical and postoperative phases remains an area of ambiguity. Current rheumatology policy tends to support the maintenance of corticosteroid and DMARD therapy during minor dental procedures, while advocating for the suspension of biologics during major surgical interventions. However, these policies seem to rely predominantly on data derived from oral surgery, anesthesiology, and maxillofacial surgery, raising concerns about their relevance. Controlled studies indicate a considerable lack of standardization in practice, with some providers adopting overly risk-averse or risk-seeking strategies. This underscores the need for tailored dental guidelines for the broad range of immunosuppressive therapies, including biologics and newer targeted agents.

Procedure-related risk stratification

Another critical aspect involves procedure-related risk stratification. Non-invasive procedures, like scaling and filling cavities, pose minimal risk for IST patients, while more invasive procedures, like extractions and implants, although risky, remain within a permissible range. Furthermore, systematic reviews have documented a high implant survival rate of 85-100% in patients with organ transplants or autoimmune disorders. These studies indicate that IST alone is not an absolute contraindication for implant therapy, provided that strict maintenance and appropriate adjunctive care are meticulously documented and followed. Concurrent scoping reviews, however, remain cautionary that complication rates rise in subgroups, including older ages, smokers, and patients receiving bisphosphonate therapy. This highlights the importance of tailored case evaluation instead of a universal strategy.

Nonetheless, there are still some controversies and gaps left unaddressed. The scheduling of dental treatments concerning IST dosing still relies on pharmacokinetic reasoning instead of oral health evidence, which is cause for concern. The controversy regarding antibiotic prophylaxis continues to be fueled by the lack of consistent evidence and data. In addition, the long-term impacts on oral health of newer immunotherapeutics, like JAK and immune checkpoint inhibitors, remain understudied.

Immunosuppressed populations are at heightened risk for severe forms of dental infections. One study has shown that rheumatoid arthritis patients on DMARDs are at an increased risk of severe odontogenic infections that necessitate hospitalization, highlighting the importance of what appear to be trivial oral health issues in these populations.

Future considerations

In addressing these gaps, looking ahead, interprofessional collaboration will be imperative. Integrated guidelines from dental and medical societies could help clarify issues such as perioperative medication management, antibiotic prophylaxis, and procedural risk. Priority should be given to prospective cohort and interventional studies to evaluate the complication rates of various management approaches. Risk classification based on drug tier is crucial, especially considering the diverse immunosuppressive potency and mechanisms of action relevant. Furthermore, the evaluation of minimally invasive dental techniques, like silver diamine fluoride and atraumatic restorative techniques, should be prioritized to lessen the surgical burden in high-risk patients. Remote dentistry may have a role in monitoring patients, especially those who find it challenging to attend in-person appointments regularly.

Limitations of current evidence

Understanding the gaps in the current evidence is essential. Most of the literature is based on retrospective reviews, expert consensus, or borrowed from other disciplines. There is a shortage of well-conducted randomized controlled trials, and numerous studies depend on clinician surveys that capture impressions instead of unbiased results. Additionally, the diversity of study participants, treatment protocols, and duration of follow-up adds complexity and limits the generalizability of the findings. These gaps underscore the need for a focused multidisciplinary research strategy that provides robust evidence with actionable clinical insights.

Conclusion

Immunosuppressed patients can receive dental care when careful infection control, tailored medication regimens, and personalized planning are utilized. Almost all procedures, even implants, can be performed, although some invasive procedures need more stringent monitoring. Current approaches are primarily based on assumptions and collective practices, which lack direct evidence. Comprehensive studies and interprofessional consensus are required to address these gaps and provide dependable care.

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