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MANAGEMENT OF DIABETIC PATIENTS UNDERGOING ORAL SURGERY PROCEDURES: A NARRATIVE REVIEW

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ABSTRACT

Introduction: Diabetes mellitus is a systemic metabolic disorder that requires careful perioperative management in oral and maxillofacial surgery.

Aim: To synthesize the current evidence on the perioperative management of diabetic patients undergoing oral surgery, with emphasis on preoperative assessment, glycemic control, medication adjustment, intraoperative precautions, and postoperative care.

Material and methods: This narrative review searched PubMed/MEDLINE and Google Scholar using terms related to diabetes mellitus, oral surgery, tooth extraction, perioperative management, glycemic control, HbA1c, antibiotic prophylaxis, wound healing, and postoperative complications. Twenty-three publications met the inclusion criteria.

Results: The literature shows that diabetes is a clinically relevant perioperative risk factor in oral surgery. Evidence on extraction healing is mixed: some studies found no significant effect of glycemic control on post-extraction healing, while others reported more unhealed sockets in patients with poorer glycemic control. The available evidence does not consistently support routine antibiotic prophylaxis for simple extractions.

Conclusions: Diabetes increases the perioperative risk in oral surgery, however, it is not a contraindication to treatment when patients are properly assessed and prepared. Individualized preoperative evaluation, glycemic control, careful surgical technique, and close postoperative follow-up are essential for safe management of these patients.

KEYWORDS

Diabetes Mellitus, Oral Surgery, Perioperative Management, Tooth Extraction, Wound Healing

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1. Introduction

Diabetes mellitus is one of the most common chronic metabolic disorders encountered in surgical practice, and its prevalence necessitates that oral and maxillofacial surgeons frequently treat patients with altered glucose regulation, medication-dependent glycemic control, and a higher baseline risk of postoperative complications. A recent narrative review in the *British Journal of Anaesthesia* highlighted that individuals with diabetes not only have a higher likelihood of requiring surgery but also face an increased risk of postoperative complications [1]. In oral and maxillofacial surgery, this is significant because surgical stress can destabilize glucose control, and perioperative hyperglycemia is linked to wound infection, impaired healing, and other adverse outcomes [1,2]. The oral surgery setting adds its own layer of complexity because extraction wounds depend on local perfusion, host defense, and controlled inflammation for healing, all of which may be compromised when metabolic control is poor. Recent literature also highlights that patients with diabetes may face oral complications relevant to surgical care, including delayed healing and increased susceptibility to infection, making preoperative optimization and postoperative monitoring crucial for safe management [3,4].

Beyond glycemic control, perioperative planning for patients with diabetes should also consider medication regimens, surgical complexity, and timing of intervention. Contemporary perioperative reviews emphasize the importance of structured assessment, glucose monitoring, and medication review before surgery, while oral surgery-focused sources highlight the need to evaluate fasting blood glucose, HbA1c, and the risk of hypoglycemia when planning treatment [1,2,5]. These considerations are particularly relevant because patients with diabetes may experience delayed healing or other oral complications that can impact recovery following extraction or other oral surgical procedures [3,4].

The aim of this narrative review is to synthesize the current evidence on the perioperative management of patients with diabetes undergoing oral surgery, with particular attention to preoperative assessment, glycemic control, medication adjustment, intraoperative precautions, and postoperative care.

2. Materials and methods

The present study was designed as a narrative review to provide a focused clinical overview of the management of diabetic patients undergoing oral surgery. A literature search was conducted across the PubMed/MEDLINE and Google Scholar databases using terms related to diabetes mellitus, oral surgery, tooth extraction, perioperative management, glycemic control, HbA1c, antibiotic prophylaxis, wound healing, and postoperative complications. In contrast to a systematic review, this paper utilized a purposive and non-systematic approach to article selection. The authors intentionally selected publications that, in their judgment, were deemed most relevant to the specific practical objectives of this review, prioritizing primary studies, clinical guidelines, and previous reviews that addressed perioperative assessment, glycemic thresholds, extraction outcomes, antibiotic prophylaxis, or postoperative management in patients with diabetes. A total of 23 publications were selected that informed the background, synthesis, and discussion of current management practices.

3. Results

3.1. Perioperative risk and general management

The retrieved literature indicates that diabetes mellitus is a clinically relevant modifier of perioperative risk in oral and maxillofacial surgery [1,5,6-8]. Contemporary perioperative reviews consistently state that patients with diabetes require structured preoperative assessment, medication review, glycemic control, and postoperative monitoring [1,2,5,6,9]. The reviewed studies also associated hyperglycemia with a higher risk of wound infection, prolonged hospitalization, morbidity, and mortality [1,2,8,9]. At the same time, guidelines vary in the glycemic thresholds they recommend: some sources provide specific cut-offs such as HbA1c >8.5% for postponement of elective surgery [1], while others emphasize that no single threshold is applicable to all procedures and all diabetic patients [1,5,9].

From the oral surgery perspective, the key preoperative elements include diabetes type, duration of disease, treatment modality, recent glycemic control (including HbA1c and fasting blood glucose), history of hypoglycemia, current symptoms, and planned procedure complexity [5-8,10-12]. Some authors have recommended specific fasting glucose limits above which postoperative complications should be anticipated [10,11]. Therefore, the literature supports an individualized approach rather than automatic treatment deferral based solely on the diagnosis of diabetes [1,5-7].

3.2. Extraction outcomes and wound healing

Evidence specifically addressing extraction healing in patients with diabetes is mixed [10,13-17]. A prospective study of diabetic patients found no statistically significant difference in post-extraction epithelialization rates based on preoperative blood glucose, HbA1c, or patient history, concluding that glycemic control did not influence post-extraction healing [13]. Similarly, a prospective cohort study of patients with type 2 diabetes on oral hypoglycaemics reported that delayed socket healing beyond one week occurred in both diabetic and control groups, with all delayed cases healing within four weeks, and concluded that these patients should be treated the same as non-diabetic patients for routine extractions [14]. These findings are clinically important because they argue against the exclusion of patients with diabetes from uncomplicated oral surgical treatment [13,14].

However, not all studies point in the same direction. Other evidence indicates that a greater proportion of unhealed sockets is observed in patients with diabetes who undergo surgical extraction and present with higher blood glucose levels [15]. This suggests that the risk is probably conditional rather than absolute: an uncomplicated extraction in a stable patient may carry limited additional risk, whereas poorer glycemic control, greater tissue trauma, and more invasive surgery may shift the balance toward delayed healing [10,15,16,17].

3.3. Oral complications and postoperative environment

Diabetes is associated with a less favorable healing environment [3,4,7,10,12,17,18]. Reviews have described xerostomia, altered salivary composition, oral mucosal lesions, periodontal inflammation, and reduced antibacterial capacity as features that may compromise postoperative recovery [3,4,7,12,18]. Hyposalivation and diminished antimicrobial salivary properties negatively affect the oral mucosa and periodontal tissues [3,18], whereas impaired microcirculation and oxidative stress contribute to additional oral complications [18]. A review of extraction socket pathogenesis also suggests that an elevated glucose microenvironment can prolong socket healing, although many proposed interventions remain at the animal-experiment stage [17].

This background is relevant to oral surgery because postoperative complications depend not only on the extraction wound itself but also on the condition of the surrounding tissues, local host defense, oral hygiene,

and systemic metabolic stability [3,4,7,10,12,17,18]. For that reason, oral surgery in patients with diabetes should not be approached simply as a technical intervention but as a treatment carried out within a potentially compromised biological environment [7,10,12,18].

3.4. Antibiotic prophylaxis and periodontal implications

The available evidence does not consistently support routine antibiotic prophylaxis for simple extractions in patients with diabetes [16,19]. A systematic review found that recommendations are inconsistent and that there is no scientific evidence demonstrating the effectiveness of antibiotic prophylaxis as a precautionary measure before surgical dental operations in patients with diabetes. However, the same review noted that antibiotic prophylaxis is recommended prior to dental implant placement [19]. A separate review concluded that routine prophylaxis is not required for simple tooth extractions [16]. Similarly, it has been suggested that routine uncomplicated oral surgical procedures in well-controlled diabetic patients ($HbA1c < 8\%$) do not require antibiotic prophylaxis, whereas prophylactic antibiotics should be considered when procedures are prolonged, complicated, or performed in poorly controlled patients [7]. Most adjunctive local strategies proposed for improving socket closure or bone regeneration remain investigational and cannot be considered standard management [16,17,19].

An additional but relevant finding has been reported in the periodontal literature. A comprehensive review of meta-analyses reported that non-surgical periodontal treatment is associated with statistically significant reductions in $HbA1c$ and fasting blood glucose levels in patients with type 2 diabetes [21], supporting the bidirectional relationship between diabetes and oral inflammation [20,21]. Although periodontal therapy is not the main topic of this review, it remains clinically relevant because patients presenting for oral surgery often have coexisting periodontal disease, poor plaque control, or chronic oral inflammation that may influence postoperative healing [7,12,18,20,21].

Table 1 and Table 2 summarize the main findings of the review and the practical management considerations for diabetic patients undergoing oral surgery.

Table 1. Summary of the main findings from the reviewed literature.

	Main finding	Practical takeaway
Perioperative risk and general management	Diabetes is a clinically relevant perioperative risk factor in oral surgery, and most sources recommend structured assessment rather than automatic deferral	Evaluate $HbA1c$, blood glucose, medications, and procedure complexity before treatment.
Extraction outcomes and wound healing	Evidence on extraction healing is mixed: some studies found no effect of glycemic control, while others reported more unhealed sockets in poorly controlled patients	Routine extractions may be acceptable in stable patients, but poor glycemic control increases concern for delayed healing.
Oral complications and postoperative environment	Diabetes is associated with xerostomia, mucosal change, impaired microcirculation, and reduced antibacterial capacity, all of which may affect recovery	Postoperative monitoring should include the local healing environment, not only the wound itself.
Antibiotic prophylaxis and periodontal implications	The evidence does not consistently support routine antibiotic prophylaxis for simple extractions, while periodontal treatment may improve glycemic control	Reserve antibiotics for selected cases and recognize the bidirectional oral-systemic relationship.

Table 2. Summary of perioperative management considerations for diabetic patients undergoing oral surgery.

Management category	Recommended measures	Clinical significance
Preoperative assessment	Review diabetes type, duration, HbA1c, fasting glucose, hypoglycemia history, medication regimen, and planned procedure complexity.	Helps identify patients who need closer optimization before oral surgery.
Intraoperative precautions	Use careful planning, low procedural stress when possible, and atraumatic surgical technique.	May reduce surgical stress and delayed healing risk.
Postoperative care	Give clear oral hygiene and nutrition instructions and plan early follow-up.	Supports healing and helps detect infection or delayed closure early.

Discussion

The available evidence supports the view that diabetes mellitus is a meaningful perioperative risk factor in oral surgery but not a contraindication to treatment [1,5-8]. The most consistent message across the literature is that postoperative risk appears to increase when metabolic control is poor, whereas patients with diabetes with acceptable glycemic status often do not show significant impairment of healing after uncomplicated extraction [10,13-15]. This distinction is clinically important because it shifts attention away from diabetes as a binary label and toward the actual biological and procedural conditions under which surgery is performed [1,5,7,8,11].

The heterogeneity of the available studies helps explain why the literature does not provide a single simple management threshold. Prospective studies mainly assessed uncomplicated extraction healing and often involved more stable patients, whereas other data more often captured greater surgical trauma and poorer metabolic status [13-15]. These differences likely account for at least part of the inconsistencies in the reported outcomes. In practical terms, the relationship between diabetes and healing appears conditional: the combination of poor glycemic control, invasive surgery, and adverse local tissue conditions is more important than the diagnosis of diabetes alone [10,15-17].

From a clinical perspective, the literature supports several management strategies. Preoperative assessment should include medical history, recent metabolic status (including HbA1c and blood glucose), medication review, and evaluation of the risk of perioperative hypoglycemia [1,2,5-9,11,12]. During treatment, clinicians should aim for careful planning, low procedural stress when possible, and an atraumatic surgical technique [5-8,10]. Postoperatively, patients may benefit from early follow-up, clear instructions regarding oral hygiene and nutrition, and monitoring for delayed healing or infections [7,10,16,19].

A broader oral health context is also relevant. Diabetes is associated with mucosal and periodontal disturbances, impaired microcirculation, and altered inflammatory responses, all of which may affect the surgical field and recovery [7,12,17,18,20,21]. In addition, periodontal treatment has been associated with statistically significant improvements in glycemic parameters, reinforcing the concept of a bidirectional relationship between oral and systemic health [20,21]. Therefore, oral surgery in patients with diabetes should be viewed as part of a wider chronic disease management rather than as an isolated procedural event [7,12,18].

Current perioperative guidelines suggest that surgical planning for patients with diabetes should integrate clinical factors beyond isolated blood glucose values. Early identification of poorly controlled patients, preoperative glucose optimization, and an individualized plan for diabetes care are emphasized in perioperative reviews, precise medication adjustments, and protocols for postoperative resumption [22]. This approach is particularly important given the increasing use of newer pharmacological agents: GLP-1 receptor agonists may delay gastric emptying and elevate the risk of aspiration, whereas SGLT2 inhibitors are associated with an increased risk of perioperative euglycemic ketoacidosis. Therefore, to ensure patient safety during the perioperative period, it is crucial to conduct thorough medication reconciliation and facilitate multidisciplinary coordination [23].

This review has several limitations. First, as a narrative review, the selection of articles was based on our judgment rather than a systematic search protocol. Second, the included studies were very different in terms of their methods and patient groups, which makes it difficult to compare them directly. Finally, most research in this area consists of small observational studies, and there is a clear lack of high-quality randomized clinical trials specifically on oral surgery.

Future research should focus on better defining clinically useful glycemic thresholds for specific oral surgical procedures and identifying patients who would benefit from enhanced local or systemic preventive strategies.

Conclusions

Diabetes increases the perioperative risk in oral surgery, however, it is not a contraindication to treatment when patients are properly assessed and prepared. Individualized preoperative evaluation, glycemic control, careful surgical technique, and close postoperative follow-up are essential for safe management of these patients.

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REFERENCES

1. Crowley, K., O Scanaill, P., Hermanides, J., & Buggy, D. J. (2023). Current practice in the perioperative management of patients with diabetes mellitus: A narrative review. *British Journal of Anaesthesia*, 131(2), 242–252. <https://doi.org/10.1016/j.bja.2023.02.039>
2. Kayes, M. N., Prodhon, N. K., & Malik, R. H. (2014). Perioperative management of diabetes: A review. *Delta Medical College Journal*, 2(2), 71–76. <https://doi.org/10.3329/dmcj.v2i2.20528>
3. Nagni, M., Severino, M., Redi, L., Zizza, A., Pancrazi, G. L., Vavassori, E., et al. (2024). Possible complications in oral surgery and their management in patients affected by type 1 diabetes: Narrative review. *Oral Implantology*, 16(1), 32–37. <https://doi.org/10.11138/oi16132-37>
4. Cunha, C. E. S., Costa, M. R. C., Souza, M. F., Souza, D. S. M., Silva, I. L. R. R., Meneses, K. S., et al. (2024). Atendimento para cirurgia oral em pacientes diabéticos: Revisão narrativa da literatura. *Uniciencias*, 28(1), 44–49. <https://doi.org/10.17921/1415-5141.2024v28n1p44-49>
5. Allyn, S., Bentov, N., & Dillon, J. K. (2024). Perioperative optimization and management of the oral and maxillofacial surgical patient: A narrative review on updates in anticoagulation, hypertension and diabetes medications. *Journal of Oral and Maxillofacial Surgery*, 82(3), 364–375. <https://doi.org/10.1016/j.joms.2023.11.015>
6. Yoo, H. K., & Serafin, B. L. (2006). Perioperative management of the diabetic patient. *Oral and Maxillofacial Surgery Clinics of North America*, 18(2), 255–260. <https://doi.org/10.1016/j.coms.2005.12.003>
7. Al-Haddad, A., Hassona, Y., Silawi, A., & Al Kayed, A. (2021). A narrative review of diabetes mellitus: An update for dentists. *Saudi Journal of Oral Sciences*, 8(1), 2–8. https://doi.org/10.4103/sjos.SJOralSci_68_20
8. Bergman, S. A. (2007). Perioperative management of the diabetic patient. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*, 103(6), 731–737. <https://doi.org/10.1016/j.tripleo.2006.11.029>
9. Dhinsa, B. S., Khan, W. S., & Puri, A. (2010). Management of the patient with diabetes in the perioperative period. *Journal of Perioperative Practice*, 20(10), 364–367. <https://doi.org/10.1177/175045891002001002>
10. Todor, L., Ravis, M., Popovici, R. A., Cosoroaba, R. M., Todor, S. A., Roi, C., et al. (2022). Peculiarities of tooth extraction in patients with diabetes. *Medicine in Evolution*, 28(4), 483–491. <https://doi.org/10.70921/medev.v28i4.1056>
11. Vegh, D., Bencze, B., Banyai, D., Vegh, A., Rozsa, N., Nagy Dobo, C., et al. (2023). Preoperative HbA1c and blood glucose measurements in diabetes mellitus before oral surgery and implantology treatments. *International Journal of Environmental Research and Public Health*, 20(6), Article 4745. <https://doi.org/10.3390/ijerph20064745>
12. Cabon, J., Pejas, J., Zawilska, A., & Trzcionka, A. (2023). Diabetes in the context of dental treatment in an interdisciplinary approach. *Journal of Education, Health and Sport*, 13(5), 38–45. <https://doi.org/10.12775/JEHS.2023.13.05.005>
13. Aronovich, S., Skope, L. W., Kelly, J. P. W., & Kyriakides, T. C. (2010). The relationship of glycemic control to the outcomes of dental extractions. *Journal of Oral and Maxillofacial Surgery*, 68(12), 2955–2961. <https://doi.org/10.1016/j.joms.2010.05.006>
14. Huang, S., Dang, H., Huynh, W., Sambrook, P. J., & Goss, A. N. (2013). The healing of dental extraction sockets in patients with type 2 diabetes on oral hypoglycaemics: A prospective cohort. *Australian Dental Journal*, 58(1), 89–93. <https://doi.org/10.1111/adj.12029>

15. Chidambaram Shathviha, P., Sherlin, H., & Mathew, M. (2020). Healing of extraction socket in diabetic patients: A hospital based retrospective study. *International Journal of Research in Pharmaceutical Sciences*, 11(Suppl. 3). <https://doi.org/10.26452/ijrps.v11ispl3.3448>
16. Nityasri, A., & Prasad, K. (2025). Influence of glycemic control, use of adjuncts and antibiotic prophylaxis on socket healing in diabetics: A review of current clinical guidelines. *International Journal of Scientific Research*. <https://doi.org/10.36106/ijsr/2808335>
17. Yang, S., Li, Y., Liu, C., Wu, Y., Wan, Z., & Shen, D. (2022). Pathogenesis and treatment of wound healing in patients with diabetes after tooth extraction. *Frontiers in Endocrinology*, 13, Article 949535. <https://doi.org/10.3389/fendo.2022.949535>
18. Tkachuk, S. S., Tkachuk, O. V., Galagdina, A. A., Povar, M. A., & Perepeliuk, M. D. (2020). Current views on pathogenesis of oral complications with diabetes mellitus: Literature review. *Journal of Education, Health and Sport*, 10(7), 366–376. <https://doi.org/10.12775/JEHS.2020.10.07.039>
19. Sykara, M., Kourtesi, A., Mavrogiannis, M., Almpiani, K., & Tzerbos, F. (2022). The necessity of administrating antibiotic prophylaxis to patients with diabetes mellitus prior to oral surgical procedures: A systematic review. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, 16(11), Article 102667. <https://doi.org/10.1016/j.dsx.2022.102667>
20. Taylor, G. W. (2003). The effects of periodontal treatment on diabetes. *Journal of the American Dental Association*, 134(1), 41–48. <https://doi.org/10.14219/JADA.ARCHIVE.2003.0371>
21. Ata-Ali, F., Melo, M., Cobo, T., Nagasawa, M. A., Shibli, J. A., & Ata-Ali, J. (2020). Does non-surgical periodontal treatment improve glycemic control? A comprehensive review of meta-analyses. *Journal of the International Academy of Periodontology*, 22(4), 205–222.
22. Grant, B., & Chowdhury, T. (2021). New guidance on the perioperative management of diabetes. *Clinical Medicine*, 21(4), e410–e411. <https://doi.org/10.7861/clinmed.2021-0355>
23. Goron, A. R., Connolly, C., Valdez-Sinon, A. N., Hesson, A., Helou, C., & Kirschen, G. W. (2024). Anti-hyperglycemic medication management in the perioperative setting: A review and illustrative case of an adverse effect of GLP-1 receptor agonist. *Journal of Clinical Medicine*, 13(20), Article 6259. <https://doi.org/10.3390/jcm13206259>