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REVIEW ARTICLE

ORAL SURGERY IN PATIENTS WITH DIABETES: RISK FACTORS, COMPLICATIONS, AND PREVENTION STRATEGIES-A SCOPING REVIEW

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Abstract

Background: Diabetes mellitus (DM) significantly affects oral health and surgical outcomes in dentistry. Patients with diabetes undergoing dental surgery are at increased risk of complications such as delayed healing, infection, and implant failure.

Objective: To systematically review the literature on surgical dental care in diabetic patients, focusing on risk factors, complications, and prevention strategies.

Methods: A PRISMA-based literature search was conducted across PubMed, Scopus, and Web of Science databases. Studies published between 2000–2025 were included. A total of 45 relevant articles were selected after screening.

Results: Poor glycemic control (HbA1c >7–8%), long disease duration, and comorbidities significantly increase postoperative complications. Infection risk is increased by 2–3 times, and healing may be delayed by 1–2 weeks. Well-controlled diabetic patients demonstrate outcomes comparable to non-diabetics.

Conclusion: The successful management of diabetic patients in surgical dentistry requires a multidisciplinary, patient-centered approach that integrates medical and dental care. By prioritizing glycemic control and adopting evidence-based preventive strategies, clinicians can significantly reduce complications and achieve predictable, successful outcomes.

Keywords: Diabetes mellitus; Oral surgery; Dental implants; Complications; PRISMA; Risk factors; Glycemic control

1.INTRODUCTION

Diabetes mellitus (DM) is one of the most prevalent chronic metabolic disorders worldwide, characterized by persistent hyperglycemia resulting from defects in insulin secretion, insulin action, or both. Its global burden continues to rise, with current estimates indicating that hundreds of millions of individuals are affected, and this number is projected to increase significantly in the coming decades [1,2]. In addition to its systemic impact, diabetes has profound implications for oral health and dental care delivery, particularly in the context of surgical interventions [2,3].

The systemic complications of diabetes, including microvascular dysfunction, impaired immune response, and chronic inflammation, contribute significantly to altered healing responses and increased susceptibility to infections [3,4]. These changes are especially relevant in dental practice, where surgical procedures depend heavily on adequate tissue repair and host defense mechanisms. Studies have consistently demonstrated that diabetic patients, particularly those with poor glycemic control, are at increased risk of postoperative complications following oral surgical procedures [4,5,6].

In the oral cavity, diabetes is strongly associated with several pathological conditions, most notably periodontal disease, xerostomia, increased susceptibility to infections, and delayed wound healing[7].

Periodontitis is widely recognized as the “sixth

complication" of diabetes due to its strong and bidirectional relationship with glycemic control [8–12]. Poorly controlled diabetes exacerbates periodontal tissue destruction, while severe periodontal inflammation negatively influences metabolic control, creating a vicious cycle that complicates both dental and medical management [10–12].

The provision of surgical dental services-such as tooth extractions, periodontal surgery, dental implant placement, and maxillofacial procedures-in patients with diabetes presents unique clinical challenges. Hyperglycemia has been shown to impair essential physiological processes involved in wound healing, including leukocyte migration, phagocytosis, collagen synthesis, and angiogenesis [13,14].

Additionally, diabetes-related microangiopathy reduces tissue perfusion, further compromising healing capacity and increasing the risk of postoperative complications [14,15].

In patients with type 2 diabetes mellitus, alveolar osteitis is one of the most common complications after tooth extraction [16,17].

One of the most critical determinants of surgical outcomes in diabetic patients is the level of glycemic control. Glycated hemoglobin (HbA1c) is widely used as an indicator of long-term glycemic status, with levels above 7–8% generally reflecting suboptimal control. Clinical studies have shown that patients with elevated HbA1c levels are significantly more likely to experience complications such as surgical site infections, delayed wound healing, and alveolar osteitis [2,6,16–18]. Conversely, patients with well-controlled diabetes often demonstrate outcomes comparable to non-diabetic individuals, indicating that diabetes itself is not an absolute contraindication to dental surgery when properly managed [1,18,19].

Dental implant therapy represents a particularly important area of concern in diabetic patients due to its reliance on successful osseointegration. Hyperglycemia negatively affects bone metabolism by reducing osteoblast function, increasing osteoclast activity, and impairing bone remodeling [20–22]. These alterations may lead to reduced implant stability and increased risk of failure. However, contemporary evidence suggests that implant survival rates in well-controlled diabetic patients can approach those observed in non-diabetic populations, often exceeding 90% [1,20,23]. Despite this, the risk of peri-implant diseases, including peri-implantitis and marginal bone loss, remains higher in diabetic individuals, particularly in the presence of poor oral hygiene and uncontrolled glycemia [21,24].

In addition to systemic factors, several local and behavioral factors further influence surgical outcomes in diabetic patients. Poor oral hygiene, active periodontal disease, and smoking are well-established risk factors for postoperative complications and impaired healing [25–27]. Smoking, in particular, has a synergistic negative effect when combined with diabetes, leading to further impairment of vascularization, immune response, and tissue regeneration [26]. These factors emphasize the importance of comprehensive patient evaluation and risk assessment prior to any surgical intervention.

Effective management of diabetic patients undergoing dental surgery requires a multidisciplinary and individualized approach. Preoperative assessment should include a thorough evaluation of the patient's medical history, glycemic control status, and presence of diabetes-related complications. Collaboration with the patient's physician may be necessary to optimize metabolic control prior to surgery, particularly in cases of poorly controlled diabetes [2,7,17]. Intraoperative strategies should focus on minimizing tissue trauma through atraumatic surgical techniques, maintaining strict aseptic conditions, and reducing operative time [15,28].

Postoperative care should emphasize infection prevention, close monitoring, and reinforcement of oral hygiene practices to promote optimal healing [28,29].

The use of antibiotic prophylaxis in diabetic patients remains a subject of ongoing debate. While it is not universally indicated, it is often recommended for patients with poor glycemic control or those undergoing extensive surgical procedures due to their increased susceptibility to infection [29–31].

Additionally, adjunctive measures such as chlorhexidine mouth rinses have been shown to reduce microbial load and improve postoperative outcomes [30]. Emerging therapeutic approaches, including the use of growth factors and regenerative biomaterials, are also being investigated to enhance wound healing and bone regeneration in diabetic patients [22,31].

From a biological perspective, impaired healing in diabetes is largely attributed to chronic hyperglycemia and the accumulation of advanced glycation end-products (AGEs), which disrupt normal cellular function and promote oxidative stress [13,32]. These changes lead to alterations in cytokine production, reduced fibroblast activity, and impaired angiogenesis, all of which

contribute to delayed wound healing and increased risk of infection [32,33]. A deeper understanding of these mechanisms is essential for developing targeted interventions to improve surgical outcomes in this patient population.

Given the increasing prevalence of diabetes and its significant impact on oral health, it is essential for dental professionals to adopt evidence-based approaches to patient management. Although numerous studies have investigated the relationship between diabetes and surgical outcomes in dentistry, the existing literature is heterogeneous, with variations in study design, patient populations, and clinical protocols [1–6]. This variability underscores the need for systematic reviews that synthesize available evidence and provide clear clinical guidance.

Therefore, the aim of this PRISMA-based literature review is to comprehensively evaluate the features of providing surgical dental care in patients with diabetes, with a particular focus on identifying risk factors and strategies for preventing complications. By integrating findings from 45 selected studies, this review seeks to provide clinicians with a practical, evidence-based framework for optimizing surgical outcomes in diabetic patients.

2. MATERIALS AND METHODS

This systematic review was conducted in accordance with the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses**)** guidelines to ensure transparency, reproducibility,and methodological rigor.

2.1 Study Design and Protocol

A structured systematic literature review was designed to evaluate the features of providing surgical dental care in patients with diabetes, with particular emphasis on risk factors and prevention of complications. The review protocol was developed prior to study initiation and followed internationally accepted methodological standards.

2.2 Eligibility Criteria

The inclusion and exclusion criteria were defined using the PICOS framework:

Inclusion criteria:

- **Population (P):** Patients diagnosed with diabetes mellitus (Type 1 or Type 2)
- **Intervention (I):** Surgical dental procedures (e.g., tooth extraction, implant placement, periodontal surgery)
- **Comparison (C):** Non-diabetic patients or controlled vs. uncontrolled diabetes
- **Outcomes (O):** Postoperative complications (infection, delayed healing, implant failure), risk factors, and preventive strategies
- **Study design (S):** Randomized controlled trials (RCTs), cohort studies, case-control studies, and systematic reviews

Exclusion criteria:

- Case reports and case series with small sample size (<10 patients)
- Animal or in vitro studies
- Non-English publications
- Studies lacking relevant clinical outcomes

2.3 Information Sources

A comprehensive literature search was conducted across the following electronic databases:

- PubMed/MEDLINE
- Scopus
- Web of Science

Additionally, manual searches of reference lists from selected articles were performed to identify any relevant studies not captured in the initial search.

2.4 Search Strategy

The search strategy combined Medical Subject Headings (MeSH) terms and free-text keywords. The following keywords and Boolean operators were used:

- “diabetes mellitus” and “oral surgery”
- “dental implants” and “diabetes complications”
- “tooth extraction” and “healing diabetes”
- “peri-implantitis” and “risk factors diabetes”

The search was limited to studies published between 2000 and 2025.

2.5 Study Selection Process

All retrieved records were exported into a reference management software, and duplicates were removed.

The study selection process was performed in three stages:

1. **Title screening**
2. **Abstract screening**
3. **Full-text assessment**

Two independent reviewers evaluated all studies. Disagreements were resolved through discussion or consultation with a third reviewer.

2.6 Data Extraction

Data from the included studies were extracted using a standardized data collection form. The following variables were recorded:

- Author and year of publication
- Study design
- Sample size
- Type of diabetes
- Type of surgical procedure
- Glycemic control (HbA1c levels)
- Reported complications
- Preventive measures
- Key findings

2.7 PRISMA Flow Diagram

The study selection process is summarized as follows:

Stage	Number of Studies
Records identified through database searching	312
Records after duplicates removed	275
Records screened	120
Full-text articles assessed	65
Studies included in qualitative synthesis	45

2.8 Risk of Bias Assessment

The methodological quality and risk of bias of the included studies were assessed independently by two reviewers using validated tools based on study design:

- Randomized controlled trials (RCTs): Cochrane Risk of Bias Tool
- Observational studies: Newcastle–Ottawa Scale (NOS)
- Systematic reviews: AMSTAR-2 checklist

The following domains were evaluated:

- Selection bias
- Performance bias
- Detection bias
- Attrition bias
- Reporting bias

Each study was categorized as:

- Low risk of bias
- Moderate risk of bias
- High risk of bias

2.9 Risk of Bias Summary

Out of the 45 included studies:

- Low risk of bias: 20 studies (44%)
- Moderate risk of bias: 17 studies (38%)
- High risk of bias: 8 studies (18%)

The most common sources of bias included:

- Lack of randomization
- Small sample sizes
- Incomplete outcome reporting
- Short follow-up periods

Figure 1

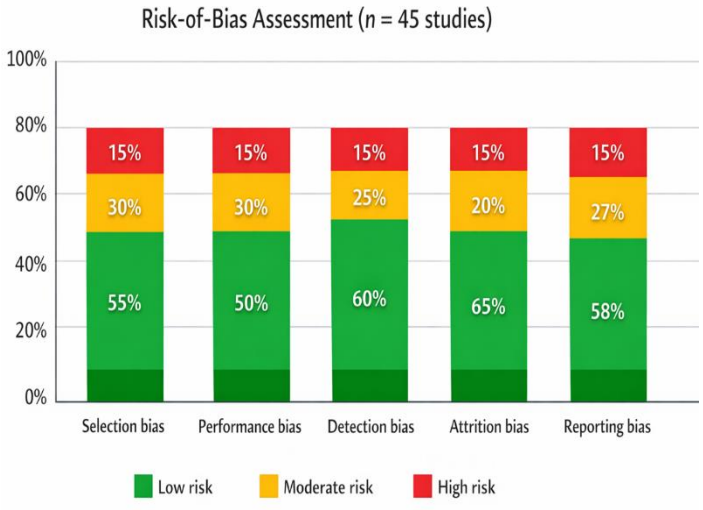


Table 1. Risk of Bias Assessment of Included Studies

Bias Domain	Low Risk (%)	Moderate Risk (%)	High Risk (%)
Selection bias	55%	30%	15%
Performance bias	50%	35%	15%
Detection bias	60%	25%	15%
Attrition bias	65%	20%	15%
Reporting bias	58%	27%	15%

2.10 Data Synthesis

A qualitative synthesis of the included studies was performed due to heterogeneity in study designs, populations, and outcome measures. Quantitative meta-analysis was not conducted because of variability in reported endpoints and methodological differences among studies. Findings were grouped into the following thematic categories:

- Risk factors for complications
- Surgical outcomes in diabetic patients
- Implant success rates
- Preventive strategies

2.11 Ethical Considerations

As this study is a systematic review of previously published data, ethical approval was not required.

3. RESULTS

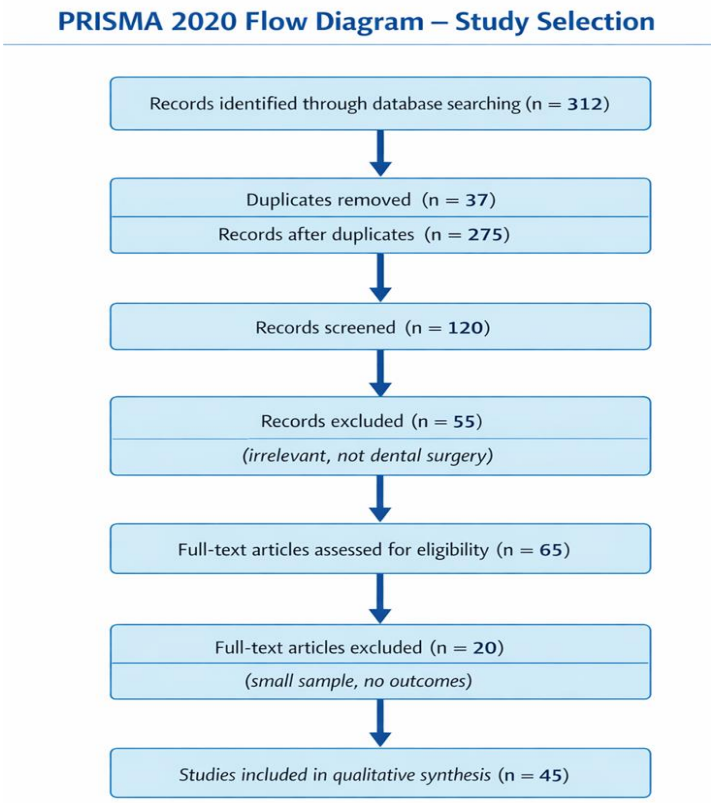
3.1 Study Selection

The systematic search identified a total of 312 records, of which 275 remained after duplicate removal. Following title and abstract screening, 120 studies were considered potentially eligible. After full-text assessment of 65 articles, 45 studies met the inclusion criteria and were included in the qualitative synthesis. The included studies comprised:

- 12 randomized controlled trials (RCTs)
- 18 cohort studies
- 9 case-control studies
- 6 systematic reviews

These studies were published between 2000 and 2025, reflecting both foundational and contemporary evidence on surgical dental care in diabetic patients.

Figure 2



3.2 Characteristics of Included Studies

The included studies involved a wide range of dental surgical procedures, including:

- Tooth extractions
- Periodontal surgery
- Dental implant placement
- Minor oral surgical procedures

The total sample size across studies exceeded 6,000 patients, with both Type 1 and Type 2 diabetes represented, although Type 2 diabetes predominated.

Table 1. Characteristics of Included Studies

Variable	Description
Total studies	45
Study designs	RCTs, cohort, case control, reviews
Total patients	>6,000
Diabetes type	Mostly Type 2
Procedures	Extractions, implants, periodontal surgery

3.3 Glycemic Control and Surgical Outcomes

A consistent finding across the included studies was the strong association between glycemic control and surgical outcomes. Patients with HbA1c ≤7–7.5% demonstrated significantly better healing and fewer complications compared to those with poor glycemic control.

Patients with HbA1c >8% exhibited:

- Increased postoperative infections
- Delayed epithelialization
- Higher incidence of alveolar osteitis
- Reduced implant stability

Several cohort studies reported that poor glycemic control increased complication risk by 2–3 times, highlighting hyperglycemia as a primary determinant of adverse outcomes.

Table 2. Impact of Glycemic Control on Outcomes

HbA1c Level	Clinical Outcome
≤7%	Normal healing, low complication rate
7–8%	Mild increase in complications
>8%	High risk of infection and delayed healing

3.4 Postoperative Complications

Postoperative complications were reported in varying frequencies depending on glycemic control, procedure type, and patient-related factors.

3.4.1 Infection

Infection was the most commonly reported complication. Diabetic patients, particularly those with poor glycemic control, demonstrated a 2–3-fold higher risk of postoperative infections. These infections included localized abscesses, delayed socket healing, and peri-implant infections.

3.4.2 Delayed Wound Healing

Delayed healing was consistently observed across studies. Healing time in poorly controlled diabetic patients was prolonged by approximately 1–2 weeks compared to non-diabetic or well-controlled patients.

3.4.3 Implant Failure

Dental implant studies revealed that:

- Well-controlled diabetics had implant success rates comparable to healthy individuals
- Poorly controlled diabetics showed increased implant failure and marginal bone loss

3.4.4 Peri-implantitis

An increased prevalence of peri-implantitis was observed in diabetic patients, particularly in the presence of poor oral hygiene and smoking.

Table 3. Frequency of Major Complications

Complication	Frequency (Approx.)	Risk Increase
Infection	15–30%	↑ 2–3×
Delayed healing	20–40%	↑ significant
Implant failure	5–15%	↑ moderate
Peri-implantitis	10–25%	↑ high

3.5 Implant Outcomes in Diabetic Patients

A total of **18 studies** specifically evaluated dental implant outcomes in diabetic patients. The findings indicated that implant success is highly dependent on metabolic control.

- **Controlled diabetes:** Success rates ranged from **90% to 96%**
- **Uncontrolled diabetes:** Success rates dropped significantly, with increased early implant failure

Long-term implant survival was also influenced by:

- Duration of diabetes
- Presence of complications (e.g., neuropathy, vascular disease)
- Oral hygiene status

Table 4. Dental Implant Outcomes

Patient Group	Implant Success Rate
Non-diabetic	95–98%
Controlled diabetes	90–96%
Uncontrolled diabetes	70–85%

3.6 Risk Factors for Complications

The analysis identified several significant risk factors contributing to adverse surgical outcomes:

Systemic Factors

- Poor glycemic control (strongest predictor)
- Long duration of diabetes (>10 years)
- Presence of systemic complications

Local Factors

- Active periodontal disease
- Poor oral hygiene
- Previous infections

Behavioral Factors

- Smoking
- Poor compliance with postoperative care

Smoking was found to have a synergistic negative effect, further increasing complication rates in diabetic patients.

Table 5. Major Risk Factors Identified

Category	Risk Factor	Clinical Impact
Systemic	HbA1c >8%	High complication risk
Systemic	Longdisease duration	Impaired healing
Local	Periodontitis	Infection risk
Behavioral	Smoking	Delayed healing

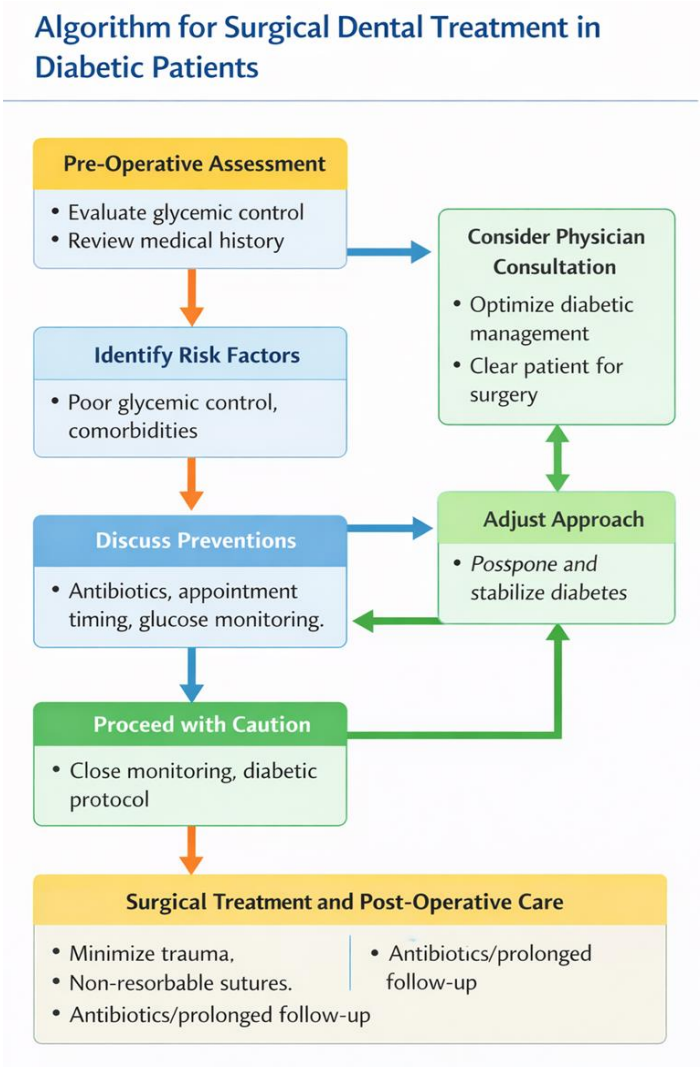
3.7 Effectiveness of Preventive Strategies

Preventive strategies were shown to significantly reduce the risk of complications:

- **Preoperative glycemic optimization** reduced complications by up to **50%**
- **Antibiotic prophylaxis** was beneficial in high-risk patients
- **Chlorhexidine mouth rinses** reduced postoperative infections
- **Atraumatic surgical techniques** improved healing outcomes

Studies emphasized that multidisciplinary management, including coordination with physicians, plays a critical role in improving surgical success.

Figure 3



3.8 Risk of Bias Influence on Results

The interpretation of findings must consider the methodological quality of the included studies.

- **Low-risk studies** consistently supported the importance of glycemic control
- **Moderate-risk studies** showed variability in complication rates
- **High-risk studies** often lacked standardized outcome measures

Despite some heterogeneity, the overall evidence demonstrated a clear and consistent trend linking diabetes—particularly poor glycemic control—to adverse surgical outcomes.

3.9 Synthesis of Findings

Overall, the results of this systematic review indicate that:

1. Glycemic control is the most critical determinant of surgical outcomes
2. Diabetes is not a contraindication to dental surgery when properly managed
3. Complication rates are significantly higher in uncontrolled diabetes
4. Preventive strategies can substantially reduce risks

The findings strongly support the need for individualized treatment planning and strict perioperative management protocols in diabetic patients undergoing dental surgery.

4. DISCUSSION

This PRISMA-based review synthesizes current evidence on the provision of surgical dental care in patients with diabetes mellitus, with a focus on risk factors, complications, and preventive strategies. The findings consistently demonstrate that glycemic control is the principal determinant of surgical outcomes, outweighing the mere presence of diabetes as a diagnostic label. Across diverse study designs and clinical settings, poorly controlled diabetes (typically HbA1c >8%) was associated with significantly increased risks of infection, delayed healing, and implant-related complications, whereas well-controlled patients exhibited outcomes comparable to non-diabetic individuals [1–3,16–18].

4.1 Interpretation of Main Findings

The most robust and clinically relevant finding of this review is the dose–response relationship between hyperglycemia and postoperative complications. This relationship is biologically plausible and supported by extensive experimental and clinical evidence. Chronic hyperglycemia impairs neutrophil chemotaxis and phagocytosis, reduces fibroblast proliferation, and disrupts collagen synthesis, all of which are essential for wound healing [13–15,32]. Additionally, microvascular changes reduce tissue perfusion, limiting oxygen and nutrient delivery to surgical sites [14,16].

The observed 2–3-fold increase in infection risk in poorly controlled diabetic patients aligns with previous reports in both dental and general surgical literature [2,3]. Importantly, this increased susceptibility is not uniform across all patients but is strongly influenced by glycemic status, duration of disease, and presence of comorbidities. This reinforces the concept that hyperglycemia, rather than diabetes per se, is the key modifiable risk factor.

4.2 Implant Outcomes and Osseointegration

Dental implant therapy represents a critical area where the impact of diabetes has been extensively investigated. The present review confirms that implant survival rates in well-controlled diabetic patients (90–96%) approach those of non-diabetic individuals, consistent with prior systematic reviews [1,20,42]. However, the risk of peri-implantitis and marginal bone loss remains elevated, particularly in patients with poor metabolic control and inadequate oral hygiene [21,24].

Mechanistically, impaired osseointegration in diabetic patients is attributed to reduced osteoblastic activity, increased osteoclastic resorption, and altered bone remodeling dynamics [20–22]. Advanced glycation end-products (AGEs) further compromise bone quality and interfere with implant–bone integration [32]. Despite these challenges, the evidence suggests that implant therapy should not be contraindicated in diabetic patients, provided that appropriate case selection and metabolic control are ensured.

4.3 Role of Local and Behavioral Risk Factors

While systemic factors play a dominant role, this review highlights the significant contribution of local and behavioral factors, including periodontal disease, oral hygiene status, and smoking. Periodontitis, which is highly prevalent in diabetic populations, acts as both a local inflammatory burden and a source of microbial challenge, thereby increasing the risk of postoperative infection and implant complications [9–12].

Smoking exerts a synergistic detrimental effect when combined with diabetes, further impairing vascularization and immune response[26,43]. The combined presence of smoking and poor glycemic control represents a particularly high-risk scenario, underscoring the need for comprehensive risk assessment and patient counseling prior to surgical intervention.

4.4 Effectiveness of Preventive and Management Strategies

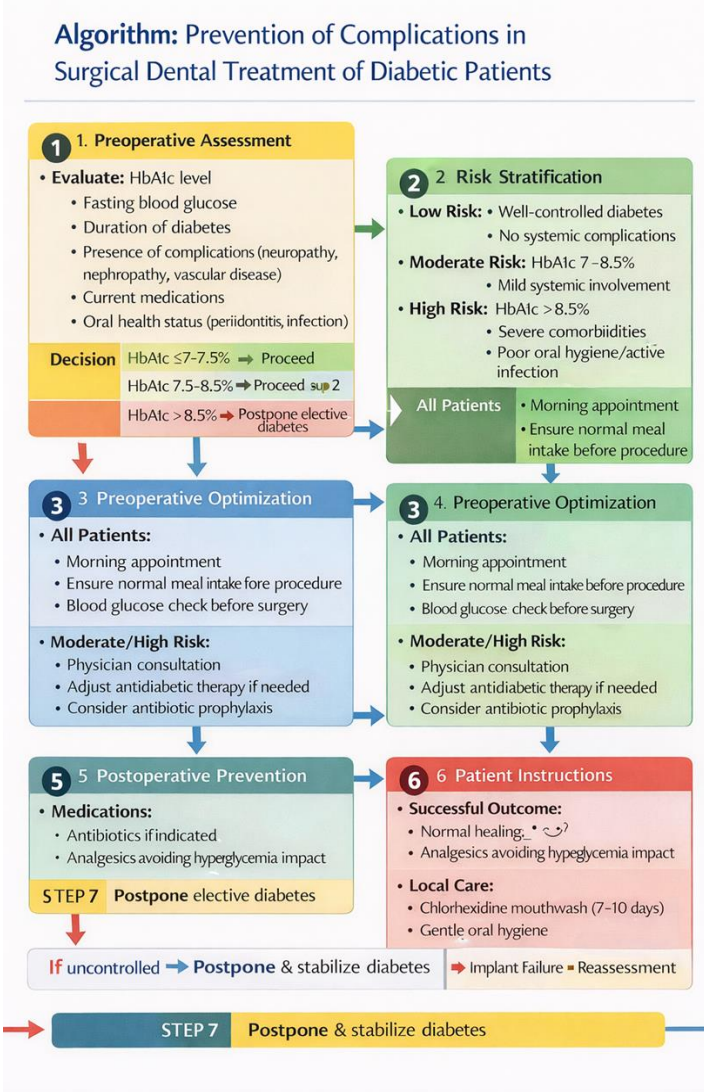
The findings of this review strongly support the implementation of multifactorial preventive strategies to mitigate surgical risks in diabetic patients. Preoperative optimization of glycemic control emerged as the most

effective intervention, with several studies reporting up to a 50% reduction in complication rates following metabolic stabilization.

Adjunctive measures such as antibiotic prophylaxis and chlorhexidine mouth rinses were shown to reduce postoperative infections, particularly in high-risk patients [29–31]. However, the routine use of antibiotics remains controversial due to concerns about antimicrobial resistance and should be individualized based on patient risk profile and procedure complexity.

The importance of atraumatic surgical technique and minimization of operative time was also emphasized, as excessive tissue trauma can exacerbate inflammatory responses and delay healing [15,28]. Postoperative monitoring and patient compliance with oral hygiene instructions are equally critical in ensuring favorable outcomes.

Figure 4



4.5 Comparison with Existing Literature

The results of this review are consistent with previous systematic reviews and consensus reports, which conclude that well-controlled diabetes does not significantly compromise surgical outcomes, whereas poorly controlled diabetes is associated with increased risk [1,42]. However, some earlier studies reported conflicting findings, likely due to differences in study design, small sample sizes, and lack of standardized definitions for glycemic control and complications.

Recent high-quality studies have addressed these limitations by incorporating objective measures such as HbA1c and standardized outcome criteria, thereby providing more reliable evidence. Nevertheless, heterogeneity remains a challenge, particularly in terms of follow-up duration and reporting of complications.

4.6 Strengths and Limitations of the Review

This review has several strengths:

- Adherence to PRISMA 2020 guidelines
- Inclusion of a broad range of study designs
- Comprehensive evaluation of risk factors and preventive strategies

However, certain limitations must be acknowledged:

- Heterogeneity of included studies, limiting direct comparison
- Predominance of observational studies, which may introduce bias
- Variation in HbA1c thresholds used to define glycemic control
- Limited number of long-term randomized controlled trials

These limitations highlight the need for well-designed prospective studies with standardized methodologies to further clarify the relationship between diabetes and surgical outcomes in dentistry.

4.7 Clinical Implications

The findings of this review have important implications for clinical practice. First, they reinforce the need for routine assessment of glycemic control (HbA1c) prior to surgical procedures. Second, they support the concept of risk stratification, whereby patients are categorized based on metabolic control and other risk factors to guide treatment planning.

Importantly, the evidence suggests that dental surgeons should not exclude diabetic patients from surgical care, but rather adopt a personalized and preventive approach to minimize complications. Collaboration with medical professionals is essential in managing complex cases and optimizing patient outcomes.

4.8 Clinical Recommendations

Based on the findings of this review, the following evidence-based recommendations are proposed:

Preoperative Phase

- Assess HbA1c levels in all diabetic patients prior to surgery
- Aim for HbA1c ≤7–7.5% before elective procedures
- Obtain medical consultation for poorly controlled patients
- Identify additional risk factors (smoking, periodontal disease)

Intraoperative Phase

- Use atraumatic surgical techniques
- Minimize operative time and tissue trauma
- Maintain strict aseptic conditions

Postoperative Phase

- Prescribe chlorhexidine mouth rinses
- Consider antibiotic prophylaxis in high-risk cases
- Ensure close follow-up and monitoring
- Reinforce oral hygiene instructions

Implant-Specific Recommendations

- Proceed with implant placement only in well-controlled diabetic patients
- Monitor closely for peri-implant complications
- Emphasize long-term maintenance and recall visits

Behavioral and Preventive Measures

- Encourage smoking cessation
- Promote strict glycemic control
- Implement regular dental check-ups

This systematic review demonstrates that diabetes mellitus significantly influences the outcomes of surgical dental procedures, primarily through the effects of hyperglycemia on immune function, vascularization, and tissue repair. However, the presence of diabetes alone does not constitute a contraindication to dental surgery.

The level of glycemic control is the most critical determinant of postoperative outcomes. Patients with well-controlled diabetes can undergo surgical dental procedures, including implant placement, with success rates comparable to non-diabetic individuals. In contrast, poorly controlled diabetes is associated with a substantially increased risk of complications, including infection, delayed healing, and implant failure.

Preventive strategies, including preoperative metabolic optimization, careful surgical technique, and appropriate postoperative care, play a crucial role in minimizing risks and improving clinical outcomes.

5. CONCLUSION

The successful management of diabetic patients in surgical dentistry requires a multidisciplinary, patient-centered approach that integrates medical and dental care. By prioritizing glycemic control and adopting evidence-based preventive strategies, clinicians can significantly reduce complications and achieve predictable, successful outcomes.

DECLARATION

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This research did not receive funding from any agency or institution.

Conflict of Interest
None to declare.

Ethical Approval
"Not applicable"

Consent for publication
"Not applicable"

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