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To Study the Relationship Between Perioperative Hyperglycemia & Postoperative Infections

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HIGHLIGHTS

- Hyperglycemia increases infection risk
- Stress hyperglycemia in euglycemics
- Glycemic control improves outcomes
- Leukocytes rise after surgery
- Diabetics have higher infections

Key Words:
Perioperative
Hyperglycemia
Postoperative infections
Stress hyperglycemia
Surgical site infection
Glycemic control

ABSTRACT

Introduction: Perioperative hyperglycemia is a common metabolic disturbance in surgical patients and is a significant predictor of adverse postoperative outcomes. It impairs immune function, disrupts neutrophil activity, delays wound healing, and increases susceptibility to infections. This effect is observed in both diabetic and non-diabetic individuals, making perioperative glycemic control essential for improving surgical outcomes. **Aim & Objective:** To study the relationship between perioperative hyperglycemia and postoperative infections, to estimate the incidence of stress-induced hyperglycemia in previously euglycemic patients, and to compare diabetic and non-diabetic patients regarding perioperative glycemic changes and subsequent bacterial infections. **Materials & Methods:** This prospective observational study was conducted in the Department of General Surgery, Johal Multispeciality Hospital, Jalandhar, Punjab, from June 1, 2023 to May 31, 2024. One hundred adult patients undergoing elective or emergency surgery under general or spinal anesthesia were included. Perioperative random blood sugar was assessed preoperatively, intraoperatively, and at 6, 24, and 48 hours postoperatively. Patients were evaluated for postoperative infections and relevant laboratory parameters. **Results:** The mean age was 51.79 years, with male predominance (65%). Mean total leukocyte count increased significantly from 9373.43/mm³ preoperatively to 11668.27/mm³ postoperatively ($p=0.0305$). Hyperglycemic patients had significantly higher random blood sugar values than euglycemic patients at all perioperative stages ($p<0.001$). Stress hyperglycemia developed in 15.38% of initially euglycemic patients ($p<0.001$). Preoperative urinary abnormalities were also noted in a small subset. Postoperative infections were markedly more common among preoperative hyperglycemic patients than euglycemic patients. **Conclusion:** Perioperative hyperglycemia is a significant modifiable risk factor for postoperative infections. Early identification, close monitoring, and glycemic control may reduce infectious complications and improve surgical outcomes.

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INTRODUCTION

Perioperative hyperglycemia has emerged as an important determinant of surgical outcome because abnormalities in glucose homeostasis during the preoperative, intraoperative, and early postoperative periods are consistently associated with adverse recovery. Surgical stress produces a characteristic endocrine and inflammatory response marked by increased secretion of catecholamines, cortisol, glucagon, and growth hormone, along with enhanced cytokine activity and insulin resistance. This metabolic shift promotes hepatic gluconeogenesis, impairs peripheral glucose uptake, and often results in transient or sustained hyperglycemia, even in patients without previously diagnosed diabetes. Contemporary perioperative literature therefore recognizes hyperglycemia not merely as a laboratory abnormality, but as a clinically relevant marker of physiological stress and a potentially modifiable contributor to postoperative morbidity [1].

The burden of hyperglycemia in surgical practice is substantial. It may occur in known diabetics because of inadequate baseline glycemic control, medication interruption, or the stress response to anesthesia and surgery; however, it is also common in non-diabetic individuals as stress hyperglycemia. This distinction is clinically important because perioperative dysglycemia in both groups has been linked with poor outcomes, including delayed wound healing, prolonged hospital stay, increased intensive care utilization, and higher mortality [2]. Among these complications, postoperative infections, especially surgical site infections, remain particularly significant because they increase patient suffering, prolong convalescence, elevate costs, and compromise overall surgical success. Major guidelines and reviews now emphasize that perioperative glycemic manage-ment should apply to both diabetic and non-diabetic adults undergoing surgery [3].

Postoperative infections represent one of the most frequent healthcare associated complications after surgery. These include superficial incisional infection, deep incisional infection, organ-space infection, pneumonia, urinary tract infection, bloodstream infection, and sepsis. Of these, surgical site infection is the most extensively studied in relation to perioperative hyperglycemia. The Centers for Disease Control and Prevention guideline for prevention of surgical site infection and the World Health Organization global SSI guidelines both highlight perioperative blood glucose control as an important infection-prevention measure [4]. The WHO specifically recommends the use of protocols for perioperative blood glucose control in adult surgical patients because improved glycemic regulation has been associated with lower SSI risk. These recommendations underscore that glucose control is no longer viewed solely as an endocrinology issue, but as a central component of perioperative infection prevention strategy [5].

The biological basis for the association between hyperglycemia and postoperative infection is well established. Elevated blood glucose impairs innate immune function by reducing neutrophil chemotaxis, phagocytosis, oxidative burst activity, and microbial killing. Hyperglycemia also promotes endothelial dysfunction, oxidative stress, pro-inflammatory signaling, and

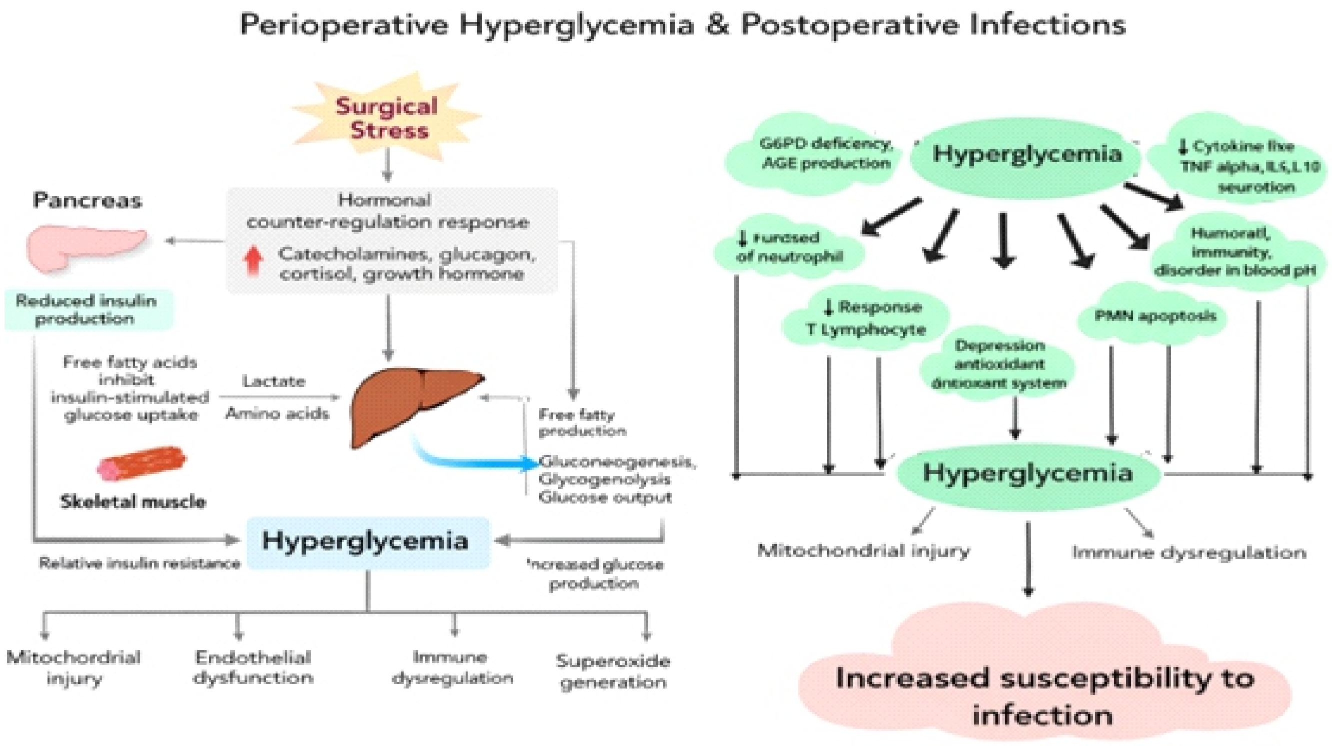

Figure 1: Perioperative Hyperglycemia and Postoperative Infections. Adopted from [1].

microvascular impairment, all of which can compromise tissue perfusion and oxygen delivery at the surgical site. In addition, excess glucose may favor bacterial proliferation in vulnerable tissues and interfere with collagen synthesis and fibroblast activity, thereby delaying wound healing and weakening tissue repair. Through these mechanisms, perioperative hyperglycemia creates an environment conducive to infection and impaired recovery. The clinical relevance of this pathophysiology is reinforced by repeated observations that rising perioperative glucose levels are associated with increasing rates of wound complications and postoperative infections [6].

Evidence consistently shows that postoperative hyperglycemia is associated with increased infection rates across surgical populations. Earlier observational studies identified it as a strong predictor of surgical site infection, while later systematic reviews confirmed that perioperative glycemic control can reduce infectious complications. However, the optimal glucose target remains uncertain. Recent evidence supports hyperglycemia as a modifiable risk factor, but also warns that overly tight insulin control may cause hypoglycemia. Therefore, current practice favors balanced glucose control within safe target ranges [7].

Current practice guidelines reflect this balance. The American Diabetes Association recommends a perioperative blood glucose target generally in the range of 80 to 180 mg/dL, while many perioperative sources support maintaining intraoperative & postoperative glucose below 180 mg/dL for most patients. Reviews from anesthesia and perioperative medicine similarly advocate structured monitoring, timely insulin administration when needed, and individualized management based on procedure type, nutritional status, diabetes status, and overall illness severity. These recommendations are especially relevant because many surgical patients have undiagnosed diabetes, prediabetes, or variable baseline control, making routine glucose surveillance during the perioperative period clinically valuable [5].

Despite growing recognition of this issue, important gaps remain. The association between perioperative hyperglycemia and postoperative infection is affected by factors such as surgery type and duration, wound class, anesthesia, obesity, nutritional status, steroid use, baseline glycemic control, and comorbidities. Stress hyperglycemia in non-diabetic patients may be overlooked, and diagnostic thresholds vary across studies. Therefore, local data are essential to identify high-risk patients, improve surveillance, and develop practical glycemic control protocols suited to available resources [1].

Studying the relationship between perioperative hyperglycemia and postoperative infections is clinically important because it may improve perioperative risk stratification, strengthen infection-prevention strategies, and promote coordinated multidisciplinary care. It also supports surgical safety by targeting a common, measurable, and potentially preventable metabolic factor. Since postoperative infections cause major clinical & economic burden, perioperative glucose control has direct relevance to patient outcomes, quality of care, and hospital practice [8]. Schematic showing how surgical stress induced hyperglycemia, via hormonal changes and metabolic alterations, impairs immune function (neutrophil dysfunction, cytokine imbalance, oxidative stress) and leads to increased susceptibility to postoperative infections (**Figure 1**).

This prospective observational study evaluates the relationship between perioperative hyperglycemia and postoperative infections. It aims to estimate the incidence of stress-induced hyperglycemia in previously euglycemic patients, assess its effect on postoperative bacterial infections, and compare diabetic and non-diabetic patients regarding perioperative glycemic changes and the subsequent development of postoperative bacterial infections.

MATERIAL & METHODS

This prospective observational study was conducted in the Department of General Surgery, Johal Multispeciality Hospital, Jalandhar, Punjab, from June 1, 2023, to May 31, 2024, to assess the relationship between perioperative hyperglycemia and postoperative infections in diabetic and non-diabetic patients undergoing elective or emergency surgery. Adults aged 18 years or more undergoing procedures under general or spinal anesthesia and providing written informed consent were included. Patients with preoperative infection, sepsis, immunocompromised status, long-term steroid or immuno-suppressive use, or pregnancy were excluded. Ethical approval was obtained, informed consent was secured, confidentiality was maintained, and participants retained the right to withdraw.

RESULTS

The study population was predominantly middle-aged and older, with most patients belonging to the 41-to-60-year age group (40%), followed by 61 to 80 years (29%). Patients aged 20 to 40 years constituted 22%, those above 80 years 6%, and those below 20 years only 3%. The mean age was 51.79 years. Males predominated (65%), while females comprised 35% of the sample. The findings show that mean hemoglobin was 12.98±1.51 g/dL, indicating no major baseline anemia in most patients. Mean TLC increased from 9373.43±3286.15/mm³ preoperatively to 11668.27±4078.43/mm³ postoperatively, with median values also rising, suggesting a postoperative inflammatory or infective response. The higher postoperative maximum TLC (21182/mm³) indicates marked leukocytosis in some patients. Overall, this rise in postoperative TLC may reflect infection risk and should be interpreted with perioperative hyperglycemia (**Table 1**). Comparison of preoperative and postoperative TLC shows a significant rise from 9373.43±3286.1/mm³ to 11668.27±4078.43/mm³ after surgery. The negative t-value ($t = -2.99$) with a p-value of 0.0305 confirms that this increase is statistically significant. This indicates a meaningful postoperative inflammatory or infective response in the study population.

Overall, rising postoperative TLC may serve as an important laboratory marker of postoperative infection risk in relation to perioperative hyperglycemia (**Table 2**). The boxplot shows that blood sugar levels remained consist-ently elevated across all perioperative stages, with median RBS values clustering around 185 to 205 mg/dL. Although there is mild fluctuation from preoperative to 48 hours postoperative periods, hyperglycemia persists throughout, indicating sustain-ed perioperative glycemic stress rather than a transient rise. The wide interquartile ranges and presence of high outliers above 300 mg/dL suggest considerable interpatient variability, with some patients experiencing marked hyperglyc-emia. Overall, this persistent elevation supports the likelihood that poor perioperative glycemic control may contribute to postoperative infectious risk (**Figure 2**). The comparison shows that patients in the hyperglycemia group had consistently higher RBS than the euglycemia group at every perioperative stage, from preoperative to 48 hours postoperative. Mean RBS remained around 217 to 228 mg/dL in the hyperglycemia group versus about 139 to 168 mg/dL in the euglycemia group, indicating sustained glycemic derangement throughout the perioperative period. The difference was statistically significant at all time points ($t=5.88$ to 18.02; $p<0.001$), confirming a clear separation between the two groups. Scientifically, this suggests that persistent perioperative hyperglycemia is a stable metabolic abnormality that may contribute to higher postoperative infectious risk (**Table 3**). **Figure 3** shows that preoperative hyperglycemia (>200 mg/dL) was more frequent than euglyce-mia, indicating that a larger proportion of surgical patients entered the perioperative period with elevated blood sugar leve-ls. This suggests that hyperglycemia was a common metabolic abnormality in the study population rather than an isolated finding. Such baseline glycemic derangement may predispose patients to impaired immune response and poor wound healing. Overall, the predominance of preoperative hyperglycemia supports its likely role as an important risk factor for post-operative infections. Among preoperatively euglycemic patien-ts, stress hyperglycemia developed in 6 of 39 cases (15.38%), while 33 patients (84.62%) remained free of it. This shows that a notable subset of initially normoglycemic patients experienced perioperative glycemic surge likely related to surgical stress response. The association was statistically highly significant ($\chi^2=18.69$, $p < 0.001$), indicating that stress hyperglycemia was not a chance occurrence. Scientifically, this finding suggests that even patients without baseline hyperglycemia may become metaboli-cally vulnerable during surgery, potentially increasing post-operative infection risk (**Table 4**). **Figure 4** demonstrates that postoperative infections were marke-dly more common in preoperative hyperglycemic patients than in euglycemic patien-ts. In contrast, most euglycemic patients remained infection-free, whereas the hyperglycemic group showed a much larger infected subgroup. This pattern indicates a strong clinical association between elevated preoperative blood sugar and subsequent postoperative infection. Overall, preoperative hyperglycemia appears to be an important predictor of adverse postoperative infectious outcomes. Preoperative URM findings were positive in 13% of patients, while 87% were within normal limits, indicating that most patients had no detectable urinary abnormality before surgery. Despite this predominance of normal findings, the distribution was statistically significant ($\chi^2=54.76$, $p<0.001$). This suggests that a definite minority entered surgery with pre-existing urinary abnormalities that could act as a potential infective focus. Scientifically, positive preoperative URM may represent an additional baseline risk factor for postoperative infectious complications alongside perioperative hyperglycemia (**Table 5**). Preoperative urine culture was positive in 15% of patients, while 85% showed no growth, indicating that most patients did not have overt urinary infection prior to surgery. However, the distribution was statisti-cally significant ($\chi^2=49$, $p<0.001$), highlighting a meaningful presence of subclinical or overt infection in a subset. This suggests that a proportion of patients entered surgery with an existing microbial burden. Scientifically, positive urine culture may act as an independent predisposing factor for postoperative infections, especially when combined with perioperative hyperglycemia (**Table 6**). **Figure 5** shows that the majority of patients had no detectable organisms in preoperative blood culture, while a smaller proportion demonstrated positive culture findings. This indicates that most patients did not have systemic infection prior to surgery, but a notable subset had bacteremia. Such a pre-existing bloodstream infection may increase susceptibility to postoperative complications. Scientifically, a positive preoperative blood culture can act as an additional risk factor for postoperative infections, particularly when combined with perioperative hyperglycemia.

Table 1: Descriptive Statistics of Age, Hemoglobin, and Total Leukocyte Count (TLC) Before and After Procedure

Descriptive Statistics	Pre-op Hb(gm%)	Pre-op TLC	Post-op TLC
Mean	12.98	9373.43	11668.27
Std	1.51	3286.15	4078.43
Min	10.55	4013.00	3996.00
Max	15.48	14985.00	21182.00
Median	13.11	9456.50	11387.00
25%	11.54	6346.00	8778.75
75%	14.14	12244.50	14269.00

anic membrane perforation. **Figure 18** examines the relationship between graft success and hearing outcomes. Among 75 patients with successful graft uptake, 57 (76%) had good hearing improvement, while 18 (24%) showed moderate improvement. Of the three graft failures, only one had good improvement and two had moderate. Fisher's Exact Test yielded a non-significant p-value (0.156), though the odds ratio (6.33) suggests a trend toward better hearing with successful grafts. These findings indicate that while graft uptake generally supports functional improvement, other factors like ossicular integrity and middle ear status may also influence hearing outcomes. **Figure 19** likely depicts the preoperative otoendoscopic view of a patient's tympanic membrane, illustrating the specific pathology prior to tympanoplasty. **Figure 20** likely shows the postoperative otoendoscopic view of the same patient's tympanic membrane at 12 weeks following tympanoplasty.

Table 2: Comparison of Preoperative and Postoperative Total Leukocyte Count (TLC) in Surgical Patients

Pre-op vs. Post-op TLC	Pre-op TLC	Post-op TLC
Mean	9373.43	11668.27
Std	3286.15	4078.43
t-statistic: -2.99		
p-value: 0.0305 (significant at $p < 0.05$)		

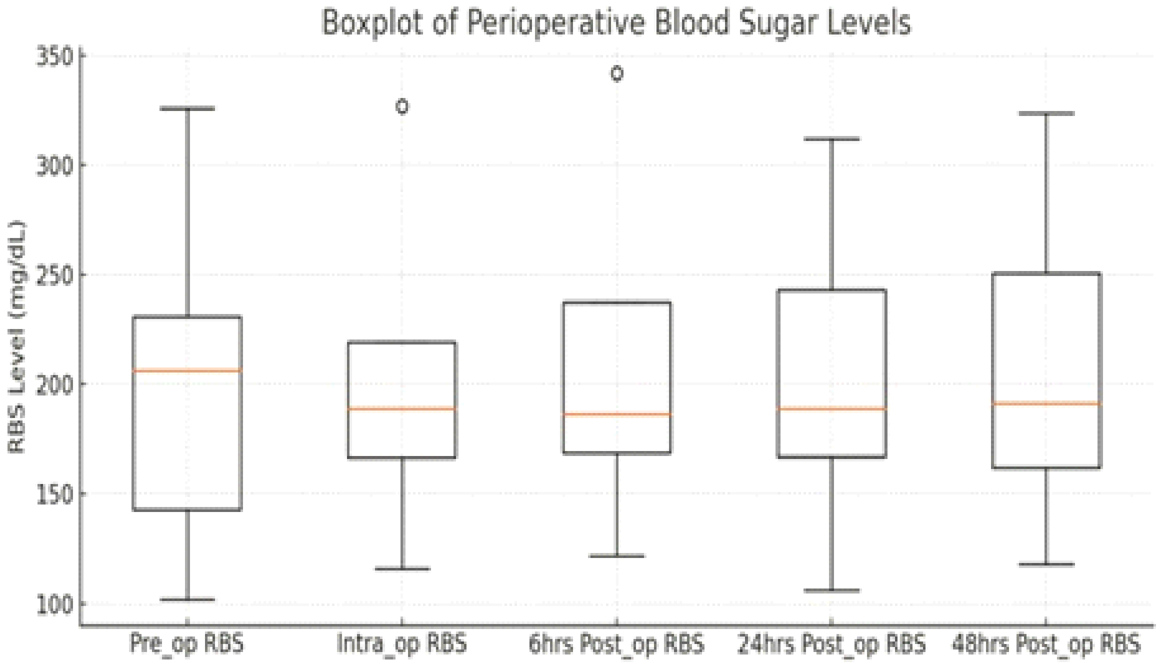

Figure 2: Descriptive Statistics of Random Blood Sugar (RBS) Levels at Different Stages

Table 3: Comparison of RBS Between Hyperglycemia and Euglycemia Group

RBS	Hyperglycemia (Mean Â± SD)	Euglycemia (Mean Â± SD)	t-statistics	p-value
Pre-op RBS	226.44 ± 24.10	138.62 ± 23.23	18.02	>0.001
Intra-op RBS	217.02 ± 50.17	165.77 ± 26.22	5.88	>0.001
6 hrs Post-op RBS	224.38 ± 51.40	167.95 ± 27.11	6.31	>0.001
24 hrs Post-op RBS	225.84 ± 50.02	166.79 ± 27.15	6.76	>0.001
48hrs Post-op RBS	227.67 ± 49.62	165.00 ± 28.80	7.15	>0.001

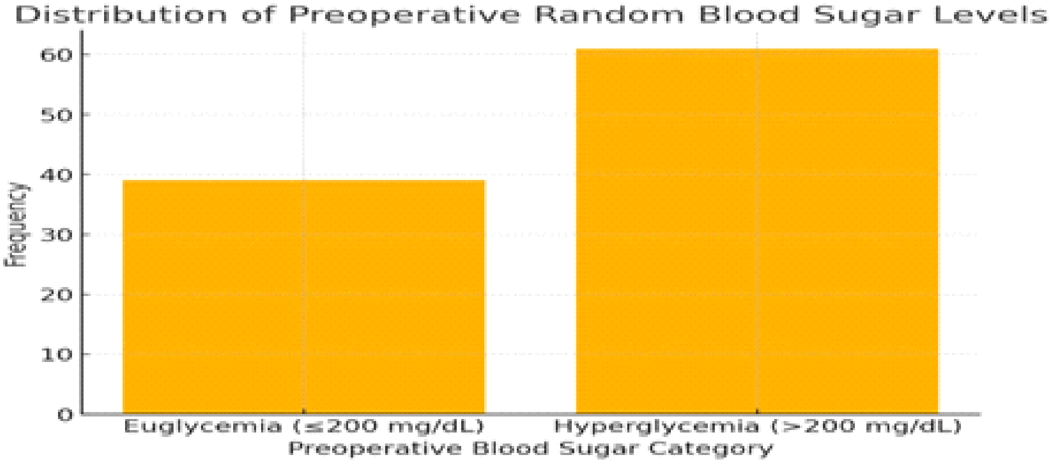

Figure 3: Distribution of Preoperative Random Blood Sugar (RBS) Levels

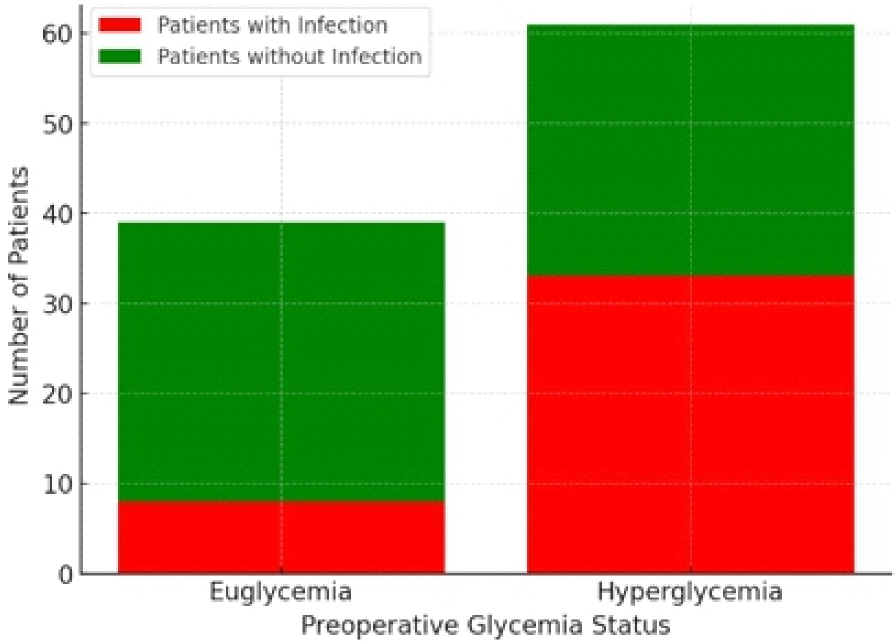

Figure 4: Comparison Between Pre-Op Hyperglycemic and Euglycemic Patients in Terms of Post-Op Infections

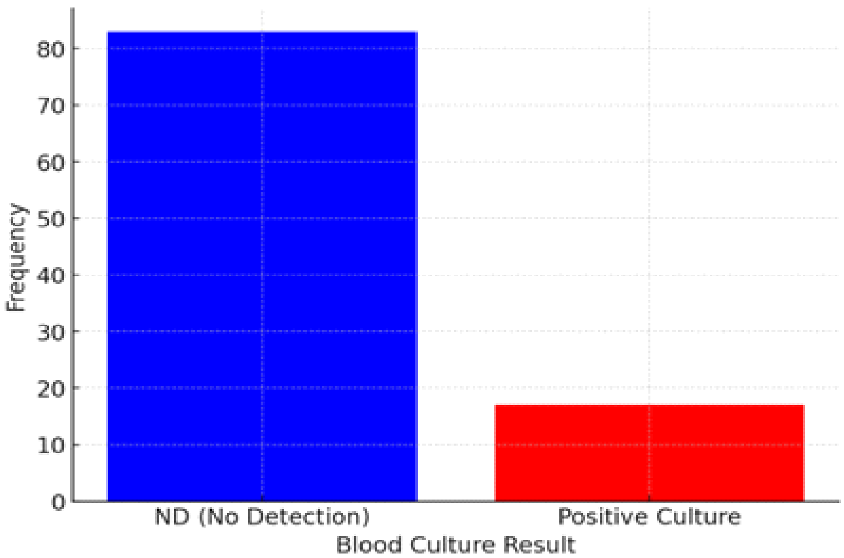

Figure 5: Distribution of Preoperative Blood Culture Results in Patients

Table 4: Incidence of Stress Hyperglycemia in Euglycemic Preoperative Patients

Stress hyperglycemia	Frequency
No, Stress Hyperglycemia	33 (84.62%)
Yes, Stress Hyperglycemia	6 (15.38%)
Total	39 (100%)
Chi-Square statistic:18.69, p-value:<0.001	

Table 5: Preoperative Urine Routine Microscopy (URM) Findings

Pre-op URM	Frequency
Positive	13
WNL	87
Total	100
Chi-Square statistic:54.76, p -value: >0.001	

Table 6: Distribution of Preoperative Urine Culture Results in Patients

Urine Culture	Frequency
WNL	85
Positive	15
Total	100
Chi-Square statistic:49, p-value: >0.001	

DISCUSSION

Perioperative hyperglycemia is increasingly recognized as an important determinant of adverse surgical outcomes because even transient perioperative glucose elevation can impair host defense, worsen inflammation, and predispose patients to postoperative infection [1]. Surgical stress induces insulin resistance and disturbed glucose metabolism, so both diabetic and non-diabetic patients may develop hyperglycemia during the perioperative period, thereby increasing the risk of wound infection, urinary infection, pneumonia, and even sepsis [9]. This pathophysiological basis is strengthened by evidence that hyperglycemia reduces neutrophil function, phagocytosis, and chemotaxis while also disturbing cytokine balance and delaying inflammatory resolution [10]. The effect is further amplified in patients with advanced age, obesity, smoking, cardiovascular disease, hypertension, and diabetes, where multiple comorbid factors interact with surgical stress to worsen immune compromise. In diabetic patients, especially, poor glycemic control provides a favorable environment for bacterial growth, biofilm formation, delayed healing, and occult infection because neuropathy and vascular insufficiency may mask or aggravate postoperative complications [11]. Hence, glucose optimization before, during, and after surgery is emphasized as a key preventive strategy, although overly strict control must be balanced against the danger of hypoglycemia [12].

The demographic profile in the discussion shows that most participants belonged to the 41 - 60 year age group, followed by 61 to 80 years, with a mean age of 51.79±18.33 years, indicating that middle-aged and older adults constituted the major surgical burden. Males predominated at 65%, like the findings of Guvener et al. (2002) and Rogers et al. (2009), suggesting that male patients may be more frequently represented in surgical cohorts with perioperative metabolic derangements and complications [13,14]. Hematological analysis showed that preoperative hemoglobin averaged 12.98 gm% and preoperative TLC averaged 9373.43 cells/mm³, rising postoperatively to 11668.27 cells/mm³, reflecting the inflammatory and immune response to surgery. This trend paralleled observations by Richards et al. (2012), McConnell et al. (2009), and Butler et al. (2005), who also linked postoperative leukocytosis with surgical stress, hyperglycemia, and infection risk [15,16,17].

A central strength of the discussion is its clear demonstration of worsening perioperative glycemia. Mean random blood sugar rose progressively from 192.19 mg/dL preoperatively to 197.03 mg/dL intraoperatively, 202.81 mg/dL at 24 hours, and 203.23 mg/dL at 48 hours, with statistical significance, supporting the view that persistent perioperative hyperglycemia is clinically meaningful. Hyperglycemic patients consistently had markedly higher glucose values than euglycemic patients at all measured time points, in agreement with Mraovic et al. (2011), and 61% of patients were hyperglycemic preoperatively, like the predictive role of elevated glucose reported by Estrada et al. (2003) [18,19]. Even among initially euglycemic patients, stress hyperglycemia occurred in 15.38%, comparable to Dronge et al.

(2006) and Vriesendorp et al. (2004) [20,21]. Most importantly, postoperative infection occurred in 54.10% of hyperglycemic patients versus 20.51% of euglycemic patients, confirming a significant association between hyperglycemia and infection, consistent with Shilling et al. (2008) [22]. Additional risk stratification was supported by significant associations of abnormal urine microscopy, positive urine culture, positive blood culture, clinical features, and wound culture positivity with postoperative infectious complications, echoing reports by Gandhi et al. (2005), Pomposelli et al.,[11,23]. Overall, the discussion supports perioperative hyperglycemia as a major modifiable predictor of postoperative infection.

CONCLUSION

Perioperative hyperglycemia was found to be a significant independent risk factor for postoperative infections in both diabetic and non-diabetic surgical patients. Elevated glucose levels during the perioperative period impair immune function, delay wound healing, and increase susceptibility to infections such as surgical site infections, urinary tract infections, and septicemia. Our findings highlight that stress-induced hyperglycemia in non-diabetic patients is equally important as chronic hyperglycemia in diabetics. Early identification, strict monitoring, and optimal glycemic control are essential to reduce postoperative complications, shorten hospital stay, and improve overall surgical outcomes and patient prognosis.

LIMITATIONS & FUTURE PERSPECTIVES

The study was limited by its single-centre design, relatively small sample size, and short duration, which may restrict generalizability. Future research could focus on multicenter studies with larger cohorts to validate findings, evaluate long-term outcomes, and explore innovative diagnostic and management strategies for appendicular perforation, improving patient prognosis and reducing complications.

CLINICAL SIGNIFICANCE

Timely detection and management of acute appendicitis are crucial to prevent perforation, reducing morbidity and mortality. The study identifies high-risk groups, such as males and individuals at age extremes, highlighting the need for targeted preventive strategies and clinical vigilance. Delayed presentation significantly increases perforation risk, underscoring the importance of early healthcare access and awareness campaigns. Postoperative complications, including surgical site infections and prolonged ileus, emphasize the need for thorough pre-operative risk assessment and tailored postoperative care. Recognizing the distal third of the appendix as the most common perforation site aids surgeons in effective intraoperative planning and management.

ABBREVIATIONS

RBS: Random Blood Sugar
TLC: Total Leukocyte Count
DM: Diabetes Mellitus
SIH: Stress-Induced Hyperglycemia
POI: Postoperative Infection
GA: General Anesthesia
SA: Spinal Anesthesia

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AUTHOR CONTRIBUTIONS

All authors significantly contributed to the study conception and design, data acquisition, or data analysis and interpretation. They participated in drafting the manuscript or critically revising it for important intellectual content, consented to its submission to the current journal, provided final approval for the version to be published, and accepted responsibility for all aspects of the work. Additionally, all authors meet the authorship criteriaoutlined by the International Committee of Medical Journal Editors (ICMJE) guidelines.

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CONFLICT OF INTEREST

Authors declared that there is no conflict of interest.

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None

ETHICAL APPROVAL & CONSENT TO PARTICIPATE

All necessary consent & approval was obtained by authors.

CONSENT FOR PUBLICATION

All necessary consent for publication was obtained by authors.

DATA AVAILABILITY

All data generated and analyzed are included within this research article. The datasets utilized and/or analyzed in this study can be obtained from the corresponding author upon a reasonable request.

USE OF ARTIFICIAL INTELLIGENCE (AI) & LARGE LANGUAGE MODEL (LLM)

The authors confirm that no AI & LLM tools were used in the writing or editing of the manuscript, and no images were altered or manipulated using AI & LLM.

AUTHOR'S NOTE

This article serves as an important educational tool for the scientific community, offering insights that may inspire future research directions. However, they should not be relied upon independently when making treatment decisions or developing public health policies.

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REFERENCES

1. Duggan EW, Carlson K, Umpierrez GE. Perioperative hyperglycemia management: an update. Anesthesiology. 2017;126(3):547-560.
2. Davis G, Fayfman M, Reyes-Umpierrez D, Hafeez S, Pasquel FJ, Vellanki P, et al. Stress hyperglycemia in general surgery: why should we care. J Diabetes Complications. 2018;32(3):305-309.
3. Rizvi AA, Chillag SA, Chillag KJ. Perioperative management of diabetes and hyperglycemia in patients undergoing orthopaedic surgery. J Am Acad Orthop Surg. 2010;18(7): 426-435.
4. Osagwu M, Okobi E, Ekor E. Postoperative infections: risk factors, prevention, and management strategies. Int J Med Sci Dent Res. 2024;7:52-76.
5. Sudhakaran S, Surani SR. Guidelines for perioperative management of the diabetic patient. Surgery Res Pract. 2015;2015:1-8.
6. Levy N, Dhatariya K. Pre-operative optimisation of the surgical patient with diagnosed and undiagnosed diabetes: a practical review. Anaesthesia. 2019;74:58-66.
7. Lai J, Li Q, He Y, Zou S, Bai X, Rastogi S. Glycemic control regimens in the prevention of surgical site infections: a meta-analysis of randomized clinical trials. Front Surg. 2022;9:1-14.
8. Ata A, Lee J, Bestle SL, Desemone J, Stain SC. Postoperative hyperglycemia and surgical site infection in general surgery patients. Arch Surg. 2010;145(9):858-864.
9. Frisch A, Chandra P, Smiley D, Peng L, Rizzo M, Gatcliffe C, et al. Prevalence and clinical outcome of hyperglycemia in the perioperative period in noncardiac surgery. Diabetes Care. 2010;33(8):1783-1788.
10. Thompson BM, Stearns JD, Apsey HA, Schlinkert RT, Cook CB. Perioperative management of patients with diabetes and hyperglycemia undergoing elective surgery. Curr Diab Rep. 2016;16(1):1-10.
11. Gandhi GY, Nuttall GA, Abel MD, Mullany CJ, Schaff HV, Williams BA, et al. Intraoperative hyperglycemia and perioperative outcomes in cardiac surgery patients. Mayo Clin Proc. 2005;80(7):862-866.
12. Ramos M, Khalpey Z, Lipsitz S, Steinberg J, Panizales MT, Zinner M, et al. Relationship of perioperative hyperglycemia and postoperative infections in patients who undergo general and vascular surgery. Ann Surg. 2008;248(4):585-591.
13. Guvener M, Pasaoglu I, Demircin M, Oc M. Perioperative hyperglycemia is a strong correlate of postoperative infection in type II diabetic patients after coronary artery bypass grafting. Endocr J. 2002;49(5):531-537.
14. Rogers SO, Zinner MJ. The role of perioperative hyperglycemia in postoperative infections. Adv Surg. 2009;43:103-109.
15. Richards JE, Kauffmann RM, Zuckerman SL, Obremskey WT, May AK. Relationship of hyperglycemia and surgical-site infection in orthopaedic surgery. J Bone Joint Surg Am. 2012;94(13):1181-1186.
16. McConnell YJ, Johnson PM, Porter GA. Surgical site infections following colorectal surgery in patients with diabetes: association with postoperative hyperglycemia. J Gastrointest Surg. 2009;13(3):508-515.
17. Butler SO, Btaiche IF, Alaniz C. Relationship between hyperglycemia and infection in critically ill patients. Pharmacotherapy. 2005;25(7):963-976.

18. Mraovic B, Suh D, Jacovides C, Parvizi J. Perioperative hyperglycemia and postoperative infection after lower limb arthroplasty. J Diabetes Sci Technol. 2011;5(2):412-418.

19. Estrada CA, Young JA, Nifong LW, Chitwood Jr WR. Outcomes and perioperative hyperglycemia in patients with or without diabetes mellitus undergoing coronary artery bypass grafting. Ann Thorac Surg. 2003;75(5):1392-1399.

20. Dronge AS, Perkal MF, Kancir S, Concato J, Aslan M, Rosenthal RA. Long-term glycemic control and post-operative infectious complications. Arch Surg. 2006;141(4): 375-380.

21. Vriesendorp TM, Morelis QJ, Devries JH, Legemate DA, Hoekstra JB. Early postoperative glucose levels are an independent risk factor for infection after peripheral vascular surgery. Eur J Vasc Endovasc Surg. 2004;28(5):520-525.

22. Shilling AM, Raphael J. Diabetes, hyperglycemia, and infections. Best Pract Res Clin Anaesthesiol. 2008;22(3):519-535.

23. Pomposelli JJ, Baxter JK 3rd, Babineau TJ, Pomfret EA, Driscoll DF, Forse RA, et al. Early postoperative glucose control predicts nosocomial infection rate in diabetic patients. JPEN J Parenter Enteral Nutr. 1998;22(2):77-81.