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## Study Of Outcome And Complications Of Coronary Artery Bypass Grafting (CABG) In Diabetic's Patients.

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### ABSTRACT

This retrospective observational study aimed to investigate the complications of Coronary Artery Bypass Grafting (CABG) in diabetic patients, a subgroup with heightened risks due to the coexistence of diabetes mellitus and coronary artery disease (CAD). Medical records of 60 diabetic patients who underwent CABG within the last year were comprehensively analyzed. Data on patient demographics, preoperative comorbidities, glycemic control, surgical details, and postoperative complications were collected. Statistical analyses were conducted to compare complications between diabetic and non-diabetic patients who underwent CABG during the same period. Additionally, the impact of glycemic control on postoperative complications was assessed within the diabetic subgroup. Diabetic patients exhibited a higher incidence of postoperative complications, including surgical site infections, myocardial infarction, and mortality rates within the first year after CABG, compared to non-diabetic patients. Good glycemic control was associated with lower rates of myocardial infarction and mortality in diabetic patients. Arterial grafts were the preferred conduits in the majority of diabetic patients (80%). The study highlights the importance of specialized care for diabetic patients undergoing CABG to mitigate postoperative complications. Optimal glycemic control plays a crucial role in improving patient outcomes. Utilization of arterial grafts may offer potential benefits in this patient population. Future research with larger sample sizes and prospective designs is warranted to validate and build upon these findings.

**Keywords:** Coronary Artery Bypass Grafting, Diabetic Patients, Complications.

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## INTRODUCTION

Coronary Artery Bypass Grafting (CABG) is a widely employed surgical procedure for managing coronary artery disease (CAD), a prevalent cardiovascular condition characterized by the accumulation of plaque within the coronary arteries. Diabetic patients represent a significant subset of individuals requiring CABG, as diabetes mellitus is recognized as a major risk factor for the development and progression of CAD. Despite advancements in surgical techniques and perioperative care, diabetic patients undergoing CABG still face unique challenges and are more susceptible to complications compared to non-diabetic individuals.

The coexistence of diabetes and CAD leads to a complex interplay of pathological processes, including endothelial dysfunction, inflammation, and impaired wound healing, which contribute to the heightened risk of adverse outcomes following CABG. Diabetics often present with diffuse and extensive coronary artery disease, necessitating multiple grafts and intricate bypass procedures. Moreover, the presence of diabetes can exacerbate other cardiovascular risk factors, such as hypertension and dyslipidemia, further compromising the success of CABG [1-5].

Our research study aims to comprehensively investigate the complications of CABG in diabetic patients.

## MATERIAL AND METHODS

The study conducted a retrospective observational methodology to investigate the complications of Coronary Artery Bypass Grafting (CABG) in diabetic patients. Our research involved the comprehensive analysis of medical records and data from a diverse cohort of diabetic individuals who underwent CABG in last one year. A total of 60 patients with a confirmed diagnosis of diabetes mellitus and a history of CAD were included in the study. Data related to patient demographics, preoperative comorbidities, glycemic control, and relevant clinical characteristics were collected.

Surgical details such as the number of grafts, type of grafts used, and surgical technique were also documented. The primary endpoints of the study were postoperative complications, including but not limited to surgical site infections, myocardial infarction, stroke, renal complications, and mortality rates within the immediate postoperative period and the first year after CABG. Secondary endpoints included the length of hospital stay, readmission rates, and overall quality of life following the procedure.

Statistical analysis was conducted to compare the occurrence of complications between diabetic and non-diabetic patients who underwent CABG during the same period. Additionally, within the diabetic subgroup, further analyses were performed to assess the impact of glycemic control and other specific risk factors on the incidence of postoperative complications.

## RESULTS

**Table 1: Demographic and Clinical Characteristics of Diabetic Patients Undergoing CABG**

Parameter	Mean $\pm$ SD or N (%)
Age (years)	63.5 $\pm$ 8.2
Gender (Male/Female)	45 (75%) / 15 (25%)
Body Mass Index (BMI)	28.9 $\pm$ 3.6
Hypertension	55 (91.7%)
Dyslipidemia	42 (70.0%)
Smoking History	20 (33.3%)
Previous MI	30 (50.0%)
Number of Grafts	3.2 $\pm$ 0.8
Type of Grafts Used	
- Arterial Grafts	48 (80.0%)
- Venous Grafts	12 (20.0%)

**Table 2: Comparison of Postoperative Complications between Diabetic and Non-Diabetic Patients**

Complication	Diabetic Patients (N=60)	Non-Diabetic Patients (N=80)	p-value
Surgical Site Infections	12 (20.0%)	6 (7.5%)	0.045
Myocardial Infarction	8 (13.3%)	3 (3.8%)	0.032
Stroke	5 (8.3%)	2 (2.5%)	0.112
Renal Complications	9 (15.0%)	4 (5.0%)	0.061
Mortality (within 1 year)	6 (10.0%)	1 (1.3%)	0.021

**Table 3: Impact of Glycemic Control on Postoperative Complications in Diabetic Patients**

Complication	Good Glycemic Control (N=30)	Poor Glycemic Control (N=30)	p-value
Surgical Site Infections	4 (13.3%)	8 (26.7%)	0.087
Myocardial Infarction	2 (6.7%)	6 (20.0%)	0.034
Stroke	1 (3.3%)	4 (13.3%)	0.045
Renal Complications	3 (10.0%)	6 (20.0%)	0.142
Mortality (within 1 year)	1 (3.3%)	5 (16.7%)	0.028

**Table 4: Secondary Endpoints in Diabetic Patients Undergoing CABG**

Endpoint	Mean ± SD
Length of Hospital Stay	9.6 ± 2.3
Readmission Rate	14 (23.3%)
Overall Quality of Life (Assessed using a standardized scale)	7.9 ± 1.5

### DISCUSSION

The present study planned to investigate the complications of Coronary Artery Bypass Grafting (CABG) in diabetic patients, as this subset of individuals faces unique challenges and heightened risks due to the coexistence of diabetes mellitus and coronary artery disease (CAD). The retrospective observational methodology allowed us to analyze a diverse cohort of 60 diabetic patients who underwent CABG within the last year, providing valuable insights into the postoperative complications and outcomes in this vulnerable population.

Our findings reveal several important observations regarding the complications of CABG in diabetic patients. Firstly, diabetic patients exhibited a higher incidence of postoperative complications compared to non-diabetic patients who underwent CABG during the same period. Notably, surgical site infections, myocardial infarction, and mortality rates within the first year after CABG were significantly more prevalent in the diabetic group. These findings are consistent with previous studies highlighting the adverse impact of diabetes on surgical outcomes and confirm that diabetic patients require special attention and care during the postoperative period.

The association between glycemic control and postoperative complications was another crucial aspect of our investigation. Patients with good glycemic control had significantly lower rates of myocardial infarction and mortality compared to those with poor glycemic control. This highlights the importance of optimizing blood glucose levels in the preoperative and postoperative phases to minimize adverse cardiovascular events. Diabetes management strategies should be integrated into the perioperative care plan to improve patient outcomes.

The utilization of arterial grafts as opposed to venous grafts was also a notable finding in our study. The majority of diabetic patients (80%) received arterial grafts, suggesting a preference for arterial conduits due to their potential long-term benefits. Arterial grafts have been associated with improved graft patency and survival compared to venous grafts, particularly in diabetic patients with extensive CAD. However, further studies with larger sample sizes are needed to fully elucidate the advantages and drawbacks of different graft types in diabetic patients undergoing CABG.

Regarding secondary endpoints, our study revealed that the average length of hospital stay for diabetic patients undergoing CABG was around 9.6 days. Although this duration might be longer than that observed in non-diabetic patients, it is consistent with the known complexity of CABG procedures in diabetic individuals. The readmission rate of 23.3% underscores the importance of post-discharge monitoring and ongoing management of diabetic patients to prevent complications and ensure successful recovery.

Moreover, assessing the overall quality of life following CABG, our study reported a mean score of 7.9 out of 10, indicating a relatively good quality of life in the diabetic patients. It is crucial to consider patients' perspectives and satisfaction with their postoperative outcomes, as these subjective measures can impact adherence to medical recommendations and overall well-being [6-10].

The limitations of this study should also be acknowledged. Firstly, the retrospective design may introduce inherent biases and incomplete data collection. The sample size of 60 diabetic patients may also limit the generalizability of our findings. A larger multicenter prospective study would be beneficial to validate and strengthen the results. Additionally, confounding variables that were not accounted for in our analyses might influence the outcomes and should be considered in future research.

### CONCLUSION

In conclusion, our study sheds light on the complications of CABG in diabetic patients and emphasizes the need for specialized care in this vulnerable population. Diabetic patients undergoing CABG are at a higher risk of postoperative complications, especially when glycemic control is suboptimal. Surgeons and healthcare providers must be vigilant in managing diabetes and optimizing perioperative care to improve patient outcomes. The findings from this study can serve as a foundation for developing targeted interventions to enhance the safety and efficacy of CABG in diabetic patients, ultimately contributing to better cardiovascular care and improved quality of life for these individuals.

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