

**Comparative Study between Tight Glycemic Control
and Moderate Glycemic Control in Patients
Undergoing Coronary Artery Bypass Grafting**

Thesis

Submitted for Partial Fulfillment of M.D. Degree in Anesthesia

By

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SUMMARY

Hyperglycemia is a normal aspect of stress response seen with the trauma of surgery, but the hyperglycemia seen in cardiac surgical patients is significant in its severity and relationship to the perioperative morbidity and mortality. The inflammatory response that produces hyperglycemia of stress consists of an endocrine response of increased circulating counter-regulatory hormones, an immune response of altered cytokine production, an autonomic response of increased sympathetic stimulation, in addition to altered insulin signaling, and insulin resistance that is observed in the myocardium.

The importance of studying the diabetic subgroup of patients individually is due to the fact that they show even more insulin resistance, greater release of pro-inflammatory mediators, and altered myocardial energetics with more inability to utilize glucose for fuel.

Cardiac surgery with cardiopulmonary bypass amplifies the stress response to cardiac surgery and results in severe intraoperative hyperglycemia caused by a surge of counter-regulatory hormones together with increased insulin resistance, and altered renal handling of glucose.

Hyperglycemia is known to be associated with poor perioperative outcome irrespective of its cause but whether the correction of hyperglycemia in CABG patients reduces perioperative morbidity and mortality still remains a subject of debate with several studies showing the beneficial effects of tight glycemic control on perioperative outcomes while other studies fail to prove any advantage of tight glycemic control over moderate glycemic control. Furthermore, currently there is no unified well accepted glycemic target.

This study compared the effect of tight glycemic control protocol (group I, 30 patients) with moderate glycemic control (group II, 30 patients) on the morbidity and mortality of those patients undergoing CABG.

All patients were continuously monitored for blood glucose levels the safety and efficacy of both protocols regarding the incidence of hyperglycemia and subsequent complications.

The results showed a decreased incidence of morbidity in the conventional glycemic control group compared to the moderate glycemic control group. This was confirmed by decreased duration of inotropic support use, attenuation of systemic inflammatory response, superiority in glucose control, target range management and more avoidance of hypoglycemic adverse effects. However there was no statistically significant effect on renal impairment, renal replacement therapy or sternal wound infection. There was no difference in the mortality rate in both groups.

From our results, we concluded that the application of dynamic moderate glycemic control protocols using continuous insulin infusion could be a cheap and effective modality for reducing morbidity in patients undergoing CABG.