

LONG-TERM GLUCOSE CONTROL AND RISK OF PERI-OPERATIVE COMPLICATION

*Acott A, Theus S, Kim LT

Central Arkansas Veterans Healthcare System, Little Rock, AR

Tight glucose control has been shown to decrease long-term complications in diabetics, and to decrease short-term post-operative complications in selected groups of patients. The impact of long-term pre-operative glucose control on short-term surgical complications is not clear. In this study, we investigated whether preoperative hemoglobin A1c (HA1c) levels correlated with the risk of postoperative surgical complications following elective surgical procedures.

We reviewed a database of 36,039 patients that underwent major surgical procedures from October, 1996 to May, 2007 (from a total of > 70,000 surgical procedures.) Of these patients, 2960 were diagnosed diabetic and had at least one HA1c level within 30 days prior to their operation. National Surgical Quality Improvement Program (NSQIP) definitions were used in determining post-operative complications.

5095 patients out of 36,039 patients experienced complications (14.1%). Of these, 780 were in the 2960 diabetic patients (26.4%) ($p \leq 0.001$, OR 2.195, CI 2.013-2.39). If the HA1c level was greater than 8.0, the odds ratio increased to 6.46 (95% CI 5.189-8.05, $p \leq 0.0001$) when compared to all surgical patients. However there was no detectable correlation between HA1c levels and risk of complication or death.

HgbA1C Level	Total	Complications (%)	p (vs. HA1c<6)	Deaths (%)	p (vs. HA1c<6)
10-17	254	63 (24.8)	0.5	8 (3.2)	0.7
9.0-9.9	167	48 (28.7)	0.86	5 (3.0)	0.7
8.0-8.9	325	69 (21.2)	0.08	17 (5.2)	0.4
7.0-7.9	520	126 (24.2)	0.3	19 (3.7)	0.9
6.0-6.9	799	228 (28.5)	0.75	39 (4.9)	0.41
<6	895	246 (27.5)		35 (3.9)	

Our data show an increased risk of surgical complications in diabetics. However there was no detectable correlation between risk of complication and HA1c level, suggesting that poor long-term glucose control may not play a major role in determining short-term surgical morbidity. Our study is limited by the fact that many diabetics may not have had preoperative HA1c levels determined. Also, despite the large size of the study population, the possibility of a Type II error exists. We conclude that diabetics have an increased risk of surgical complications, but delay of elective surgical procedures because of poor long-term glucose control is not warranted. Good peri-operative glucose control should still be maintained.