



# FACTORS INFLUENCING SUCCESS OF IMMEDIATELY-LOADED IMPLANTS IN DIABETIC PATIENTS

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## Introduction

Placement of dental implants in patients with diabetes mellitus (DM) was previously avoided due to the increased risk of delayed healing, microvascular complications, tissue damage and infections in these patients. However, under optimal glycemic control, dental implants can osseointegrate and remain functionally and esthetically stable in patients with DM in a manner similar to non-diabetic individuals.

It has been proposed that optimal glycemic control levels may help to improve the function of osteoblasts, and retard the progression of periodontal inflammation and bone loss. Periodontal therapy improves periodontal status and lower glycemic levels in patients with type-2 DM by reducing the systemic burden of inflammatory mediators that aggravate the existing metabolic disorder in patients with hyperglycemia.

It is hypothesized that routine peri-implant hygiene maintenance reduces hyperglycemia and clinical and radiographic peri-implant parameters around immediately loaded dental implants placed in type 2 diabetic patients with varying glycemic levels.

## Objective

The aim of the present 2-year follow-up study was to assess the effect of oral hygiene maintenance on HbA1c levels and peri-implant parameters around immediately loaded dental implants placed in type-2 diabetic patients with varying glycemic levels.

## Methods

### INCLUSION CRITERIA

- Patients diagnosed with type-2 DM
- Measurement of Hb1Ac levels
- Measurement of periodontal parameters

### PARTICIPANTS

- Ninety-one partially edentulous male patients
- Participants receiving one-piece implants

### GROUPING

- Group 1: 30 healthy patients, Hb1Ac < 6%
- Group 2: 30 T2DM patients, Hb1Ac 6.1% - 8%
- Group 3: 31 T2DM patients, Hb1Ac 8.1%-10%

### HEMOGLOBIN A1C LEVELS

- Measurement at baseline, 6, 12 and 24 months

### SURGICAL PROTOCOL

- Bone level implants
- Crestal bone level in anterior maxilla
- Implants immediate loaded after surgery

### NON-SURGICAL PERIODONTAL THERAPY AND ORAL HYGIENE INSTRUCTIONS.

- Enrollment in a 6 monthly periodontal/peri-implant maintenance program

### STATISTICAL ANALYSIS

- Kruskal-Wallis test
- Bonferroni *post hoc* test

## Results

	Group-1	Group-2	Group-3
Number of participants (n)	30	30	31
Mean age in years (range)	48.5 (45-52)	50.1 (46-55)	50.5 (45-59)
Preoperative mean hemoglobin A1c (range)	4.5% (4.1-5.4)	6.8% (6.4-8)	8.7% (8.2-9.7)

Table 1: Number of participants, mean age and hemoglobin A1c-levels in the study groups.

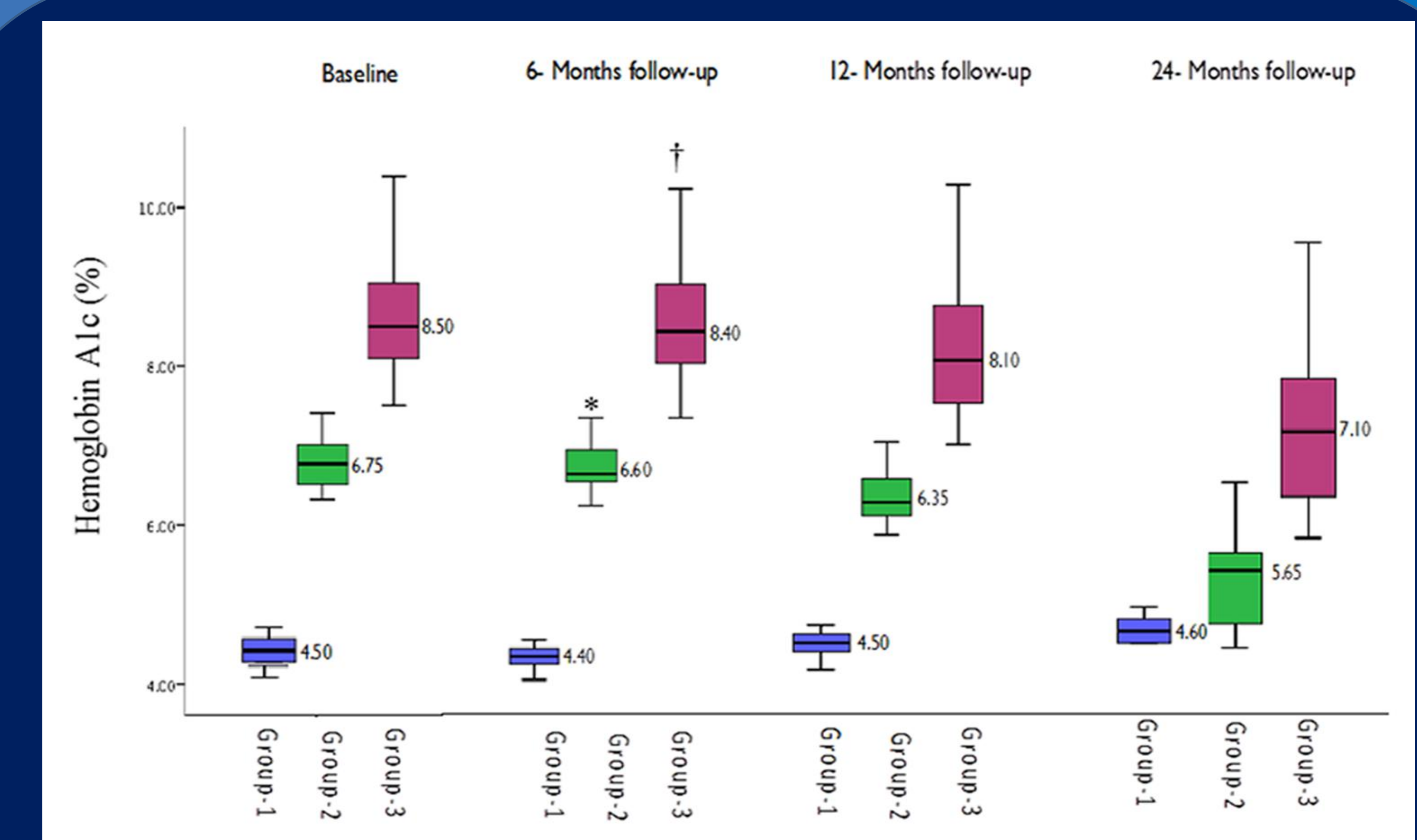


Fig. 1. Box plots showing the median hemoglobin A1c levels among patients in groups 1, 2, and 3 after 6, 12, and 24 months of follow-up. \*In Group-2, there was a significant decrease in HbA1c levels at 24-months follow-up as compared to 6-months follow-up (P = 0.01). †In Group-3, there was a significant decrease in HbA1c levels at 24-months follow-up as compared to 6-months follow-up (P = 0.003)

Follow-up	Bleeding on probing			Probing depth			Marginal bone loss (in mm)		
	6 months	12 months	24 months	6 months	12 months	24 months	6 months	12 months	24 months
Group-1	0.42±0.05	0.4±0.02	0.4±0.06	2±0.5	1.9±0.04	1.6±0.05	0.33±0.1	0.45±0.06	0.46±0.16
Group-2	0.63±0.06	0.6±0.04	0.62±0.07	2.5±0.18	2.3±0.26	2.3±0.15	0.52±0.02	0.54±0.12	0.58±0.15
Group-3	0.71±0.05	0.63±0.02	0.62±0.05	3.3±0.21	2.4±0.35	2.3±0.62	0.55±0.06	0.57±0.07	0.59±0.2

Table 2. Clinical peri-implant parameters and marginal bone loss among patients in groups 1, 2 and 3 at 6, 12 and 24 months follow-up.

## Conclusion

Oral hygiene maintenance reduces hyperglycemia and peri-implant inflammatory parameters around immediately loaded dental implants placed in type 2 diabetic patients.