



## Assessment of outcome of dental implants in HIV positive patients

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### ABSTRACT

**Background:**Dental implants are considered a favourable treatment option for the rehabilitation of patients who present partial or total edentulism. The present study was conducted to assess outcome of dental implants in HIV positive patients.

**Materials & Methods:**42 HIV positive patients of both genders were kept in group I and HIV negative (control) in group II. Two stage or single surgery was performed. Implants and restorations were assessed at 6 months intervals over a period of 3 years for stability, peri-implant health, and patient satisfaction

**Results:** Group I had 22 males and 20 females and group II had 21 males and 21 females. D1 bone was seen in 5 in group I and 14 in group II, D2 in 18 in group I and 12 in group II, D3 10 in group I and 11 in group II and D4 9 in group I and 5 in group II. The difference was significant ( $P < 0.05$ ). The mean ISQ value of implant placement (i) in group I was 78.2 and in group II was 72.1 and restoration placement (r) in group I was 82.3 and in group II was 80.4. The difference was significant ( $P < 0.05$ ). The mean GI was 0.14 in group I and 0.28 in group II. The mean PI was 0.27 in group I and 0 in group II. The difference was significant ( $P < 0.05$ ).

**Conclusion:** Human immunodeficiency virus was not a contraindication to dental implant-supported restorations.

**Key words:**Dental implants, human immunodeficiency virus, Outcome

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### Introduction

Dental implants are considered a favourable treatment option for the rehabilitation of patients who present partial or total edentulism, as survival and success rates are high.<sup>1</sup> However, treatment longevity can be reduced in patients with a compromised medical status or systemic conditions. In addition, the effects of general health problems on implant failure rates are still poorly documented, especially in human immunodeficiency virus (HIV)-positive patients.<sup>2</sup>

Dental implants can be a viable treatment option for HIV-positive patients, provided that their overall health and immune status are stable. HIV infection itself does not automatically disqualify someone from receiving dental implants.<sup>3</sup> Before proceeding with dental implant placement, a thorough medical evaluation is crucial. The patient's overall health, immune status, viral load, CD4 count, and medication regimen should be assessed.<sup>4</sup> It is essential to consult with the patient's HIV healthcare provider to ensure that their condition is stable and their immune system is functioning adequately. The patient's oral health needs to be evaluated thoroughly to identify any existing dental issues that may complicate implant treatment. Periodontal (gum) disease, tooth decay, or other oral infections should be treated before dental implant surgery.<sup>5</sup>

Due to the development of their immunological resistance and the use of antiretroviral medication (HAART), people with HIV/AIDS now have a higher life expectancy.<sup>6</sup> More HIV-positive individuals will therefore probably seek dental care, such as dental implants, for oral rehabilitation.<sup>7</sup> The present study was conducted to assess outcome of dental implants in HIV positive patients.

### Materials & Methods

The present study consisted of 42 HIV positive patients of both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. HIV patients were kept in group I and HIV negative (control) in group II. Two stage or single surgery was performed. After a six months healing period, definitive impressions were fabricated using polyvinyl siloxane impression material. Implant stability quotient values were obtained at the time of surgery and placement of the restoration. Screw retained custom titanium abutments were designed, milled, and placed with 25 N/cm torque using a calibrated torque controller. Porcelain fused-to-metal complete coverage restorations were then cemented with elastomeric resin implant cement. Implants and restorations were assessed at 6 months intervals over a period of 3 years for stability, peri-implant health, and patient satisfaction. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

### Results

**Table I Distribution of patients**

Groups	Group I	Group II
Male	22	21
Female	20	21

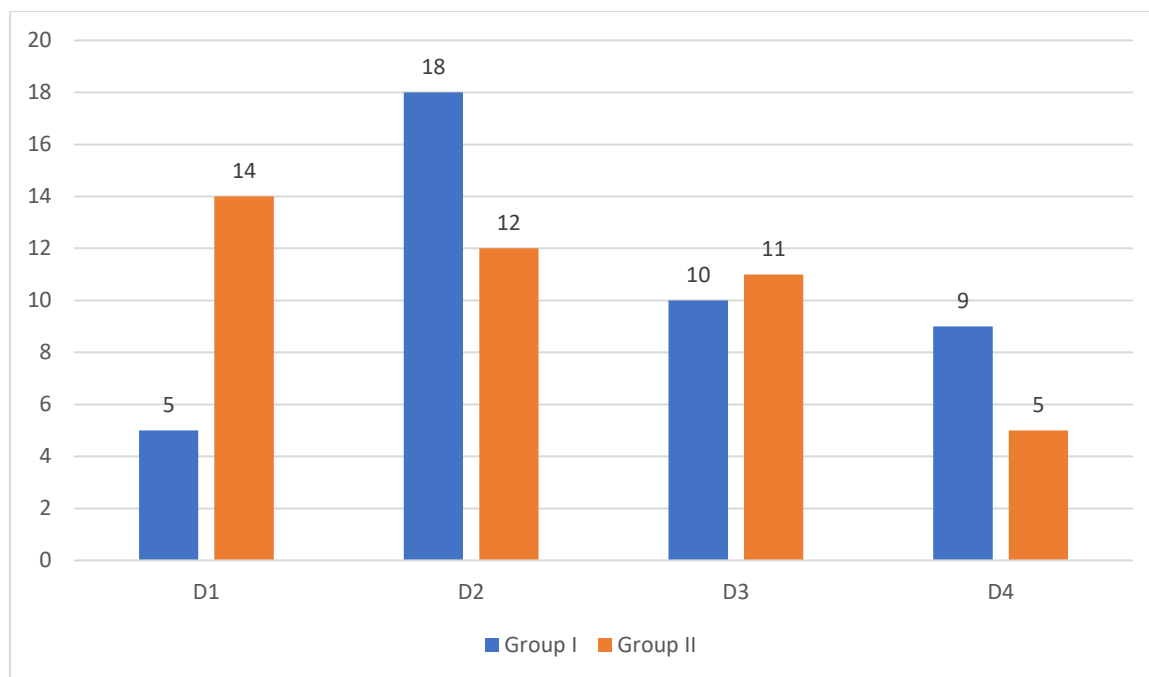
Table I shows that group I had 22 males and 20 females and group II had 21 males and 21 females.

**Table II Assessment of Misch Bone Density Index**

Bone type	Group I	Group II	P value
D1	5	14	0.05
D2	18	12	
D3	10	11	
D4	9	5	

Table II, graph I shows that D1 bone was seen in 5 in group I and 14 in group II, D2 in 18 in group I and 12 in group II, D3 10 in group I and 11 in group II and D4 9 in group I and 5 in group II. The difference was significant (P < 0.05).

### Graph I Assessment of Misch Bone Density Index



**Table III Assessment of ISQ values at implant placement (i) and restoration placement (r)**

Parameters	Group I	Group II	P value
implant placement (i)	78.2	72.1	0.05
restoration placement (r)	82.3	80.4	0.04

Table III shows that mean ISQ value of implant placement (i) in group I was 78.2 and in group II was 72.1 and restoration placement (r) in group I was 82.3 and in group II was 80.4. The difference was significant ( $P < 0.05$ ).

**Table IV Assessment of parameters**

Parameters	Group I	Group II	P value
Gingival index (GI)	0.14	0.28	0.03
Plaque index (PI)	0.27	0	0.001

Table IV shows that mean GI was 0.14 in group I and 0.28 in group II. The mean PI was 0.27 in group I and 0 in group II. The difference was significant ( $P < 0.05$ ).

### Discussion

Most HIV-positive patients are on antiretroviral therapy to manage their infection.<sup>8</sup> It is crucial to ensure that the patient is adhering to their medication regimen and that the drug interactions between the antiretrovirals and any medications used during dental implant treatment are considered.<sup>9,10</sup> The patient's immune system status, as indicated by their CD4 count and viral load, should be stable and within acceptable ranges. A compromised immune system may increase the risk of implant failure and post-operative infections.<sup>11</sup> The present study was conducted to assess outcome of dental implants in HIV positive patients.

We found that group I had 22 males and 20 females and group II had 21 males and 21 females. D1 bone was seen in 5 in group I and 14 in group II, D2 in 18 in group I and 12 in group II, D3 10 in group I and 11 in group II and D4 9 in group I and 5 in group II. Lemos et al<sup>12</sup> selected six studies. In total, 821 implants were placed: 493 in 169 HIV-positive patients, and 328 in 135 HIV-negative patients. The mean duration of follow-up was 47.9 months. Weighted mean survival rate, success rate, and marginal bone loss values were calculated for the HIV-positive patients. Mean survival and success rates at the patient level were 94.76% and 93.81%, respectively; when calculated at the implant level (according to the number of

implants), these rates were 94.53% and 90.37%, respectively. Mean marginal bone loss was 0.83 mm at the patient level and 0.99 mm at the implant level. Thus, dental implants are suitable for the rehabilitation of HIV-positive patients with controlled risk factors and normal CD4+ cell counts.

We found that mean ISQ value of implant placement (i) in group I was 78.2 and in group II was 72.1 and restoration placement (r) in group I was 82.3 and in group II was 80.4. We found that mean GI was 0.14 in group I and 0.28 in group II. The mean PI was 0.27 in group I and 0 in group II. Neumeier et al<sup>13</sup> in their study twenty patients testing positive for the human immunodeficiency virus were recruited for this study. Twenty-one negative control patients were also selected, for a total of forty-one patients. Over the three years period, 25 of 42 implants placed in the negative control group were assessed, and 17 of 27 implants placed in the positive control group were evaluated. The overall patient retention rate was 77 percent. At the three years follow up, restorations examined were fully functional and causing no pain. Overall implant retention within the positive group was 96 percent. Implant retention within the negative control group was 100 percent. No differences were noted between groups for bone loss based on statistical tests.

Esposito et al<sup>14</sup> reported that prophylactic antibiotics reduce the failure of dental implants placed in ordinary conditions, but that there are no apparent differences in the occurrence of postoperative infections. Thus, the use of antibiotics before surgery is recommended, especially because the inflammatory process at the site of surgery causes a temporary reduction in the CD4+ T-cell count after implant placement.

The limitation the study is small sample size.

### Conclusion

Authors found that human immunodeficiency virus was not a contraindication to dental implant-supported restorations.

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