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ORIGINAL ARTICLE

In Vivo Evaluation of Crestal Bone Loss in Placement of a Screw Vs Cement Retained Single-Tooth Posterior Dental Implant Prosthesis

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ABSTRACT

Dental implants have emerged as a reliable and predictable treatment modality for the rehabilitation of both complete and partial edentulism. They not only restore masticatory efficiency but also improve prosthetic stability and enhance patient satisfaction and quality of life. Despite these advantages, preservation of peri-implant bone remains a critical challenge in implant dentistry. Clinical studies have reported an average marginal bone loss of approximately 1 mm during the first year following implant placement. The present study aims to compare the extent of crestal bone loss associated with implant-supported restorations retained by screw mechanisms versus those retained using cement. A total of 18 implants were placed in 18 participants, with restorations randomly assigned into two groups: 9 screw-retained and 9 cement-retained crowns. In the screw-retained group, the restorations were bonded to titanium bases outside the oral cavity. For the cement-retained group, crowns were cemented onto customized titanium abutments directly within the mouth. All restorations were assessed using modified FDI criteria at baseline (within two weeks of placement), and subsequently at 3, 6, and 12 months. Crestal bone loss was measured using standardized radiographs taken at the same time intervals. There was no notable difference observed between screw-retained and cement-retained implant-supported prostheses. However, dental implants may present complications that can contribute to failure, depending on the type of restoration—whether screw-retained or cement-retained. Therefore, choosing the appropriate treatment should be guided by clinical relevance and the specific condition of the tooth. Within the limitations of this study, no statistically significant difference was observed in crestal bone loss between screw-retained and cement-retained implant-supported prostheses.

Keywords: Dental implant; Screw retained prosthesis; Cement retained prosthesis

1 INTRODUCTION

Dental implants have emerged as a reliable functional solution for managing both complete and partial edentulism, enhancing chewing efficiency, ensuring proper prosthesis fit, and boosting patient self-esteem. Tooth loss significantly impacts overall quality of life. A variety of treatment options are available for replacing missing teeth, with the choice influenced by factors such as available space, condition of the remaining dentition, bone support, cost considerations, and patient preferences[1,2]. Among these, fixed prostheses have gained popularity due to their superior comfort, functionality, and aesthetics.

Tooth loss can be addressed using two primary types of prostheses: tooth-supported fixed partial dentures and implant-supported prostheses. Implants are now widely accepted for replacing one or multiple missing teeth[3]. Based on the method of attachment of the prosthetic crown or bridge to the implant, restorations are generally classified into screw-retained and cement-retained types.

Screw-retained prostheses offer the advantage of easy retrievability, making them suitable for cases with limited interarch space or misaligned implants[4]. On the other hand, cement-retained restorations provide several benefits, including a more passive fit, improved occlusion, cost-effectiveness, simplified clinical procedures, and favorable load distribution. However, a key drawback of cement-retained prostheses is the risk of peri-implantitis, often caused by residual cement, which may result in crestal

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bone loss. This issue is typically not associated with screw-retained restorations, which tend to exhibit a better soft tissue response.

Nonetheless, screw-retained prostheses are not without limitations. The presence of a microgap at the screw joint may allow fluid and bacterial infiltration, potentially leading to gingival inflammation. Additionally, mechanical complications such as screw loosening or fracture can occur. Given these advantages and disadvantages, both types of restorations present unique clinical considerations.

This study aims to evaluate and compare crestal bone loss around single posterior dental implants restored with either cement-retained or screw-retained prostheses.

2 MATERIALS AND METHODS

2.1 *Study Design and Objectives*

This study aimed to evaluate and compare marginal bone loss around dental implants restored with either cement-retained or screw-retained prostheses, utilizing intraoral periapical radiography for assessment. A total of 20 patients were enrolled, all of whom were referred from the Outpatient Department of Prosthodontic & crown and bridge, Government Dental College, Srinagar, Jammu & Kashmir, India, to its specialized dental clinic. Candidates requiring oral rehabilitation through single implant placement were invited to participate.

This was a single-center, double-blinded, randomized controlled trial (RCT) with parallel groups and balanced allocation. The study commenced in March 2023 and concluded in March 2024. All patients provided informed consent approved by the Institutional Ethics Committee prior to enrollment.

2.2 *Inclusion Criteria*

Participants met the following criteria:

1. Presence of an edentulous site in the maxilla or mandible with D1, D2, or D3 bone density (assessed via CBCT).
2. Sufficient bone height for implant placement (minimum 7.5 mm).
3. Adequate bone width for implant support.
4. Opposing occlusion comprising either natural dentition or fixed prosthesis.
5. Healed extraction sites (minimum 3 months).
6. No need for bone grafting.
7. Age between 18 and 65 years.
8. Good oral hygiene and periodontally healthy teeth.
9. Willingness to provide written informed consent.

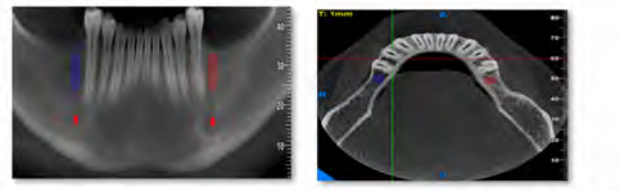
2.3 *Exclusion Criteria*

Exclusions were made for patients with:

1. Poor oral hygiene or periodontal disease.
2. Severe skeletal discrepancies.
3. Medical conditions contraindicating surgery.
4. Inadequate bone volume or density.
5. Parafunctional habits.
6. Smoking, alcohol use, or drug dependency.
7. History of renal failure or head/neck radiation.
8. Current chemotherapy.
9. Local infections at the surgical site.

2.4 *Pre-Surgical Assessment and Preparation*

After preliminary screening with periapical radiographs, CBCT (NewTom) was used to assess bone volume at the implant sites (Figure 1 **a** and **b**). Standard laboratory tests including complete blood count and Vitamin D3 levels were obtained. Oral prophylaxis was performed. Surgical stents were fabricated using diagnostic casts and auto-polymerizing acrylic resin to guide implant placement.



a: CBCT image with Implant simulation b: CBCT images with Implant simulation

Fig. 1:

2.5 *Surgical Protocol*

Patients were premedicated with 2 g of amoxicillin one hour prior to surgery. Preoperative rinses with povidone-iodine and chlorhexidine were used. Local anesthesia was administered using lignocaine with adrenaline. Implant placement sites were examined (Figure 2). Following stent verification, (Figure 3) a mid-crestal incision was made (Figure 4**a** and **b**), and full-thickness mucoperiosteal flaps were raised. A 2 mm pilot drill was used to initiate osteotomy under sterile saline irrigation (Figure 5**a** and **b**). Parallel pins were used to assess implant angulation (Figure 6 **a** and **b**). Osteotomies were completed using sequential drills. Implants (Bioline) were inserted using a motor-driven handpiece at 30 rpm and torqued to 40 Ncm (Figure 7). Healing caps were placed immediately, and surgical sites were closed with 3-0 silk sutures (Figure 8).

Baseline intraoral periapical radiographs were obtained to confirm implant positioning. Postoperative instructions

included dietary guidance, oral hygiene measures, and medications:

- Amoxicillin-clavulanate 625 mg BID for 5 days.
- Aceclofenac-paracetamol-serratiopeptidase combination.
- Chlorhexidine mouthwash twice daily for 7 days.

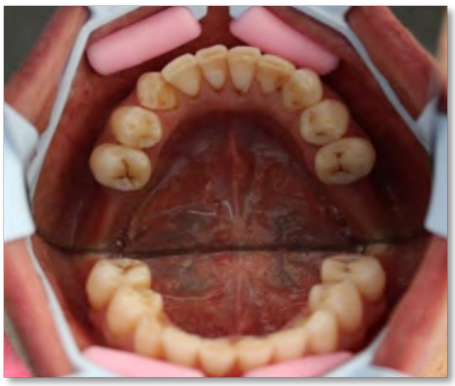


Fig. 2: Pre operative edentulous site



Fig. 3: Surgical stent in place



a: Mid Crestal incision made on right side b: Mid Crestal incision made on left side

Fig. 4:



a: Pilot drilling on right side b: Pilot drilling on left side

Fig. 5:



a: Paralleling pins in place after sequential drilling to check parallelism (right side) b: Paralleling pins in place after sequential drilling to check parallelism (left side)

Fig. 6:

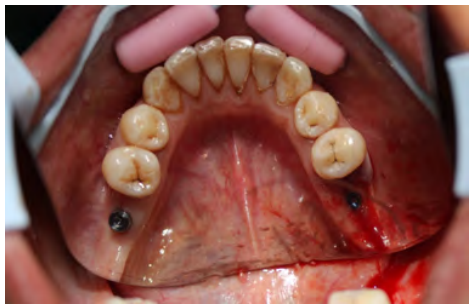


Fig. 7: Implant placed in relation to right and left First molar site



a: Healing caps placed, and flaps repositioned using interrupted silk sutures (right side) b: Healing caps placed, and flaps repositioned using interrupted silk sutures (left side)

Fig. 8:

2.6 *Prosthetic Protocol*

After one month, (Figure 9) healing caps were removed (Figure 10), and open tray impression copings were placed (Figure 11). Impressions were taken using a custom tray with putty and light-body rubber base materia (Figure 12). Implant analogs were attached (Figure 13), and impressions were poured with Type IV die stone (Figure 14). A verification jig was fabricated with pattern resin and try-in was conducted to verify impression accuracy (Figure 15 **a** and **b**). Shade selection was done, and definitive prostheses were fabricated (Figures 16 and 17).



Fig. 9: Healing caps in place after 4 weeks of implant placement



Fig. 10: Healthy peri Implant soft tissue on removal of healing caps

2.7 *Group Allocation*

Group A: Implants restored with screw-retained prostheses (n=9)

Group B: Implants restored with cement-retained prostheses (n=9)

Screw-retained restorations were torqued directly to the implants, while cement-retained restorations were luted with Type I glass ionomer cement. Occlusion was adjusted to provide point contacts in centric occlusion and eliminate lateral interferences using 12 μm articulating paper.

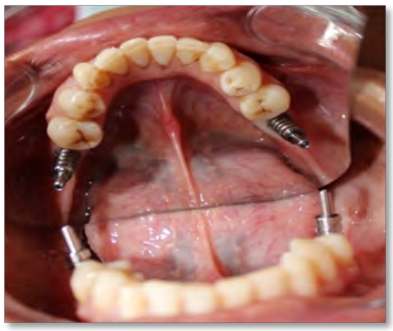


Fig. 11: Open tray impression copings attached to implant fixtures



Fig. 12: Impression recorded using Open tray technique



Fig. 13: Implant analogs attached to Open tray impression copings

Both groups followed an early loading protocol with implants loaded 42 days post-placement. Follow-up appointments for radiographic evaluation were scheduled at baseline (T0), and at 1 (T1), 3 (T2), 6 (T3), and 12 (T4) months post-implantation.



Fig. 14: Final cast with soft tissue replicating material



a: Jig trial in cement retained case b: Jig trial in screw retained case

Fig. 15:



a: Final porcelain fused to metal cement retained prosthesis in place b: Final porcelain fused to metal screw retained prosthesis in place with screw access hole covered by composite material

Fig. 16:

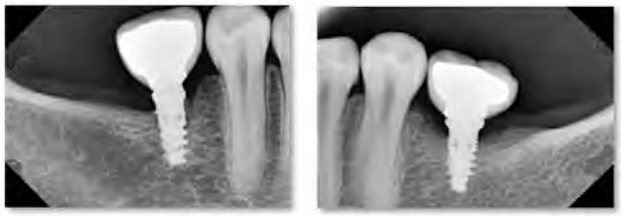


a: Screw retained prosthesis in occlusion b: Cement retained prosthesis in occlusion

Fig. 17:

2.8 *Radiographic Evaluation*

Standardized periapical radiographs were taken using the long-cone paralleling technique (70 kV, 8 mA) (Figure 18 **a** and **b**). Images were labeled with patient ID, date, implant specifications, and site. The implant-abutment junction served as the reference point for bone level measurements.



a: Intra oral periapical radiograph of right side b: Intra oral periapical radiograph of left side

Fig. 18:

Measurements were made on the mesial and distal sides of the implants using a 7x magnification lens. The actual bone loss was calculated using the formula:

Actual Bone Loss = (Actual Implant Length × Measured Bone Loss) / Measured Implant Length

Mean marginal bone loss for each aspect was recorded and compared across follow-up intervals. Radiographic assessments were conducted by two experienced evaluators blinded to the treatment groups and independent of the surgical operator.

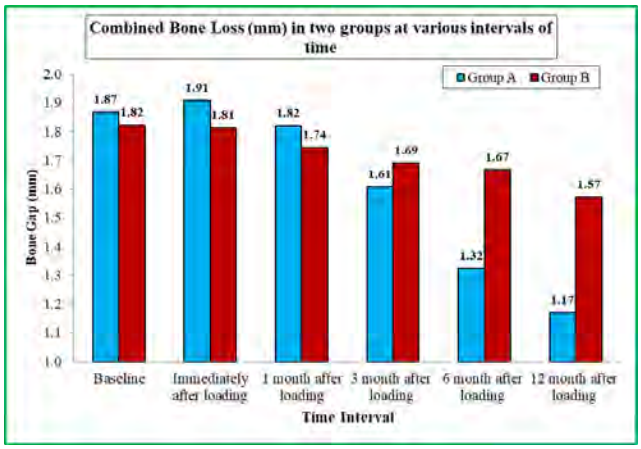
3 RESULTS

A total of 18 patients (11 males and 7 females) were enrolled in this clinical study, each receiving a single dental implant. Of these, 9 individuals (5 males, mean age: 53.7 ± 19.7 years; 4 females, mean age: 54.2 ± 26 years) received screw-retained prostheses. The remaining 9 patients (6 males, mean age: 53.1 ± 28 years; 3 females, mean age: 54.3 ± 15.7 years) were restored with cement-retained prostheses.

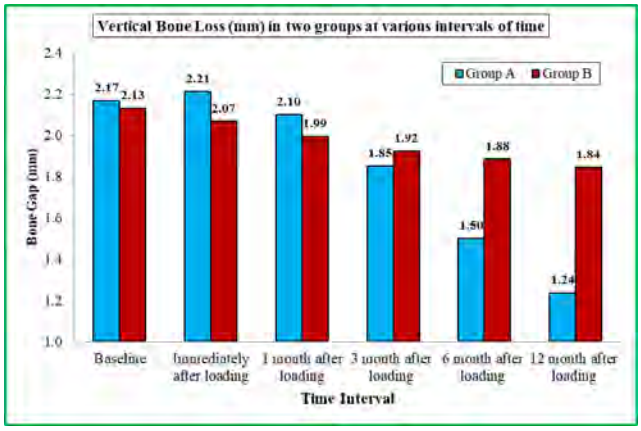
All collected data were initially recorded in Microsoft Excel and subsequently imported into SPSS version 20.0 (IBM Corp., Chicago, IL, USA) for statistical analysis. Results were expressed as mean ± standard deviation (SD). A p-value of less than 0.05 was considered statistically significant, and values below 0.01 were regarded as highly significant. Statistical comparisons between the two groups were conducted using the independent Student's t-test, while repeated measures ANOVA was used for analyzing intra-group differences over time. Visual representation of the data was provided using bar charts.

No statistically significant differences were observed between the two groups in terms of demographic characteristics. The results of the comparative analysis are detailed in Tables 1, 2, 3, 4 and 5 and illustrated in Graphs 1, 2, 3, 4, 5, 6

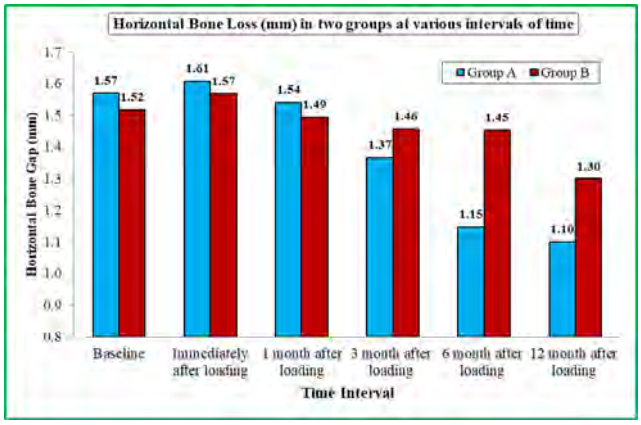
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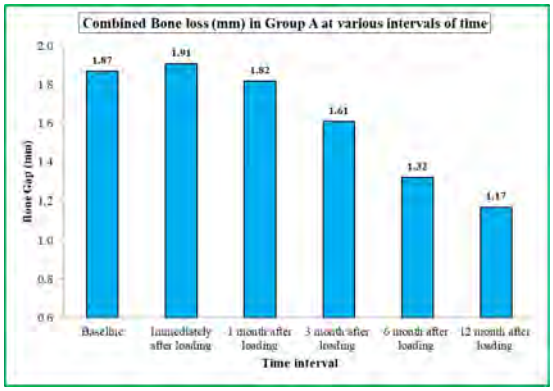
Graph 1: **Comparison based on Combined Bone Loss (mm) between two groups at various intervals of time**



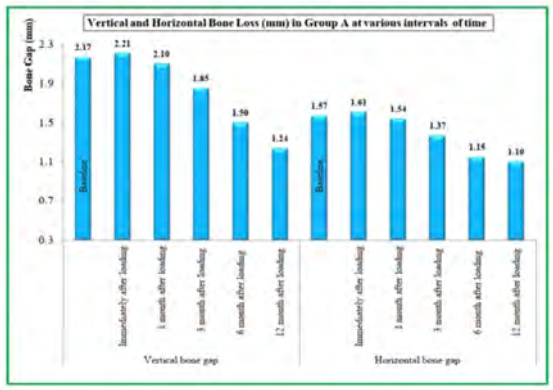
Graph 2: **Comparison based on Vertical Bone Loss (mm) between two groups at various intervals of time**



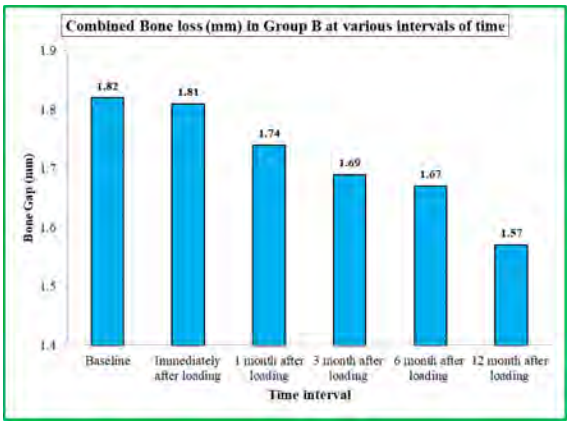
Graph 3: **Comparison based on Horizontal Bone Loss (mm) between two groups at various intervals of time**



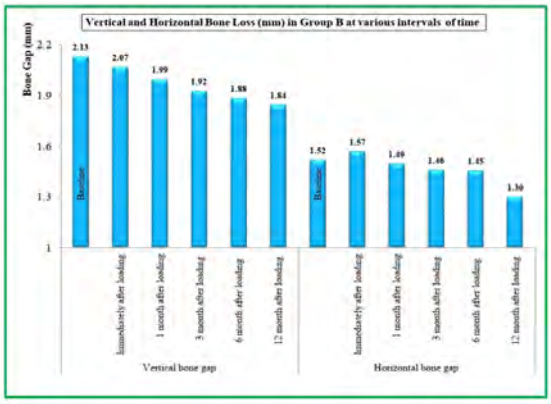
Graph 4: **Intra-group comparison based on Combined Bone Loss (mm) in Group A at various intervals of time**



Graph 5: **Intra group comparison of Vertical and Horizontal Bone Loss in Group A at various intervals of time**



Graph 6: **Intra-group comparison based on Combined Bone Loss (mm) in Group B at various intervals of time**



Graph 7: **Intra group comparison of Vertical and Horizontal Bone Loss in group B at various intervals of time**

Table 1 shows the comparison between two Groups i.e. Group A (Screw retained) and Group B (Cement retained) at different intervals of time. It is clear from the given table that the Combined bone loss in Group A increases from the baseline to immediately after loading whereas in Group B the Combined bone loss decreases from baseline to immediately after loading, After 1 and 3 months of loading the Combined bone loss further decreases in both GROUP A and in Group B. At 6 months after loading the Combined bone loss further decreases to a significant amount in both Group A and Group B (P value 0.003). At 12 months after loading the Combined bone loss decreases to a statistically significant amount in both Group A and Group B (P value <0.001). Therefore, it could be inferred that Group A (Screw retained) group has less amount of Combined bone loss as compared to Group B (Cement retained).

Table 1: Comparison based on Combined Bone Loss (mm) between two groups at various intervals of time

Time interval	Group A (Screw retained)		Group B (Cement retained)		P-value
	Mean	SD	Mean	SD	
Baseline **(T0)**	1.87	0.494	1.82	0.406	0.764
Immediately after loading **(T1),**	1.91	0.484	1.81	0.349	0.521
1 month after loading **(T2)**	1.82	0.486	1.74	0.309	0.579
3 month after loading **(T3)**	1.61	0.459	1.69	0.279	0.520
6 month after loading **(T4)**	1.32	0.365	1.67	0.276	0.003*
12 month after loading **(T5)**	1.17	0.265	1.57	0.321	<0.001*

***Statistically Significant Difference (P-value<0.05)**

Table 2 shows the comparison between two Groups i.e. Group A (Screw retained) and Group B (Cement retained) at different intervals of time. It is clear from the given table that the Vertical bone loss in Group A increases from the baseline to immediately after loading whereas in Group B the Vertical bone loss decreases from baseline to immediately after loading, After 1 and 3 months of loading the Vertical bone loss further decreases in both GROUP A and in Group B. At 6 months after loading the Vertical bone loss further decreases to a significant amount in both Group A and Group B (P value 0.024). At 12 months after loading the Vertical bone loss decreases to a statistically significant amount in both Group A and Group B (P value <0.001). Therefore, it could be inferred that Group A (Screw retained) group has less amount of Vertical bone loss as compared to Group B (Cement retained).

Table 2: Comparison based on Vertical Bone Loss (mm) between two groups at various intervals of time

Time interval	Group A (Screw retained)		Group B (Cement retained)		P-value
	Mean	SD	Mean	SD	
Baseline **(T0)**	2.17	0.556	2.13	0.254	0.855
Immediately after loading **(T1)**	2.21	0.533	2.07	0.247	0.478
1 month after loading **(T2)**	2.10	0.560	1.99	0.164	0.591
3 month after loading **(T3)**	1.85	0.547	1.92	0.152	0.699
6 month after loading **(T4)**	1.50	0.439	1.88	0.137	0.024*
12 month after loading **(T5)**	1.24	0.344	1.84	0.131	<0.001*

***Statistically Significant Difference (P-value<0.05)**

Table 3 shows the comparison between two Groups i.e. Group A (Screw retained) and Group B (Cement retained) at different intervals of time. It is clear from the given table that the Horizontal bone loss in Group A and Group B decreases from baseline to immediately after loading, After 1 and 3 months of loading the Horizontal bone loss further decreases in both GROUP A and in Group B. At 6 months after loading the Horizontal bone loss further decreases to a significant amount in both Group A and Group B (P value 0.002). At 12 months after loading the Horizontal bone loss decreases to a statistically significant amount in both Group A and Group B (P value <0.001). Therefore, it could be inferred that Group A (Screw retained) group has less amount of Horizontal bone loss as compared to Group B (cement retained).

Table 4 shows the intra group comparison in Group A (screw retained) based on combined bone loss, vertical bone loss, and Horizontal bone loss at different intervals of time.

Combined Bone loss: it is clear from the given table that the combined bone loss at baseline has increased to

Table 3: Comparison based on Horizontal Bone Loss (mm) between two groups at various intervals of time

Time interval	Group A (Screw retained)		Group B (Cement retained)		P-value
	Mean	SD	Mean	SD	
Baseline **(T0)**	1.57	0.091	1.52	0.274	0.587
Immediately after loading **(T1)**	1.61	0.100	1.57	0.240	0.651
1 month after loading **(T2)**	1.54	0.106	1.49	0.191	0.540
3 month after loading **(T3)**	1.37	0.129	1.46	0.139	0.174
6 month after loading **(T4)**	1.15	0.145	1.45	0.197	0.002*
12 month after loading **(T5)**	1.10	0.141	1.30	0.186	<0.001*

***Statistically Significant Difference (P-value<0.05)**

immediately after loading then has decreased at 1 at 3 months after loading (P value<0.001) then has decreased to a significant amount at 6 months after loading (P value<0.001) then has decreased to further decreased to a statistically significant amount at 12 months after loading (P value<0.001).

Vertical Bone loss: it is clear from the given table that the vertical bone loss at baseline has increased to immediately after loading then decreased to 1 and 3 months after loading then has decreased to a significant amount at 6 months after loading (P value<0.001) then has decreased to a statistically significant amount at 12 months after loading (P value<0.001).

Horizontal Bone loss: it is clear from the given table that the horizontal bone loss at baseline has increased to immediately after loading then decreased to 1.54+/-0.106 at 1 and 3month after loading then has further decreased to a significant amount at 6 months after loading (P value<0.001) then has decreased to a statistically significant amount at 12 months after loading (P value<0.001).

Table 5 shows the intra group comparison in Group B (cement retained) based on combined bone loss, vertical bone loss, and Horizontal bone loss at different intervals of time.

Combined Bone Loss: It is clear from the given table that the combined bone loss from baseline has decreased slightly to immediately after loading then decreased at 1,3 and 6 months after loading, then has decreased to further a statistically significant amount at 12 months after loading (P value<0.001).

Vertical Bone Loss: It is clear from the given table that the vertical bone loss from baseline has decreased immediately after loading 1,3 and 6 after loading then has decreased to a statistically significant amount at 12 months after loading (P value<0.001).

Horizontal Bone Loss: It is clear from the given table that the horizontal bone loss from baseline has increased immediately after loading then decreased to at 1,3 and 6 months after loading, then has further decreased to a statistically significant amount at 12 months after loading (P value<0.001).

4 DISCUSSION

This study highlights the clinical relevance and utility of both screw-retained and cement-retained implant restorations for the replacement of missing teeth. The findings support the notion that the selection between these two methods should be guided by individual case requirements and clinical considerations. The analysis indicates that screw-retained implants may be preferable in cases where long-term predictability is essential. These restorations also offer advantages such as easier maintenance of oral hygiene, simpler prosthetic repairs, and facilitated surgical access, especially in situations with limited interocclusal space. These benefits contribute positively to patient satisfaction and perception of implant therapy[5].

Despite these advantages, screw-retained restorations require a high degree of precision during placement, particularly in aligning the screw access channel within the prosthesis. They are generally considered more technique-sensitive when compared to cement-retained alternatives[6,7]. On the other hand, cement-retained restorations are typically more cost-effective and provide greater flexibility in managing implant angulation discrepancies. They also offer improved passive fit, superior esthetic outcomes, and better occlusal control.

However, a key limitation of the cemented approach is the potential for residual cement to remain subgingivally, which can promote bacterial colonization, lead to peri-implant inflammation, and contribute to progressive bone loss. This concern is consistent with previous research, such as the systematic review by Sailer et al. (2012), which also reported increased marginal bone loss associated with cement-retained restorations.

The principal aim of the present investigation was to assess the clinical outcomes of both restoration types. When the cement margin was placed slightly below the gingival margin ($\leq$1.0 mm), cement-retained single crowns in the posterior region demonstrated biological outcomes comparable to those of screw-retained restorations. Except for differences in plaque index and marginal bone changes, no significant variations in biological parameters were observed after a 12-month follow-up period. Based on these short-term findings, both screw-retained and cement-retained implant restorations appear to be viable treatment options.

Table 4: Intra-group comparison based on Combined Bone loss, Vertical bone loss and Horizontal bone loss (mm) in Group A (screw retained)

		Mean	SD	Difference	P-value
Bone loss	Baseline **(T0)**	1.87	0.494	-	-
	Immediately after loading **(T1)**	1.91	0.484	-0.04	0.496
	1 month after loading **(T2)**	1.82	0.486	0.05	0.483
	3 month after loading **(T3)**	1.61	0.459	0.26	<0.001*
	6 month after loading **(T4)**	1.32	0.365	0.55	<0.001*
	12 month after loading **(T5)**	1.17	0.265	0.70	<0.001*
Vertical bone loss	Baseline **(T0)**	2.17	0.556	-	-
	Immediately after loading **(T1)**	2.21	0.533	-0.04	0.489
	1 month after loading **(T2)**	2.10	0.560	0.07	0.315
	3 month after loading **(T3)**	1.85	0.547	0.32	<0.001*
	6 month after loading **(T4)**	1.50	0.439	0.67	<0.001*
	12 month after loading **(T5)**	1.24	0.344	0.93	<0.001*
Horizontal bone loss	Baseline **(T0)**	1.57	0.091	-	-
	Immediately after loading **(T1)**	1.61	0.100	-0.04	0.514
	1 month after loading **(T2)**	1.54	0.106	0.03	0.528
	3 month after loading **(T3)**	1.37	0.129	0.20	0.014*
	6 month after loading **(T4)**	1.15	0.145	0.42	<0.001*
	12 month after loading **(T5)**	1.10	0.141	0.47	<0.001*

***Statistically Significant Difference (P-value<0.05)**

Table 5: Intra-group comparison based on Combined Bone loss, Vertical bone loss and Horizontal bone loss (mm) in Group B (cement retained)

		Mean	SD	Difference	P-value
Bone loss	Baseline **(T0)**	1.82	0.406	-	-
	Immediately after loading **(T1)**	1.81	0.349	0.01	0.921
	1 month after loading **(T2)**	1.74	0.309	0.08	0.261
	3 month after loading **(T3)**	1.69	0.279	0.13	0.057
	6 month after loading **(T4)**	1.67	0.276	0.15	0.034*
	12 month after loading **(T5)**	1.57	0.321	0.25	<0.001*
Vertical bone loss	Baseline **(T0)**	2.13	0.254	-	-
	Immediately after loading **(T1)**	2.07	0.247	0.06	0.465
	1 month after loading **(T2)**	1.99	0.164	0.14	0.115
	3 month after loading **(T3)**	1.92	0.152	0.21	0.037*
	6 month after loading **(T4)**	1.88	0.137	0.25	0.017*
	12 month after loading **(T5)**	1.84	0.131	0.29	0.007*
Horizontal bone loss	Baseline **(T0)**	1.52	0.274	-	-
	Immediately after loading **(T1)**	1.57	0.240	-0.05	0.517
	1 month after loading **(T2)**	1.49	0.191	0.03	0.849
	3 month after loading **(T3)**	1.46	0.139	0.06	0.508
	6 month after loading **(T4)**	1.45	0.197	0.07	0.541
	12 month after loading **(T5)**	1.30	0.186	0.22	0.021*

***Statistically Significant Difference (P-value<0.05)**

5 CONCLUSION

Based on the analysis of the study findings, the following conclusions were derived:

1. The results indicate that early loading of dental implants is as effective as delayed loading, offering comparable clinical outcomes. This approach benefits both the patient and clinician by reducing treatment time and allowing for faster restoration.
2. Horizontal bone loss was found to be lower in the screw-retained group when compared to the cement-retained group.
3. Similarly, vertical bone loss was also less in the screw-retained group than in the cement-retained group.
4. Although both groups exhibited a reduction in bone loss over the 12-month period following prosthesis placement, the screw-retained group showed a statistically significant lesser degree of bone loss.
5. In Group A (screw-retained), intra-group comparison of combined bone loss—including vertical and horizontal components—demonstrated a statistically significant decrease in bone loss as early as 3 months after loading.
6. In Group B (cement-retained), intra-group analysis revealed a progressive and statistically significant reduction in bone loss at 3, 6, and 12 months after loading.

5.1 Limitations

1. The sample size in this study was relatively small due to the application of stringent inclusion and exclusion criteria. Future investigations involving a larger cohort may help to reinforce and validate these findings.
2. A potential limitation lies in the method used to assess marginal bone resorption. The reliance on radiographic evaluation may have led to an underestimation of bone loss, and no repeated measurements were performed to confirm the initial readings.
3. The duration of follow-up in this study was restricted to 12 months. Extending the follow-up period to 24 months or more in future studies could provide deeper insight and more robust data on long-term outcomes.

Longer follow up time up to 24 months could add to the findings of our study.

6 DISCLOSURE

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Conflict of Interest: Nil

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