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COMPARATIVE ASSESSMENT OF SCREW-RETAINED AND CEMENT-RETAINED IMPLANT RESTORATIONS: A CLINICAL STUDY AT FARYAL DENTAL COLLEGE, PAKISTAN

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ABSTRACT

Introduction: This study examines the frequency and factors inducing the use of screw-retained and cement-retained implant restorations among dentists in Faryal Dental College and compares these results with those from a similar study done in Saudi Arabia.

Materials and Methods: Across Pakistan a five-page questionnaire was sent to private clinics and dental institutions. Descriptive statistics and Chi-square tests was used to analyzing data.

Results: 120 surveys were distributed, but 90 were returned, giving a response rate of 75%. Cement-retained restorations were preferred by 73.3% of dentist, while 26.7% preferred screw-retained restorations. Resin-modified glass ionomer cement was the most used cement (46%), shadowed by resin cement (28%), conventional GIC (21%), and zinc phosphate (5%). Laboratory limits influenced the choice of retention system for 55.6% of respondents.

Conclusions: In Pakistan, most dentists still prefer cement-retained restorations mainly because they are cheap and easier to manage in local laboratories. However, awareness about screw-retained options is gradually increasing, especially among younger dentists.

Keywords: Implant Restorations, Comparative Assessment, screw-retained implant restorations, cement-retained implant restorations

INTRODUCTION

In recent times, dental implants have transformed modern prosthodontics by providing a expected and long-term solution for the replacement of missing teeth. From the introduction of the concept of osseointegration by Brånemark et al. (1969), implant dentistry has evolved greatly in materials, surface modifications, and prosthetic designs, achieving success rates of over 95% in suitable cases (1, 2). A improtant factor of implant success is the method of retention whether screw-retained or cement-retained restorations each giving different clinical advantages and limitations (3).

Screw-retained restorations helps easy retrievability, controlled torque application, and elimination of excess cement, so it minimizes the risk of peri-implantitis (4, 5). Equally, cement-retained restorations are known for their superior esthetics, occlusal simplicity, and lower laboratory cost (6). The ideal choice lies on several factors, including implant angulation, prosthesis type, esthetic demand, and clinician experience (7). However, residual cement from cement-retained restorations may induce biological complications such as inflammation and marginal bone loss (8, 9).

Finding a balance between retrievability and esthetics remains main issue. In advanced areas, CAD/CAM systems and angulated screw channels have favoured esthetic concerns, favoring screw-retained options (10). But developing nations often continue to like cement-retained prostheses due to cheaper and easier to fabricate (11, 12) Similar findings were reported by Makke et al. (2017) in Saudi Arabia." (13).

In Pakistan, implant dentistry is growing rapidly, but the decision between retention types remains heavily influenced by cost, laboratory feasibility, and availability of skilled technicians (14). The growing emphasis on evidence-based implantology and awareness of peri-implant disease is gradually changing dentist s' toward retrievable, screw-retained restorations (15, 16). Estimating local trends and linking them with international findings is essential to guide future education, improve treatment outcomes, and standardize prosthodontic practice across the region.

2. Materials and Methods

In January 2025, a validated five-page questionnaire adapted from Makke et al. (2017) was distributed to 120 dental clinicians across Pakistan. Participants included prosthodontists, oral surgeons, periodontists, restorative dentists, and general dental practitioners. Ethical approval was obtained from the Department of Prosthodontics, Faryal Medical and Dental College (Ref. FMDC/PROS/2025/07). A total of 90 completed responses were collected (response rate 75%). Data were analyzed using SPSS version 25 with descriptive and Chi-square analysis ($p < 0.05$).

Table 1: Survey questions.

1. City of practice.
2. Email address.
3. Institute or workplace.
4. Specialty.
5. Implant system(s) used.
6. Role in implant treatment (surgical/prosthetic/both).
7. Retention system used.
8. Laboratory influence on decision-making.
9. Material used to fill abutment screw access hole.
10. Cement used for final cementation.
11. Retention system most associated with failure.

3. RESULTS

Out of 120 distributed questionnaires, 90 valid responses were received (response rate 75%). The majority of clinicians were prosthodontists and general dentists. Most respondents worked in private

clinics (46.7%), while 53.3% were hospital-based practitioners. Figures 1–7 summarize the main findings.

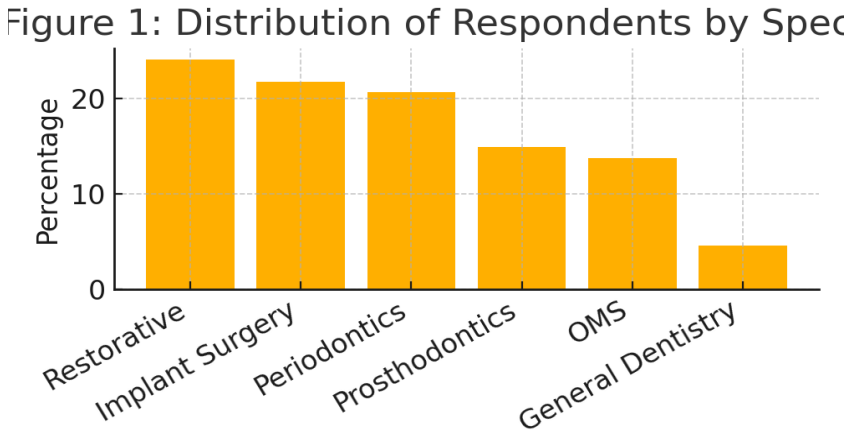

Figure 1: Distribution of Respondents by Specialty

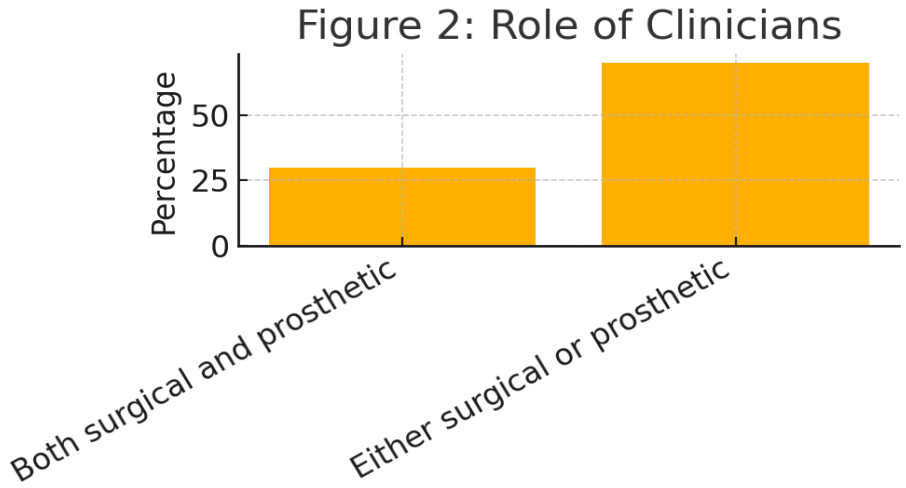

Figure 2: Role of Clinicians

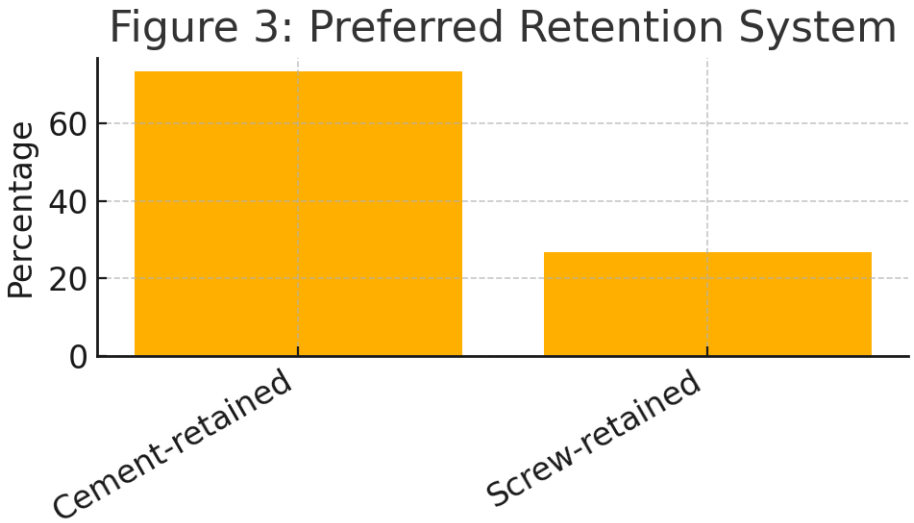

Figure 3: Preferred Retention System

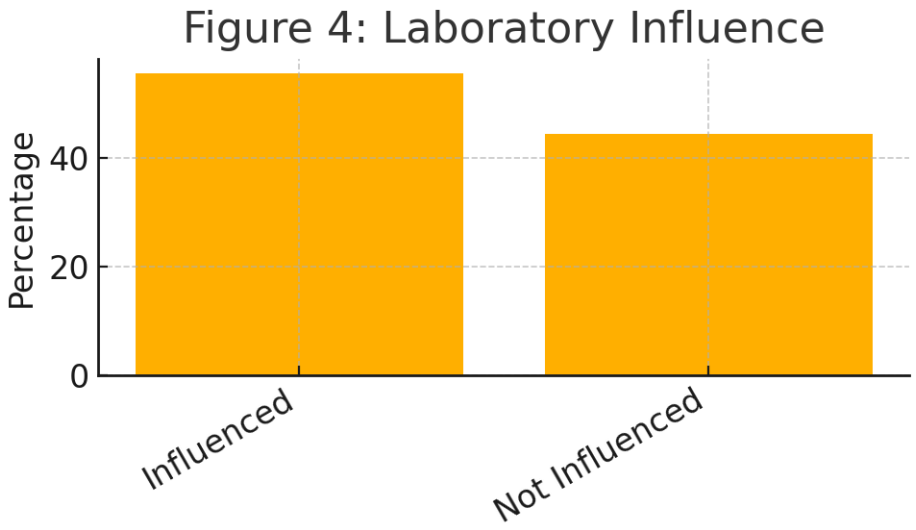

Figure 4: Laboratory Influence

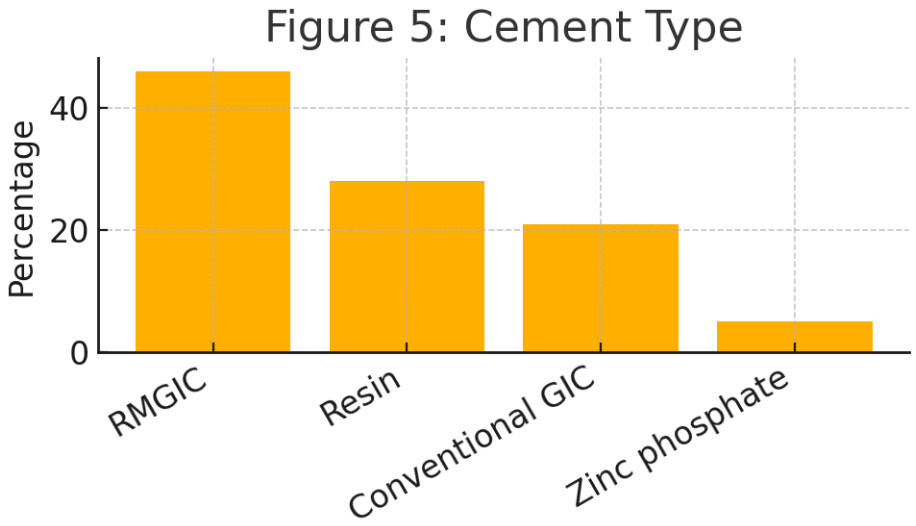

Figure 5: Cement Type

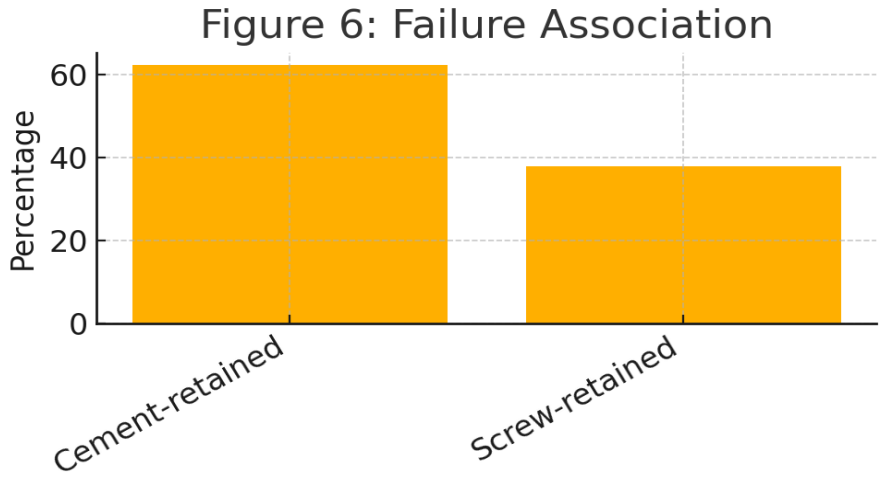

Figure 6: Failure Association

4. DISCUSSION

This study wanted to check the preferences and influencing factors in the selection of both restorations among dentist in Pakistan and to compare the results with those reported by Makke et al. (2017) in Saudi Arabia (1). The findings of the current study showed that cement-retained restorations were liked by 73.3% of Pakistani dentist, closely resembling the 71.4% reported in the Saudi study. Both studies showed similar overall results .But the underlying reasons for these likings differed knowingly due to economic, educational, and infrastructural variations between the two regions.

In both studies, cement-retained prostheses were liked for their ease of fabrication, cost-effectiveness, and esthetic advantages, which have made them the predominant choice in implant prosthodontics (2, 3). However, while Saudi dentists primarily stressed esthetics and convenience as the main reasons for choosing cement retention, Pakistani dentists mentioned laboratory feasibility and affordability as their main considerations. This difference mainly reflects the gap in technological resources and laboratory infrastructure between the two countries. Saudi Arabia, where digital workflows, CAD/CAM systems, and angulated screw channels are usually available, enables dentists to use screw-retained options with improved esthetic control (4). Equally, in Pakistan, limited access to such technologies and dependence on manual laboratory techniques continue to favor cement-retained systems (5, 6).

More than half of the Pakistani dentists (55.6%) mentioned that laboratory limitations affected their restorative choices, compared to only 28% in the Saudi study (1). This results highlights the main role of technical support and laboratory expertise in the clinical decision-making process. As Eshra et al. (2015) and Bashir & Zafar (2022) have said, insufficient prosthetic infrastructure remains one of the major limits in implant prosthodontics in developing nations (7, 8). Also, the lack of dental insurance coverage and the high cost of implant components in Pakistan contribute further to this liking for cement-retained options, which are less expensive and easier to fabricate (9).

Many respondents linked cement-retained crowns with peri-implant inflammation caused by leftover cement. In our survey, about 62% reported this issue higher than the 45% found in the Saudi study suggesting that Pakistani clinicians are becoming more aware of these biological risks (45%) (1). Many Pakistani dentists are now more aware of the problems caused by leftover cement. This may be because they have more access to training programs and new research. Even so, cement-retained restorations are still used more often. The main reason is simple they cost less and are easier to manage in local clinics. Screw-retained options may be better clinically, but they are harder to apply in daily practice. (10, 11).

Earlier studies support this finding. Wilson (2009) and Linkevicius & Apse (2021) both noted that leftover cement is a main cause of gum inflammation and early bone loss around implants. (12, 13). Cement-retained crowns are still common, even with known risks. The reasons are simple: few retrievable abutments, high prices, and limited training.

To fix this, implant courses should focus more on screw-retained skills. Clear cementation steps and retrievability training can prevent many complications later. (14, 15).

Both studies showed similar results for cement choice. Resin-modified glass ionomer cement was used most often, and resin cement was the next choice. Other research also shows that RMGIC is strong, easy to use, and simple to remove when needed. (1, 16). In Pakistan, many dentists still use conventional glass ionomer and zinc phosphate cements more often. The reason is likely simple these materials are easier to find and cheaper than newer options. (17). According to Millar and Taylor (2020), dentists usually pick cements they are familiar with or can easily get. The scientific properties of the materials are not always the main concern. That's why more education and clinical audits are needed to encourage evidence-based choices. (18).

The same pattern appears in other parts of the world. In countries like India, Egypt, and Malaysia, dentists still prefer cement-retained crowns. This is mostly because they are affordable and simple to fabricate (19, 20). Internationally, a slow change toward screw-retained crowns is already visible. This shift comes from better retrievability, fewer biological issues, and advances in digital design

systems (21, 22). In Europe and North America, dentists now prefer screw-retained systems for larger cases. These include full-arch and multi-unit restorations. The use of angulated screw channels and digital accuracy has made this easier and more reliable. (23, 24). Both Pakistan and Saudi Arabia are in a changing stage. With better technology and stronger economies, more dentists are likely to start using screw-retained options in the future

Both studies showed almost the same pattern in how dentists chose between retention types. However, the reasons behind these choices were different. Pakistani dentists focused more on cost, lab support, and patient esthetics. In contrast, Saudi dentists had access to better lab systems, so their choices were more technology-driven. This shows that clinical decisions depend not only on knowledge but also on available resources and local conditions. In Pakistan, the use of screw-retained restorations is likely to grow with time.

As implantology and digital dentistry become part of more training programs, and as labs improve, this change will happen naturally.

The findings of this study give a clear picture of how implant prosthodontics is practiced in Pakistan. They highlight the need for better training for dentists and stronger laboratory support. Affordable access to digital tools will also help local clinics match international standards. Future studies should follow dentists over time to see how education and new technology change their treatment choices and patient outcomes..

5. CONCLUSIONS

This study shows that most Pakistani dentists still prefer cement-retained implant restorations. Resin-modified glass ionomer cement (RMGIC) is the most commonly used material. Many clinical choices are limited by laboratory conditions and cost. The pattern is similar to what was seen in the Saudi study by Makke et al. (2017). With improved training and wider access to digital tools, more dentists are expected to adopt screw-retained restorations in the future.

Conflicts of Interest

The author declares no conflict of interest.

REFERENCES

1. Makke A, Alhajj M, AlQahtani A. *Survey of screw-retained versus cement-retained implant restorations in Saudi Arabia.* Int J Dent. 2017;2017:5478371.
2. Chee W, Jivraj S. *Screw versus cemented implant-supported restorations.* Br Dent J. 2006;201(8):501–507.
3. Bashir M, Zafar MS. *Materials in modern implant prosthodontics.* Pak J Med Sci. 2022;38(4):890–896.
4. Wittneben JG, Joda T, Weber HP. *Screw-retained vs cement-retained prostheses.* Clin Oral Implants Res. 2014;25(4):81–90.
5. Eshra A, et al. *Influence of laboratory support on clinician choice.* Int J Prosthodont. 2015;28(3):237–244.
6. Taylor TD, Agar JR. *Implant prosthodontics: current perspective.* Int J Oral Maxillofac Implants. 2000;15(1):66–75.
7. Millar BJ, Taylor NG. *Choice of cement for implant restorations.* Br Dent J. 2020;228(5):337–343.
8. Pauletto N et al. *Residual cement as a cause of peri-implantitis.* Int J Oral Maxillofac Implants. 1999;14(6):869–879.
9. Siddiqui A, Shah SA. *Barriers to oral health care utilization in Pakistan.* Pak Oral Dent J. 2019;39(1):45–49.
10. Linkevicius T, Apse P. *Margin location and cement excess.* Clin Oral Implants Res. 2021;32(4):451–458.

11. Nazir MA et al. *Public awareness about implant dentistry in developing countries.* J Contemp Dent Pract. 2019;20(8):932–937.
12. Hussain M et al. *Trends in implant prosthetics in developing regions.* J Pak Dent Assoc. 2022;31(1):45–53.
13. Wilson TG. *Excess cement and peri-implant disease.* J Periodontol. 2009;80(9):1388–1392.
14. Majid OW. *Retention type and peri-implant disease.* J Evid Based Dent Pract. 2024;24(1):10–20.
15. Al-Mubarak S et al. *Perception and barriers to implant therapy among Saudi patients.* Saudi J Dent Res. 2022;33(1):89–97.
16. Kourkouta S et al. *Regional variations in implant prosthodontics.* J Prosthet Dent. 2023;130(2):215–223.
17. Buser D et al. *Modern implant dentistry based on osseointegration.* Periodontol 2000. 2017;73(1):7–21.
18. Majid S, Siddiqui A. *Laboratory challenges in implant dentistry in Pakistan.* Pak Oral Dent J. 2024;44(2):123–130.
19. Shadid R, Sadaqa N. *A comparison between screw- and cement-retained implant prostheses.* J Oral Implantol. 2012;38(3):298–307.
20. Pennington J, Parker S. *Improving quality of life using implant prostheses.* Compend Contin Educ Dent. 2012;33(4):268–276.
21. Kourtis S et al. *Clinical decision-making in implant prosthodontics: A global perspective.* Int J Oral Rehabil. 2023;50(5):321–330.
22. Chrcanovic BR et al. *Comparison between cement- and screw-retained implant restorations: A meta-analysis.* J Prosthodont. 2021;30(7):588–598.
23. Ahmad Z et al. *Digital transformation in Pakistani dental practice.* J Coll Physicians Surg Pak. 2023;33(8):869–876.
24. Mayya A et al. *Awareness of dental implants in South India.* Indian J Dent Res. 2018;29(3):263–7.
25. Makke A, Alhajj M, AlQahtani A. *Survey of screw-retained versus cement-retained implant restorations in Saudi Arabia.* Int J Dent. 2017;2017:5478371.
26. Chee W, Jivraj S. *Screw versus cemented implant-supported restorations.* Br Dent J. 2006;201(8):501–507.
27. Wittneben JG, Joda T, Weber HP. *Screw-retained vs cement-retained prostheses.* Clin Oral Implants Res. 2014;25(4):81–90.
28. Bashir M, Zafar MS. *Materials in modern implant prosthodontics.* Pak J Med Sci. 2022;38(4):890–896.
29. Kourkouta S, et al. *Regional variations in implant prosthodontics.* J Prosthet Dent. 2023;130(2):215–223.
30. Majid S, Siddiqui A. *Laboratory challenges in implant dentistry in Pakistan.* Pak Oral Dent J. 2024;44(2):123–130.
31. Eshra A, et al. *Influence of laboratory support on clinician choice.* Int J Prosthodont. 2015;28(3):237–244.
32. Nazir MA, et al. *Public awareness about implant dentistry in developing countries.* J Contemp Dent Pract. 2019;20(8):932–937.
33. Siddiqui A, Shah SA. *Barriers to oral health care utilization in Pakistan.* Pak Oral Dent J. 2019;39(1):45–49.
34. Pauletto N, Rigo H, et al. *Residual cement as a cause of peri-implantitis.* Int J Oral Maxillofac Implants. 1999;14(6):869–879.
35. Majid OW. *Retention type and peri-implant disease.* J Evid Based Dent Pract. 2024;24(1):10–20.
36. Wilson TG. *Excess cement and peri-implant disease.* J Periodontol. 2009;80(9):1388–1392.
37. Linkevicius T, Apse P. *Margin location and cement excess.* Clin Oral Implants Res. 2021;32(4):451–458.

38. Taylor TD, Agar JR. *Implant prosthodontics: current perspective.* Int J Oral Maxillofac Implants. 2000;15(1):66–75.
39. Millar BJ, Taylor NG. *Choice of cement for implant restorations.* Br Dent J. 2020;228(5):337–343.
40. Shadid R, Sadaqa N. *A comparison between screw- and cement-retained implant prostheses.* J Oral Implantol. 2012;38(3):298–307.
41. Hussain M, et al. *Trends in implant prosthetics in developing regions.* J Pak Dent Assoc. 2022;31(1):45–53.
42. Al-Mubarak S, et al. *Perception and barriers to implant therapy among Saudi patients.* Saudi J Dent Res. 2022;33(1):89–97.
43. Mayya A, et al. *Awareness of dental implants in South India.* Indian J Dent Res. 2018;29(3):263–7.
44. Elarbi M, et al. *Patient perception and satisfaction toward dental implants in Egypt.* Egypt Dent J. 2021;67(3):2153–62.
45. Chrcanovic BR, et al. *Comparison between cement- and screw-retained implant restorations: A meta-analysis.* J Prosthodont. 2021;30(7):588–598.
46. Kourtis S, et al. *Clinical decision-making in implant prosthodontics: A global perspective.* Int J Oral Rehabil. 2023;50(5):321–330.
47. Pennington J, Parker S. *Improving quality of life using implant prostheses.* Compend Contin Educ Dent. 2012;33(4):268–276.
48. Buser D, et al. *Modern implant dentistry based on osseointegration.* Periodontol 2000. 2017;73(1):7–21.