IMMEDIATE LOADING WITH PROVISIONALIZATION IN AESTHETIC AREA

CARGA IMEDIATA COM PROVISIONALIZAÇÃO EM ÁREA ESTÉTICA

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Fernanda dos Santos Lacerda[1], Thaís Dias Machado[2], Luana Thamires Rocha dos Santos[3], Lorenzo Mendonça Pinto[4], Maíra Menezes Santos Martins[5], Fabiano Luiz Heggendorn[6]

ABSTRACT

Oral rehabilitation with dental implants, especially in the aesthetic area, has evolved with the immediate loading approach, aiming to restore function and aesthetics, minimizing bone resorption, and preserving peri-implant soft tissues. This study aimed to review the scientific literature on the predictability of immediate implant loading in the maxillary aesthetic zone, highlighting its impact on peri-implant tissue maintenance and the factors that influence its clinical success. The research followed a bibliographic, exploratory, and qualitative methodology, reviewing articles published between 2020 and 2025. The results indicated that immediate loading demonstrates benefits in preserving peri-implant soft and hard tissues, with less mucosal alteration and reduced papillary recession compared to delayed loading. Additionally, the use of connective tissue grafts in cases of vestibular bone loss has proven effective, ensuring stability and aesthetic predictability. The three-dimensional position of the implant and preservation of peri-implant tissue volume are also crucial to the success of the procedure. Long-term analysis reinforces the effectiveness of immediate loading in maintaining gingival architecture and preserving peri-implant tissues. The conclusion suggests that immediate loading is a promising approach, but that careful case selection and implementation of appropriate clinical protocols are essential for treatment success.

Keywords: Immediate Loading. Dental Implant. Aesthetics. Connective Tissue.

RESUMO

A reabilitação oral com implantes dentários, especialmente na área estética, tem evoluído com a abordagem de carga imediata, visando restaurar a função e estética, minimizando a reabsorção óssea e preservando os tecidos moles peri-implantares. Este estudo teve como objetivo revisar a literatura científica sobre a previsibilidade da carga imediata de implantes na zona estética maxilar, destacando seus impactos na manutenção dos tecidos peri-

[1]Master's student in Endodontics. Universidade do Grande Rio (UNIGRANRIO). Rio de Janeiro, Brazil. E-mail: drafernandalacerda@hotmail.com Orcid: https://orcid.org/0009-0006-7508-6437
[2]Specialist in Implantology. Associação Brasileira de Odontologia de Volta Redonda (ABO-VR). Rio de Janeiro, Brazil. E-mail: drathaisdias@hotmail.com Orcid: https://orcid.org/0009-0003-7203-7240
[3]Doctorate student in Implantology. Universidade do Grande Rio (UNIGRANRIO). Rio de Janeiro, Brazil. E-mail: luanatrsantos@hotmail.com Orcid: https://orcid.org/0009-0000-7702-392X
[4]Master's student in Implantology. Universidade do Grande Rio (UNIGRANRIO). Rio de Janeiro, Brazil. E-mail: lorenzo.medonca92@gmail.com Orcid: https://orcid.org/0009-0004-8563-3735
[5]Doctorate student in Implantology. Universidade do Grande Rio (UNIGRANRIO). Rio de Janeiro, Brazil. E-mail: mairasmartins@yahoo.com.br Orcid: https://orcid.org/0009-0001-1923-1840
[6]Dr. in Oral Pathology and Post-doctorate at Instituto de Macromoléculas Professora Eloisa Mano (IMA-UFRJ). E-mail: fabianohegg@gmail.com Orcid: https://orcid.org/0000-0002-2687-0165

implantares e os fatores que influenciam seu sucesso clínico. A pesquisa seguiu uma metodologia bibliográfica, de caráter exploratório e qualitativo, revisando artigos publicados entre 2020 e 2025. Os resultados indicaram que a carga imediata demonstra benefícios na preservação dos tecidos moles e duros peri-implantares, com menor alteração no nível da mucosa e menor recessão papilar em comparação à carga tardia. Em adição, a utilização de enxerto de tecido conjuntivo, em casos de perda óssea vestibular, tem se mostrado eficaz, garantindo estabilidade e previsibilidade estética. A posição tridimensional do implante e a preservação do volume do tecido peri-implantar também são cruciais para o sucesso do procedimento. A análise de longo prazo reforça a eficácia da carga imediata na manutenção da arquitetura gengival e na preservação dos tecidos peri-implantares. A conclusão aponta que a carga imediata é uma abordagem promissora, mas que a escolha criteriosa dos casos e a aplicação de protocolos clínicos adequados são essenciais para o sucesso do tratamento.

Palavras-chave: Carga Imediata. Implante Dental. Estética. Tecido Conjuntivo.

RESUMEN

La rehabilitación oral con implantes dentales, especialmente en el área estética, ha evolucionado con el enfoque de carga inmediata, buscando restaurar la función y la estética, minimizar la reabsorción ósea y preservar los tejidos blandos periimplantarios. Este estudio tuvo como objetivo revisar la literatura científica sobre la predictibilidad de la carga inmediata de implantes en la zona estética maxilar, destacando su impacto en el mantenimiento del tejido periimplantario y los factores que influyen en su éxito clínico. La investigación siguió una metodología bibliográfica, exploratoria y cualitativa, revisando artículos publicados entre 2020 y 2025. Los resultados indicaron que la carga inmediata demuestra beneficios en la preservación de los tejidos blandos y duros periimplantarios, con menor alteración de la mucosa y menor recesión papilar en comparación con la carga retardada. Además, el uso de injertos de tejido conectivo en casos de pérdida ósea vestibular ha demostrado ser eficaz, garantizando la estabilidad y la predictibilidad estética. La posición tridimensional del implante y la preservación del volumen del tejido periimplantario también son cruciales para el éxito del procedimiento. El análisis a largo plazo refuerza la eficacia de la carga inmediata para mantener la arquitectura gingival y preservar los tejidos periimplantarios. La conclusión sugiere que la carga inmediata es un enfoque prometedor, pero que la selección cuidadosa de los casos y la implementación de protocolos clínicos adecuados son esenciales para el éxito del tratamiento.

Palabras clave: Carga Inmediata. Implante Dental. Estética. Tejido Conectivo.

1 INTRODUCTION

Oral rehabilitation with dental implants has evolved significantly, especially in relation to the installation and immediate loading in the maxillary aesthetic area. This procedure aims to restore function and aesthetics with predictability, minimizing bone resorption and preserving peri-implant soft tissues (Wang *et al.*, 2020).

The immediate loading approach has been widely studied and compared with late loading, demonstrating potential advantages in maintaining gingival architecture and patient comfort (Qin *et al.*, 2023). However, clinical challenges, such as loss of the vestibular wall of the alveolus, can compromise treatment success, requiring complementary strategies, such as the use of connective tissue grafts optimizing outcomes (Tirone & Genovesi, 2021).

Thus, this study aimed to review the scientific literature on the predictability of immediate loading of implants in the maxillary aesthetic zone, analyzing its impacts on the maintenance of peri-implant tissues and identifying factors that influence the clinical success of this procedure.

2 METHODOLOGY

This study was characterized as an exploratory bibliographic research, with the objective of qualitatively analyzing the predictability of the immediate loading of implants in the maxillary aesthetic zone and its impacts on peri-implant tissues. To achieve the proposed objectives, relevant scientific studies on the subject were reviewed, ensuring credibility to the analysis (Sousa; Olive tree; Alves, 2021).

The search was performed in the PubMed, LILACS and VHL databases, using the following descriptors associated with Boolean operation: (Immediate loading OR immediate loading) AND (provisionalization OR provisionalization) AND (aesthetic area OR aesthetic area).

The inclusion criteria covered articles published between 2020 and 2025, in Portuguese, English, and Spanish, that presented clinical studies, systematic reviews, or meta-analyses on the subject. Duplicate articles and those published outside the delimited period were excluded.

The search identified 42 articles in the scientific databases and after applying the inclusion and exclusion criteria, 22 articles were screened. After reading the abstracts and titles, a total of 11 articles were selected, which composed the database of this study.

3 RESULTS AND DISCUSSIONS

After associating all descriptors in the searched databases, 11 articles were found that evaluated the use of immediate loading in the aesthetic area. The literature shows that this approach has been widely investigated, with evidence supporting the preservation of peri-implant hard and soft tissues.

According to Qin *et al.* (2023), immediate loading showed less change in the level of the midfacial mucosa (0.48 mm lower) and less papillary recession compared to late loading. These findings are consistent with those of Puisys *et al.* (2022), who reported satisfactory aesthetic results for both approaches, but a slight gain in the level of the medial-buccal mucosa for the immediate-loading implants after one year of follow-up.

Another relevant aspect is the feasibility of immediate loading even in challenging clinical scenarios, such as loss of the vestibular wall of the alveolus. Studies have shown that the use of connective tissue grafting can enable immediate loading, providing stability to the particulate graft and improving aesthetic predictability (Tirone & Genovesi, 2021). Similarly, Stefanini *et al.* (2023) emphasized that an adequate mucogingival approach is essential to avoid complications related to the resorption of peri-implant tissues and ensure a favorable aesthetic outcome.

The three-dimensional position of the implant also plays a crucial role in the aesthetic predictability of the results, Rosa & Oliveira Rosa (2023), proposed that obtaining an optimal distance of 3 mm between the implant platform and the gingival margin, together with maintaining an adequate buccal and palatable thickness and a soft tissue gap of ≥ 3 mm in the cervical portion of the implant, It promotes soft tissue growth and a thicker peri-implant bone ridge. These factors would ensure the stability of the results over time.

Volumetric preservation of peri-implant tissue is also an important factor to be considered. Menchini-Fabris *et al.* (2023) reported that immediate provisionalization can minimize the loss of volume of soft and hard tissues, with a reduction in alveolar width of only 0.5 mm after one year. These findings are in line with those of Wang *et al.* (2020), who demonstrated that immediate provisionalization better preserves facial crest volume, although it does not significantly impact linear soft tissue resorption.

On the other hand, Jiang *et al.* (2020) investigated the influence of connective tissue grafting on immediate loading and observed that the use of connective tissue grafting can significantly reduce oral tissue collapse, especially in the region of 2-5 mm apical to the gingival margin. However, the maintenance of the position of the midfacial gingival margin did not present statistically significant differences between the groups with and without

connective tissue grafting, indicating that the graft may benefit volumetric stability, but not necessarily gingival position.

The correlation between intraoperative jump space and soft tissue stability has been investigated. Zhang *et al.* (2023) observed a moderate negative correlation between the size of the jump gap and the stability of peri-implant tissues, suggesting that larger gaps may impact aesthetic predictability. However, the immediate implantation procedure with provisionalization proved to be effective in maintaining gingival architecture.

Long-term results have also been analyzed. Weigl *et al*. Wang et al. (2023) conducted a five-year prospective study on immediate provisionalization in 3.0 mm diameter conical implants and reported a survival rate of 96.5%, with marginal bone gain and improvement in aesthetic parameters over time. These findings reinforce the safety of immediate loading when applied under appropriate conditions.

In addition, a controlled retrospective analysis conducted with 43 individuals who underwent immediate placement of dental implants in post-extraction sockets also demonstrated advantages of immediate loading in the preservation of peri-implant tissues. The results indicated a lower volumetric loss in the immediate load group (-39 ± 31 mm^3) compared to the late load group (-89 ± 30 mm^3). The final index of Jemt's papilla was also higher in the immediate loading group, showing better preservation of the soft tissues around the implant (Menchini-Fabris *et al.*, 2023). These findings corroborate previous studies that have highlighted the benefits of immediate provisionalization in the maintenance of peri-implant architecture and aesthetic predictability.

However, this study has some limitations. The selection of articles was based on specific criteria, which may restrict the scope of the results. In addition, the variability in clinical protocols among the studies analyzed makes it difficult to standardize the ideal approaches. For future research, it is recommended to conduct long-term randomized controlled trials to validate the efficacy of immediate loading under different clinical conditions. In addition, further investigations into the influence of variables such as gingival biotype, buccal bone thickness, and graft materials may contribute to the definition of more accurate and personalized protocols.

The findings discussed indicate that the immediate installation and loading of implants in the maxillary aesthetic zone, when performed under appropriate criteria, favors the maintenance of peri-implant tissues, reduces facial crest resorption, and improves aesthetic results. Careful selection of cases is essential, especially in situations of vestibular bone loss, where the use of grafts may be necessary to optimize results.

4 CONCLUSION

Immediate loading of implants in the maxillary aesthetic zone has been shown to be a viable and beneficial approach in the preservation of peri-implant tissues and in aesthetic predictability. The results analyzed indicate that immediate provisionalization reduces bone crest resorption, favors soft tissue stability, and improves aesthetic parameters compared to delayed loading.

However, careful case selection and the adoption of appropriate clinical protocols are essential to ensure the success of treatment. Future research, with long-term randomized controlled trials, is needed to validate the effectiveness of this approach in different clinical scenarios.

REFERENCES

Jiang, X., Di, P., Ren, S., Zhang, Y., & Lin, Y. (2020). Hard and soft tissue alterations during the healing stage of immediate implant placement and provisionalization with or without connective tissue graft: A randomized clinical trial. Journal of Clinical Periodontology, 47(8), 1006–1015. https://doi.org/10.1111/jcpe.13314

Menchini-Fabris, G., Toti, P., Covani, U., Vatteroni, E., Marconcini, S., & Crespi, R. (2023). Bone volume assessment around immediate dental implant in the esthetic area with immediate tooth-like single crown provisionalization: A laser and computed tomography 1-year retrospective study. The International Journal of Oral & Maxillofacial Implants, 38(5), 933–942. https://doi.org/10.11607/jomi.10123

Menchini-Fabris, G. B., Toti, P., Covani, U., Trasarti, S., Cosola, S., & Crespi, R. (2023). Volume assessment of the external contour around immediate implant with or without immediate tooth-like crown provisionalization: A digital intraoral scans study. Journal of Stomatology, Oral and Maxillofacial Surgery, 124(4), 101418. https://doi.org/10.1016/j.jormas.2023.101418

Puisys, A., Auzbikaviciute, V., Vindasiute-Narbute, E., Pranskunas, M., Razukevicus, D., & Linkevicius, T. (2022). Immediate implant placement vs. early implant treatment in the esthetic area. A 1-year randomized clinical trial. Clinical Oral Implants Research, 33(6), 634–655. https://doi.org/10.1111/clr.13928

Qin, R., Chen, Y., Han, C., Wu, D., Yu, F., & He, D. (2023). Immediate implant placement with or without immediate provisionalization in the maxillary esthetic zone: A systematic review and meta-analysis. The International Journal of Oral & Maxillofacial Implants, 38(3), 422–434c. https://doi.org/10.11607/jomi.9876

Rosa, J. C. M., & Rosa, A. C. P. O. (2023). The importance of the 'magic square' in immediate implant placement and provisionalization in postextraction sites. A case series. The International Journal of Esthetic Dentistry, 18(2), 180–198.

Sousa, A. S., Oliveira, G. S., & Alves, L. H. (2021). A pesquisa bibliográfica: Princípios e fundamentos. Cadernos da Fucamp, 20(43), 64–83.

Stefanini, M., Rendón, A., Zucchelli, A., Sangiorgi, M., & Zucchelli, G. (2023). Avoiding errors and complications related to immediate implant placement in the esthetic area with a mucogingival approach. Periodontology 2000, 92(1), 362–372. https://doi.org/10.1111/prd.12456

Tirone, F., & Genovesi, F. (2021). Immediate implant placement and loading in the esthetic area when the buccal socket wall is significantly damaged. Journal of Esthetic and Restorative Dentistry, 33(4), 542–549. https://doi.org/10.1111/jerd.12707

Wang, I. C., Chan, H. L., Kinney, J., & Wang, H. L. (2020). Volumetric facial contour changes of immediately placed implants with and without immediate provisionalization. Journal of Periodontology, 91(7), 906–916. https://doi.org/10.1002/JPER.19-0402

Weigl, P., Trimpou, G., Hess, P., Kolinski, M., Bellucci, G., Triscuoglio, D., Friberg, B., Leziy, S., Al-Nawas, B., Wagner, W., Pozzi, A., Ottria, L., Wiltfang, J., Behrens, E., Vasak, C., & Zechner, W. (2024). Esthetically driven immediate provisionalization in the anterior zone: 5-year results from a prospective study evaluating 3.0-mm-diameter tapered implants. Clinical Oral Investigations, 28(8), 460. https://doi.org/10.1007/s00784-024-05834-3

Zhang, S., Sun, Y., Huang, C., & He, D. (2023). Correlation between differences in intraoperative jumping gaps and soft tissue changes around immediate implant placement and provisionalization in the maxillary anterior region. Hua Xi Kou Qiang Yi Xue Za Zhi, 41(6), 678–685. https://doi.org/10.7518/hxkq.2023.06.008