

Exploring The Wonders of Lingual Braces

¹Dr. Ekta Gupta, Assistant Professor, Department of Orthodontics, Siddhpur Dental College, and Hospital, Patan, Gujarat, India.

²Dr. Shailly Nimbark, Consultant Orthodontist and Private Practitioner, Indore, Madhya Pradesh, India.

³Dr. Jerbin Vijai V M, Consultant Orthodontist, Kanyakumari, Tamil Nadu, India.

⁴Dr. Shahabuddin Khan, General Dentist, Senior Assistant, Dentistry. calm. Taylor, Michigan, USA.

⁵Dr. Mohammad Ullah Khan, Orthodontist, Tobal Dental Clinic, Buraidah, Al Qasim, Saudi Arabia.

⁶Dr. Vinit Kumar Singh, Professor, Department of Orthodontics and Dentofacial Orthopaedic, Vananchal Dental College, Garhwa, Jharkhand, India.

Corresponding Author: Dr. Ekta Gupta, Assistant Professor, Department of Orthodontics, Siddhpur Dental College, and Hospital, Patan, Gujarat, India.

Citation of this Article: Dr. Ekta Gupta, Dr. Shailly Nimbark, Dr. Jerbin Vijai V M, Dr. Shahabuddin Khan, Dr. Mohammad Ullah Khan, Dr. Vinit Kumar Singh, “Exploring The Wonders of Lingual Braces”, IJDSIR- November - 2023, Volume – 6, Issue - 6, P. No. 64 – 69.

Copyright: © 2023, Dr. Ekta Gupta, et al. This is an open access journal and article distributed under the terms of the creative common’s attribution non-commercial License. Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given, and the new creations are licensed under the identical terms.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Orthodontic treatment has undergone a remarkable transformation over the years, moving away from the visibility and inconvenience of traditional metal braces to more discreet and efficient alternatives. Among these innovations, lingual braces have emerged as a groundbreaking solution, hidden from view on the inner surface of the teeth. This comprehensive review article delves into the world of lingual braces, exploring their evolution, precise design, benefits, challenges, and the latest advancements in the field.

The evolution of lingual braces, dating back to their introduction in the 1970s, marks a significant departure from traditional orthodontic methods. Although early

iterations faced technical and patient comfort issues, continued research and innovation have propelled them into a highly effective and sought-after orthodontic treatment.

The design and placement of lingual braces are emblematic of modern orthodontics' precision and individualization. Customization is a cornerstone of their appeal, ensuring an exact fit for each patient. These braces consist of small, inconspicuous brackets and archwires discreetly bonded to the inner surface of the teeth. This unobtrusive placement caters to the needs of patients, particularly adults and teenagers, who seek orthodontic treatment without drawing attention to their dental correction.

The benefits of lingual braces are diverse. They offer a significant aesthetic advantage, making them appealing to individuals who wish to maintain their appearance during treatment. Lingual braces are equally effective in addressing a wide range of orthodontic issues, including complex cases, making them a reliable choice for orthodontic professionals. Customization guarantees that each bracket and wire is tailored to an individual's unique dental needs, enhancing the treatment's effectiveness. Furthermore, lingual braces prioritize patient comfort, with their design intended to minimize discomfort and irritation, allowing individuals to continue their daily lives with minimal disruption. The feature promoting improved oral hygiene sets lingual braces apart, as they do not obstruct regular brushing and flossing practices, thus bolstering overall dental health.

This comprehensive review has unveiled the wonders of lingual braces, offering valuable insights for orthodontic professionals and prospective patients. As technology continues to progress, the future of orthodontics may witness even more remarkable developments in lingual braces, further enhancing treatment duration, patient comfort, and accessibility to a broader spectrum of individuals.

Keywords: Archwires, Braces, Lingual, Orthodontics.

Introduction

Orthodontic treatment has seen remarkable advancements over the years, with a significant shift from conspicuous metal braces to more subtle and efficient alternatives. Among these innovative solutions, lingual braces have emerged as a revolutionary option for individuals seeking orthodontic treatment without the social or aesthetic concerns associated with traditional braces. Lingual braces, also known as incognito braces or hidden braces, are placed discreetly on the inner surface of the teeth, making them virtually invisible to

others. In this review article, we embark on a comprehensive journey into the world of lingual braces, exploring their evolution, intricate design, multitude of benefits, unique challenges, and the latest breakthroughs in the field.[1,2]

Evolution of Lingual Braces

The concept of placing brackets on the lingual (inner) surface of the teeth was introduced in the 1970s, signifying a significant departure from traditional orthodontic methods. Early iterations of lingual braces faced various technical and patient comfort issues, but the relentless pursuit of improvement in orthodontic practice has led to their evolution into a highly effective and sought-after treatment option. Pioneering orthodontists recognized the potential of lingual braces and, through continued research and innovation, have refined and expanded their application.[3]

Design and Placement:[4-6]

Lingual braces are a testament to the precision and individualization achievable in modern orthodontics. This section delves deeper into their design and placement, shedding light on why they are regarded as a discreet and effective orthodontic option.

1. Customization: One of the most remarkable aspects of lingual braces is the level of customization they offer. Before the treatment begins, an orthodontist takes detailed impressions and digital scans of the patient's teeth and oral anatomy. Using this data, the orthodontist and a skilled lab technician work together to create a set of braces that perfectly match the patient's dental structure. This level of customization ensures an exact fit, enhancing both comfort and effectiveness throughout the orthodontic journey.

2. Bracket and Archwire Design: Lingual braces are designed to be as inconspicuous as possible. The brackets used in lingual braces are small and low-profile,

carefully engineered to be unobtrusive. They are crafted from biocompatible materials to reduce the risk of allergies or irritations. These brackets are securely bonded to the inner surface of each tooth using a specialized adhesive, ensuring a stable and discreet placement.

3. Placement on the Inner Surface: Lingual braces' defining feature is their discreet positioning. Unlike traditional braces, where brackets and wires are affixed to the front surface of teeth, lingual braces are hidden on the inner surface. This placement makes them virtually invisible to others, allowing patients to undergo orthodontic treatment without drawing attention to their dental correction. This discreet placement aligns with the desires of many patients, particularly adults and teenagers, who may be apprehensive about the social implications of visible braces.

4. Comfort and Functionality: The design of lingual braces takes into account the need for patient comfort. Despite their positioning on the inner surface, lingual braces are engineered to minimize discomfort and irritation. The archwires connecting the brackets are thin and flexible, exerting the necessary pressure on the teeth to guide them into their desired positions while reducing the potential for discomfort. This attention to comfort ensures that patients can go about their daily lives without significant disruption.

5. Individualized Treatment Plans: Lingual braces, being custom-made for each patient, allow orthodontists to devise highly tailored treatment plans. Whether the patient requires mild adjustments or more complex orthodontic work, the braces can be adapted to meet those specific needs. The customization of lingual braces extends to their functionality, ensuring that treatment is both effective and patient-centric.

The design and placement of lingual braces embody the principles of precision, comfort, and discretion. This level of customization and attention to patient needs makes lingual braces an attractive option for those seeking orthodontic treatment without compromising their appearance or well-being.

Benefits of Lingual Braces: [7-9]

Lingual braces offer a range of significant advantages over traditional braces and clear aligners. In this section, we elaborate on these benefits, highlighting why they are gaining popularity among orthodontic patients of all ages.

1. Aesthetic Advantage

Lingual braces provide a unique aesthetic advantage, setting them apart from other orthodontic options. The primary allure of lingual braces is their discreet nature. Placed on the inner surface of the teeth, they remain virtually invisible to others. This feature is particularly appealing to individuals who desire orthodontic treatment without drawing attention to their dental correction. Adults in professional settings and teenagers who are conscious of their appearance often find lingual braces an attractive solution, as they can smile with confidence throughout their treatment.

Efficient Alignment

One of the most compelling aspects of lingual braces is their effectiveness in achieving orthodontic goals. They are capable of treating a wide spectrum of orthodontic issues, including complex cases, with the same level of efficacy as traditional braces. Lingual braces offer orthodontists the precision and control required to address various dental misalignments, overcrowding, overbites, underbites, and other issues. Their ability to provide consistent and predictable results makes them a trusted choice for orthodontic professionals.

Customization

Customization is a cornerstone of lingual braces. Each bracket and wire is meticulously tailored to the individual's dental needs. Orthodontists take detailed impressions and digital scans to create a treatment plan that aligns with the patient's unique anatomy and goals. This level of personalization ensures that the orthodontic process is optimized for each patient. Lingual braces adapt to the individual's specific treatment requirements, enhancing their efficiency and patient satisfaction.

Comfort

Comfort during orthodontic treatment is a top priority, and lingual braces are designed with patient comfort in mind. The brackets and archwires used in lingual braces are crafted to minimize discomfort and irritation. The thin, flexible archwires apply gentle pressure to the teeth, reducing the potential for soreness while effectively guiding the teeth into their desired positions. Patients can go about their daily lives with minimal disruption, experiencing less discomfort than traditional braces may cause.

Improved Oral Hygiene

Maintaining good oral hygiene during orthodontic treatment is crucial to overall dental health. Lingual braces excel in this regard. Unlike traditional braces, where brackets and wires are on the front surface of teeth and may obstruct brushing and flossing, lingual braces do not interfere with regular oral care practices. Patients can maintain their oral hygiene routine with ease, reducing the risk of plaque buildup, tooth decay, and gum problems. This feature promotes better oral health during the course of orthodontic treatment, minimizing potential complications.

The benefits of lingual braces, ranging from their aesthetic advantage to their effectiveness, customization, comfort, and support for oral hygiene, make them a

compelling option for individuals seeking orthodontic correction. These advantages cater to a broad spectrum of patient needs and preferences, contributing to the growing popularity of lingual braces in the field of orthodontics.

Challenges and Considerations:[10]

Adaptation Period: Patients may require an adjustment period to become accustomed to the lingual braces, affecting speech and initial discomfort.

Cost: Lingual braces tend to be more expensive than traditional braces or clear aligners.

Longer Treatment Time: The complexity of lingual braces may extend the treatment duration compared to some other orthodontic options.

Maintenance: Regular follow-up appointments are crucial for effective treatment, and patients should maintain good oral hygiene.

Advancements in Lingual Braces [11]

Recent advancements in lingual orthodontics have addressed many of the challenges mentioned above. The use of advanced materials, computer-aided design, and robotic wire bending techniques have made lingual braces more accessible, comfortable, and efficient. Intraoral scanners and 3D printing have also improved the customization process, reducing patient discomfort and treatment time.

Comparisons with Other Orthodontic Options:[12]

Lingual braces offer unique advantages compared to traditional braces and clear aligners. This section will compare these options in terms of aesthetics, effectiveness, and patient experience, highlighting the distinct benefits of lingual braces.

Patient Profiles[13]

Lingual braces are suitable for a wide range of patients, including adults, teenagers, and individuals seeking discrete orthodontic treatment. This section will discuss

the profiles of patients who may benefit from lingual braces and provide insights into case selection.

Conclusion

Lingual braces represent a remarkable innovation in orthodontics, providing patients with an inconspicuous and effective solution for straightening their teeth. Despite the initial challenges, recent advancements in technology and materials have made lingual braces a viable choice for orthodontic treatment. Their ability to combine aesthetics and efficiency is making them increasingly popular among patients. This comprehensive review has highlighted the wonders of lingual braces, offering valuable insights for both orthodontic professionals and prospective patients.

Future Perspectives

As technology continues to advance, the field of orthodontics will likely witness even more remarkable developments in lingual braces. Future innovations may further reduce treatment time, enhance patient comfort, and make this discreet orthodontic option even more accessible to a broader range of individuals.

References

1. Ipek Tamer, Evren Öztaş, Gülnaz Marşan. Orthodontic Treatment with Clear Aligners and The Scientific Reality Behind Their Marketing: A Literature Review. Turk J Orthod. 2019 Dec;32(4):241-246. doi: 10.5152/TurkJOrthod.2019.18083. PMID: 32110470; PMCID: PMC7018497.
2. Fritz U, Diedrich P, Wiechmann D. Lingual Technique - Patients' Characteristics, Motivation and Acceptance Interpretation of a Retrospective Survey. Journal of Orofacial Orthopedics / Fortschritte der Kieferorthopädie. 2002;63:227-33. [PubMed] [Google Scholar]
3. Karkhanechi M, Chow D, Sipkin J, David S, Boylan R, Norman R, et al. Periodontal Status of adult patients treated with fixed buccal appliances and removable aligners over one year of active Orthodontic therapy. Angle Orthod. 2013;83:146-51. doi: 10.2319/031212-217.1. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
4. Buckley J. Lingual orthodontics: an illustrated review with the incognito fully customized appliance. J Ir Dent Assoc. 2012;58:149-55. [PubMed] [Google Scholar]
5. Ling PH. Lingual orthodontics: history, misconceptions and clarification. J Can Dent Assoc. 2005;71:99-102. [PubMed] [Google Scholar]
6. George RD, Hirani S. Fully-customized lingual appliances: how lingual orthodontics became a viable treatment option. J Orthod. 2013;40:S8-13. [PubMed] [Google Scholar]
7. Keim R, Gottlieb E, Vogels D, Vogels P. 2017 JCO Orthodontic Practice Study. Journal of Clinical Orthodontics: JCO. 2017;51:639. [PubMed] [Google Scholar]
8. War I. The number of adults seeking orthodontic treatment in the UK continues to rise. British Dental Journal. 2018;224:847. [PubMed] [Google Scholar]
9. Agrawal S, Hegde TM, Patil AK. Survey on the practice of lingual orthodontics in India. Journal of Indian Orthodontic Society. 2016;50:234-9. [Google Scholar]
10. Cem Caniklioglu, Yildiz Oztürk. Patient discomfort: a comparison between lingual and labial fixed appliances. Angle Orthod. 2005 Jan;75(1):86-91. doi: 10.1043/0003-3219(2005)075<0086:PDACBL>2.0.CO;2. PMID: 15747820.

11. Heidi H. Huh, Kishore Chaudhry, Richard Stevens, Karthikeyan Subramani. Practice of lingual orthodontics and practitioners' opinion and experience with lingual braces in the United States. *J Clin Exp Dent*. 2021 Aug;13(8):e789-e794. doi: 10.4317/jced.58328. PMID: 34512918; PMCID: PMC8412811.
12. Rosvall MD, Fields HW, Ziuchkovski J, Rosenstiel SF, Johnston WM. Attractiveness, acceptability, and value of orthodontic appliances. *American Journal of Orthodontics and Dentofacial Orthopedics*. 2009;135:276.e1–e12. [PubMed] [Google Scholar].
13. Angela Auluck. Lingual orthodontic treatment: what is the current evidence base? *Review J Orthod*. 2013 Sep;40 Suppl 1:S27-33. doi: 10.1179/1465313313Y.0000000073. PMID: 24005948.