

## Basal implants and their importance in clinical Dentistry: Literature review

### Implantes basais e sua importância na Odontologia clínica: Revisão da literatura

### Implantes basales y su importancia en la Odontología clínica: Revisión de la literatura

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#### Summary

**Background:** Basal implants, also known as cortical implants, have a history dating back to the mid-20th century. Although they are not as well known or widely used as conventional dental implants, they have been gaining relevance in dentistry in recent years due to their effectiveness in specific clinical situations. **Objective:** evaluate clinical effectiveness, analyze their indications, contraindications, examine complications and success rate. **Methods:** the research was structured based on a search tree (PubMed, Google Scholar, ProQuest, Scopus), with keywords such as: Basal Implant. The languages: English, Portuguese and Spanish were used as limiters; open access articles, systematic reviews, meta-analysis, randomized clinical trials, case reports. We established a secondary selection based on the title and summary of the articles according to the objective of the study. **Results:** The initial search showed 3,099 studies whose title was related to the search patterns, of which 3,029 articles were excluded based on their title and abstract, thus resulting in 70 potentially relevant articles. After reading, 21 articles that did not meet the inclusion criteria were excluded: repeated. In this way, 49 articles were finally selected to carry out this review. **Conclusions:** Dental implants offer significant benefits in oral functionality, facial aesthetics, self-esteem and long-term health. However, there are important considerations that encompass postoperative care, costs, insurance coverage, and access to these treatments.

**Keywords:** Oral basal implants; Oral basal cortico implants; One-piece oral implants.

#### Resumo

**Histórico:** Os implantes basais, também conhecidos como implantes corticais, têm uma história que remonta a meados do século XX. Embora não sejam tão conhecidos ou amplamente utilizados como os implantes dentários convencionais, eles têm ganhado relevância na odontologia nos últimos anos devido à sua eficácia em situações clínicas específicas. **Objetivo:** avaliar a eficácia clínica, analisar suas indicações, contra indicações, examinar as complicações e a taxa de sucesso. **Métodos:** a pesquisa foi estruturada com base em uma árvore de busca (PubMed, Google Scholar, ProQuest, Scopus), com palavras-chave como: Basal Implant (Implante basal). Os idiomas: Inglês, português e espanhol foram usados como limitadores; artigos de acesso aberto, revisões sistemáticas, meta-análises, ensaios clínicos randomizados, relatos de caso. Estabelecemos uma seleção secundária com base no título e no resumo dos artigos de acordo com o objetivo do estudo. **Resultados:** A busca inicial mostrou 3.099 estudos cujo título estava relacionado aos padrões de busca, dos quais 3.029 artigos foram excluídos com base em seu título e resumo, resultando assim em 70 artigos potencialmente relevantes. Após a leitura, 21 artigos que não atendiam aos critérios de inclusão foram excluídos: repetidos. Dessa forma, 49 artigos foram finalmente selecionados para a realização desta revisão. **Conclusões:** Os implantes dentários oferecem benefícios significativos em termos de funcionalidade oral, estética facial, autoestima e saúde em longo prazo. Entretanto, há considerações importantes que abrangem cuidados pós-operatórios, custos, cobertura de seguro e acesso a esses tratamentos.

**Palavras-chave:** Implantes orais basais; Implantes orais basais corticais; Implantes orais de peça única.

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## Resumen

Los implantes basales, también conocidos como implantes corticales, tienen una historia que se remonta a mediados del siglo XX. Aunque no son tan conocidos ni se utilizan tanto como los implantes dentales convencionales, en los últimos años han ido ganando relevancia en odontología debido a su eficacia en situaciones clínicas específicas. **Objetivo:** evaluar la eficacia clínica, analizar sus indicaciones y contraindicaciones, examinar las complicaciones y las tasas de fracaso. **Método:** la investigación se estructuró a partir de un árbol de búsqueda (PubMed, Google Scholar, Dialnet, Scopus), con palabras clave como: Implante Basal. Los idiomas: Inglés, portugués y español se utilizaron como limitadores; artículos de acceso abierto, revisiones sistemáticas, meta-análisis, ensayos clínicos aleatorizados, informes de casos. Se estableció una selección secundaria basada en el título y resumen de los artículos según el objetivo del estudio. **Resultados:** La búsqueda inicial mostró 3.099 estudios cuyo título estaba relacionado con los patrones de búsqueda, de los cuales 3.029 artículos fueron excluidos en base al título y resumen de los mismos, resultando 70 artículos potencialmente relevantes. Tras la lectura, se excluyeron 21 artículos que no cumplían los criterios de inclusión: Repetidos. De esta forma, se seleccionaron finalmente 49 artículos para llevar a cabo la presente revisión. **Conclusiones:** Los implantes dentales ofrecen importantes beneficios en cuanto a funcionalidad oral, estética facial, autoestima y salud a largo plazo. Sin embargo, existen consideraciones importantes que abarcan los cuidados postoperatorios, los costes, la cobertura de los seguros y el acceso a estos tratamientos.

**Palabras clave:** Implantes orales basales; Implantes orales basales corticales; Implantes orales de una pieza.

## 1. Introduction

Dental implants have assumed an important role in replacing missing teeth, which aim to restore oral function and aesthetics, however, like all rehabilitation systems, conventional implants have some limitations that are related to the anatomical area, the quality, height and width of bone available (Radharkrishnan et. al, 2021).

To solve these problems related to bone loss, additional surgical procedures are necessary such as placement of bone grafts, maxillary sinus elevation, and nerve repositioning. To avoid these procedures, the implant design was modified and the basal osseointegrated implant (BOI) was created (Vijayebenezer et. al, 2023).

Basal implantology is also known as cortical or bicortical implant systems, where the implant is placed in the cortical portion of the jaw and thus excellent retention is obtained because this area has excellent quality and quantity of bone, these implants also They are called lateral implants or disc implants (Thakur et. al, 2021).

In recent years, BOI basal implants have undergone modifications with the aim of achieving anchorage of the basal cortical bone. Currently, these systems have less surgical protocol, are simple and can be carried out immediately functionally (Vijayebenezer et. al, 2023). The aim of this study is to evaluate clinical effectiveness, analyze its indications, contraindications, examine complications and success rate.

## 2. Methodology

This study was conducted through an Integrative Review. The integrative review is a methodology that allows the inclusion of studies with different methodological approaches (quantitative and qualitative), with the aim of synthesizing and comprehensively analyzing the existing literature on a specific topic. This methodology is particularly useful in providing a more complete and balanced understanding of the phenomenon under investigation.

This article is based on articles categorized within the levels of evidence included up to level B/2b of the University of Oxford from the last 5 years (2018- 2023) with the search date being the month of October 2023.

The information obtained was through a structured investigation based on a search tree of bibliographic information (secondary information) such as PubMed (US National Library of Medicine, National Institutes of Health), Google Scholar, ProQuest, Scopus, in all The same search strategy was used in the sources: basal oral implants, corticobasal oral implants, one piece oral implants.

For the inclusion criteria, the following criteria were used as limiters: language (English, Portuguese, Spanish), free

access, any type of research study (systematic reviews, meta-analysis, randomized clinical trials, case reports, observational studies, series of patients with severe atrophy of the jaw who had undergone basal implants, articles with direct clinical data, articles that were published less than 5 years ago.

Within the present article, we excluded those repeated studies that were found within the search engines, studies not competent for our analysis, series that did not report clinical data, series of patients that did not include follow-up and/or review for the period established above. In addition, a secondary selection was carried out based on the title and summary of the articles, selecting only those relevant to the objective of the present study, for the population of interest in this review, all individuals treated with basal implants were included.

To carry out this integrative review, the guidelines and theoretical frameworks established by several recognized authors in the field of scientific methodology were followed. Below are the main authors and works that provide methodological support for this type of research:

**Pereira AS et al. (2018):** In their work "Metodologia da pesquisa científica", Pereira et al. offer an exhaustive overview of scientific research methods, highlighting the importance of rigor and systematicity in literary reviews. This book provides a solid foundation for structuring and conducting integrative reviews.

**Estrela, C. (2018):** In "Scientific Methodology: Ciência, Ensino, Pesquisa", Estrela discusses the various methodological approaches in scientific research, highlighting the characteristics and benefits of integrative reviews as a tool for the synthesis of knowledge.

**Snyder, H. (2019):** In his article "Review of literature as a research methodology: Overview and guidelines", Snyder provides a clear framework for conducting literature reviews, highlighting the integrative one for its ability to combine diverse studies and offer a holistic view of the subject under investigation.

These methodological references not only guide the process of data collection and analysis, but also ensure that the integrative review is carried out with the rigor and precision necessary to be accepted by the academic and scientific community.

**Table 1** - Flowchart of the systematic review of the literature.

PubMed	Inclusion criteria	Results
	5 years	20
	Languages (English, Spanish, Portuguese)	20
	Free access.	20
	Systematic reviews, meta-analysis, RCTs, case reports.	20
Academic google	Inclusion criteria	Results
	5 years	18,100
	Languages (English, Spanish, Portuguese)	9,480
	Free access.	9,480
	Systematic reviews, meta-analysis, RCTs, case reports.	168
ProQuest	Inclusion criteria	Results
	5 years	3,042
	Languages (English, Spanish, Portuguese)	3,009
	Free access.	2,999
	Systematic reviews, meta-analysis, RCTs, case reports.	2,883

Scopus	Inclusion criteria		Results	
	5 years		31	
	Languages (English, Spanish, Portuguese)		31	
	Free access.		31	
	Systematic reviews, meta-analysis, RCTs, case reports.		28	
Exclusion/selection criteria	Search engines	Results	Repeated	Total
	Pubmed	13	.....	13
	Academic google	17	1 Pubmed 3 Scopus	13
	ProQuest	12	.....	12
	Scopus	18	2 Pubmed 5 google academic	11

Fuente: Autoría propia.

### 3.Results

The initial search showed 3,099 studies whose title was related to the search patterns, of which 3,029 articles were excluded based on their title and abstract, thus resulting in 70 potentially relevant articles. After reading, 21 articles that did not meet the inclusion criteria were excluded: repeated. In this way, 49 articles were finally selected to carry out this review.

**Table 2** - Characteristics of the included articles.

PUBMED				
Authors	Article title/DOI	Type of study	Journal	Threshold Concepts
Antonina I, Lazarov A, Gaur V, Lysenko V, Konstantinovic V, Grombkötö G, Palka L, Ihde S.  2020. Germany	“Consensus Regarding 16 Recognized and Clinically Proven Methods and Sub-Methods for Placing Corticobasal® Oral Implants”  Doi:10.4103/ams.ams_62_20	<b>Systematic review</b>	<i>Annals of Maxillofacial Surgery</i>	This document describes different methods of placing cortico-basal oral implants in different areas of the jaw and maxilla bone and in this way avoiding complications and also taking caution in areas that may be compromised when placing an implant. Each method is used according to the complexity and variation of each case.
Ihde S.  2019. Germany	“Indications and Treatment Modalities with Corticobasal Jaw Implants”  Doi:10.4103/ams.ams_142_19	<b>Systematic review</b>	<i>Annals of Maxillofacial Surgery</i>	The indications and contraindications for cortico-basal implants are described, taking into account situations such as systemic or local diseases or factors that may cause treatment failure, and also includes the precautions that should be taken in these cases or adjustments to the treatment plan with such implants. implants.

Awadalkreem F, Ahmad AG, Ihde S, Osman M.  2020. Sudan	“Effects of Corticobasal Implant Protrusion inside the Nasal and Maxillary Sinus”  Doi:10.4103/ams.ams_42_20	<b>Prospective longitudinal observational study.</b>	<i>Annals of Maxillofacial Surgery</i>	49 implants were placed, of which 5 protrude into sinus cavities, the survival rates were evaluated using the plaque and calculus index, modified gingival index and probing depth, resulting in no patient showing clinical or radiographic signs of sinusitis during the procedure. observation period.
Awadalkreem F, Khalifa N, Satti A, Suliman AM.  2022. Sudan	“Rehabilitation of Patients with Compromised Ridge Support Using Immediately Loaded Corticobasal Implant-supported Protheses: A Prospective Observational Study”  Doi:10.5005/jp- journals-10024-3416	<b>Prospective observational study.</b>	<i>The journal of contemporary dental practice</i>	This article aimsevaluate the results of immediate loading fixed cortico basal implant supported protheses by placing one hundred and seventy four cortico basal implants in 20 consecutive patients with compromised ridge support, resulting in The implants showed optimal implant health and a 100% survival rate.
Ahmad AG, Awadalkreem F, Osman M, Palka L.  2023. Sudan	“Does the Protrusion of Corticobasal Implants in the Maxillary Sinuses Affect Sinus Health? “A Retrospective Study”  Doi:10.5005/jp- journals-10024-3521	<b>Retrospective observational study</b>	<i>The journal of contemporary dental practice</i>	This article mentions that cortico-basal implants are effective in working on severely atrophied ridges, and also indicates that the tips of the implants can safely protrude into the maxillary and nasal sinuses, without any negative effect if not presented with greater acceptance and satisfaction on the part of the patient.
Ihde SKA.  2021. Germany	“The “Specialist Standard” has Changed in Oral Implantology.”  Doi:10.4103/ams.ams_262_21	Critical Observation	<i>Annals of Maxillofacial Surgery</i>	Inde and Stefan KA, mention and compare the advantages and disadvantages of cortico-basal implants and conventional implants, where they mention that the success rate of conventional implants is lower and additional surgical procedures are also required, reaching the conclusion that Corticobasal implants are the “specialist standard.”
Lazarov A  .2020. Bulgaria	“A Prospective Cohort Study of Maxillary Sinus Complications in Relation to Treatments with Strategic Implants® Penetrating Into the Sinus”  Doi:10.4103/ams.ams_85_20	<b>Prospective observational study.</b>	<i>Annals of Maxillofacial Surgery</i>	In this study, 217 corticobasal implants were placed that penetrate the cortical walls of the maxillary sinus, 204 implants were placed in the cortical bone of the sinus protruding towards the sinus up to 3 mm and 13 were placed in a trans sinuous manner, and the result was that no implant failed during the observation period.
Gaur V, Doshi AG, Bengani AKS.  2022. India	“Management of Mandibular Nonunion Fracture with Single-Piece Implant - A Case Report.”  Doi:10.4103/ams.ams_227_21	<b>Observational study</b>	<i>Annals of Maxillofacial Surgery</i>	A case is reported about a fracture with pseudoarthrosis, where the use of cortico-basal implants was very beneficial in the treatment since these, when fixed in the cortex, have no mobility and their success rate is very high.

<p>Ihde S, Sipic O. 2019. Germany</p>	<p>“Functional and Esthetic Indication for Dental Implant Treatment and Immediate Loading (2) Case Report and Considerations: Typical Attitudes of Dentists (and their Unions) toward Tooth Extractions and the Prevention of Early, Effective, and Helpful Dental Implant Treatment in the European Union.” Doi:10.4103/ams.ams_152_19</p>	<p><b>Observational study</b></p>	<p><i>Annals of Maxillofacial Surgery</i></p>	<p>In this case, they mention the use of cortico-basal implants in areas where the first cortex has been completely lost. They also mention that, according to some studies, they have less risk of producing peri-implantitis, and also have a high success rate, being satisfactory for the patient. since it generates less discomfort and requires less time when performing this treatment.</p>
<p>Gaur V, Doshi AG, Palka L. 2022. India.</p>	<p>“Zygomatic approach with single-piece implants: A technical note.” Doi:10.4103/njms.NJM S_274_20</p>	<p><b>Cases and controls study</b></p>	<p>National Journal of Maxillofacial Surgery</p>	<p>Zygomatic implants are used in atrophic jaws, demonstrating minimal postoperative complications, and no additional surgical procedures are needed.</p>
<p>Ihde S, Sipic O, Palka L. 2020. Poland.</p>	<p>“A Single-Step Implant Treatment of a Patient Presenting with a High Smile Line (Gummy Smile) - Surgical, Prosthetic, and Financial Considerations of Full-Mouth Rehabilitation with One-Piece Implants Anchored in Cortical Bone - A Case Report” Doi:10.4103/ams.ams_43_19</p>	<p><b>Case report</b></p>	<p><i>Annals of Maxillofacial Surgery</i></p>	<p>Basal implants allow us to have stable anchors, and have an advantage in terms of independence in their vertical bone supply.</p>
<p>Gaur V, Doshi AG, Palka LR. 2022. India.</p>	<p>“Multiple pterygoid approach: A novel technique with single-piece implants” Doi:10.4103/njms.NJM S_137_20</p>	<p><b>Descriptive observational study</b></p>	<p>National Journal of Maxillofacial Surgery</p>	<p>One-piece implants with a flapless approach for pterygoid anchorage have an advantage over conventional implants for atrophied tuberosity with pneumatized maxillary sinus, since the primary retention of the implant is not dependent on the ridge.</p>
<p>Ihde S, Palka L, Gaur V, Ihde A. 2018. Germany.</p>	<p>“Critical Appraisal Regarding the Publication "Implant Survival between Endo-Osseous Dental Implants in Immediate Loading, Delayed Loading, and Basal Immediate Loading Dental Implants: A 3-Year Follow-Up" “ Doi:10.4103/ams.ams_122_18</p>	<p><b>Prospective observational study</b></p>	<p><i>Annals of Maxillofacial Surgery</i></p>	<p>Basal implants had a 100% survival rate in the cases that were used, while conventional implants failed in one and two of the cases performed.</p>



SCOPUS				
Author; year; country	Article title/ DOI	Type of study	Journal	Threshold Concepts
Sahoo SK, Mishra S, Chinnannavar SN, Bajoria AA, Das A, Singh DK.  2023. India.	“Assessment of Oral Health-Related Quality of Life in Patients Receiving Corticobasal Dental Implants” doi:10.4103/jpbs.jpbs_236_23	<b>In vivo prospective observational study</b>	<i>Journal of pharmacy &amp; bioallied sciences</i>	This article evaluated the quality of life related to oral health in patients receiving corticobasal dental implants, which demonstrated that non-smoking patients, without a history of diabetes and periodontitis, showed greater satisfaction compared to those who had it with a minimal difference.
Awadalkreem F, Khalifa N, Ahmad AG, Suliman AM, Osman M.  2022. Sudan.	“Oral rehabilitation of maxillofacial trauma using fixed corticobasal implant-supported prostheses: A case series” doi:0.1016/j.ijscr.2022.107769	<b>Case report</b>	<i>International journal of surgery case reports</i>	The use of corticobasal implants to rehabilitate patients with facial trauma has had good results in terms of survival, success rate and patient satisfaction.
Ahmad AG, Osman M, Awadalkreem F.  2022. Sudan.	“Orthognathic correction and corticobasal implant-supported prostheses as a treatment modality for partial edentulism with mandibular prognathism: A case report and review of literature.” doi:10.1016/j.ijscr.2022.107219	<b>Case report and literature review</b>	<i>International journal of surgery case reports</i>	A 23-year-old woman who presented with mandibular protrusion, maxillary retrusion, and prominent chin underwent orthognathic surgery followed by the placement of corticobasal implants with immediate loading and significantly improved the treatment outcome after <a href="#">Surgery</a> .
Fodor, C.R., Cretu, R. and Purghel, T.I.  2022. Romania	“Implant rehabilitation with Strategic Implant <sup>^^@^^</sup> technology in two stage implants – bone addition, sinus-lift failure (cases presentation)”  doi:10.37897/RJS.2022	<b>Case report</b>	<i>Romanian Journal of Stomatology</i>	The technology of basal implants surpasses conventional implants at a high level, since with these we can carry out immediate loading, avoiding bone regeneration or sinus elevations, techniques that are required in some cases with conventional implants.
Lazarov AB.  2021. Bulgaria.	“The Impact of Diabetes, Smoking, and Periodontitis on Patients' Oral Health related Quality of Life after Treatment with Corticobasal Implants - An Evaluative Study” doi:10.4103/ams.ams_191_21	<b>Evaluative study</b>	<i>Annals of Maxillofacial Surgery</i>	Treatment with corticobasal implants is highly beneficial regardless of the presence of advanced periodontitis, controlled diabetes or smoking.
Gaur V, Doshi AG, Gandhi S.  2020. India.	“Immediate Prosthetic Rehabilitation of Marginal Mandibulectomy Post Radiation Case by Single-Piece Implant - A Case Report” doi:10.4103/ams.ams_260_20	<b>Case report</b>	<i>Annals of Maxillofacial Surgery</i>	Corticobasal or one- piece implants have an advantage over conventional ones since with these no delayed complications such as loosening or fracture of the screw are expected, because they are anchored to the cortex and are very stable.

Awadalkreem F, Khalifa N, Ahmad AG, Suliman AM, Osman M.  2020. Sudan.	“Prosthetic rehabilitation of maxillary and mandibular gunshot defects with fixed basal implant-supported prostheses: A 5-year follow-up case report” doi:10.1016/j.ijscr.2020.02.025.	<b>Case report</b>	<i>International journal of surgery case reports</i>	Male patient of 32 years who presented marginal mandibular resection by bullet wound was rehabilitated with the placement of definitive prostheses of basal implants of immediate load supported by 6 corticobasal screw implants, after 5 years the patient presented excellent health of the peri-implant soft tissues, stability of the prosthesis, with good aesthetics and improved function as well as its quality of life.
Gaur V, Singh N, Doshi AG, Chandrabas B.  2021. India.	“Immediate rehabilitation of a rheumatoid arthritis patient with single- piece implants” doi:10.1016/j.ijscr.2021.105874	<b>Case report</b>	<i>International journal of surgery case reports</i>	A 60-year-old patient has severe dental mobility, so the mobile teeth are extracted and immediate basal implants are placed, resulting in excellent osseointegration, so it is concluded that Patients who have atrophic jaws and in cases such as osteoporosis, diabetes, rheumatoid arthritis and cases of periodontal infection are successfully restored using one- piece implants with a smooth surface.
Vivek Gaur, Anita Gala Doshi, Lukasz R. Palk.  2020. India	“Mandibular reconstruction using single piece zygomatic implant in conjunction with a reinforcing Fibular Graft Union: A case report” doi:10.1016/j.ijscr.2020.07.047	<b>Case report</b>	<i>International journal of surgery case reports</i>	A 45-year-old male patient presented bone loss after the removal of a squamous cell carcinoma of the lower right vestibular side. This defect was reconstructed with a vascularized free fibula graft. Six basal implants were placed in this area, of which only one had not osseointegrated so it was extracted. This case presented high success for immediate functional prosthetic restoration and high acceptance by the patient.
Ahmad AG, Osman M, Awadalkreem F.  2019. Sudan	“Full-mouth rehabilitation of a patient with cleidocranial dysplasia using immediately loaded basal implant- supported fixed prostheses: A case report” doi:10.1016/j.ijscr.2019.11.005	<b>Case report</b>	<i>International journal of surgery case reports</i>	The objective of this article was to study a case of complete rehabilitation in a patient with periodontally compromised, 18 one-piece basal implants were placed and functionally loaded with a fixed partial prosthesis. For the results, bone loss was measured and obturated. an excellent
<b>ProQuest</b>				
<b>Author; year; country</b>	<b>Article title/ DOI</b>	<b>Type of study</b>	<b>Journal</b>	<b>Threshold Concepts</b>
Sahoo S, Mishra S, Chinnannavar S, Bajoria A, Das A, Singh D.  2023. India.	“Assessment of oral health-related quality of life in patients receiving corticobasal dental implants” doi:https://doi.org/10.4103/jpbs.jpbs_236_23.	<b>Descriptive observational study</b>	<i>Journal of Pharmacy and Bioallied Sciences.</i>	This article evaluated the effects of tobacco, periodontitis and diabetes on quality of life in 120 patients who were rehabilitated with basal implants, who underwent the Oral Health Impact Profile-20 (OHIP-20) for patients with dental implants (OHRQoL questionnaire). resulting in the level of satisfaction in patients with diabetes, smoking and periodontitis is higher than compared to control.



Safiya H, Prasad D, Mundada Bhushan P, Pavan B, Chitrika S, Oza RR.  2023. Wardha	“Single tooth replacement using immediately loaded basal implant- supported fixed prosthesis in a hyperdense lesion: A case report” doi:10.7759/cureus.34946	<b>Case report</b>	<i>Cureus</i>	An 18-year-old patient presents with a periapical endodontic infection where bone has been lost. His extraction and placement of an immediately loaded basal implant are planned, resulting in a successful integration, without infection or mobility after six months.
Ihde S, Pałka Ł.  2022. Germany	“Customer complaints as an evaluation tool assessing the performance and clinical suitability of different implant designs” doi:https://doi.org/10.3390/app122211394	<b>Descriptive observational study</b>	<i>Applied Sciences</i>	This article analyzes the influence of the implant design on the result of the placement of basal implants, according to the number of complaints received, the study of 254,141 was carried out, with the results that the implants that feature polished endosseous surfaces and cortical involvement have a lower rate of complaints, as do implants with aggressive threads created to fit into the second cortex.
Radhakrishnan S, Biju K, Anbuselvan G, Chinnannan M, Sivakumar K.  2021 .India.	“Distally edentulous maxillary left-sided arch with pneumatized sinus area restored with corticobasal implants - A case report.” doi:https://doi.org/10.4103/jpbs.jpbs_75_21	<b>Clinical case report.</b>	<i>Journal of Pharmacy and Bioallied Sciences</i>	This article is about a case of a patient 58 where he was rehabilitated with endodontic treatments, fixed prosthesis and in the edentulous area with basal implants with a follow-up of 3 years, resulting in a reduction of costs and treatment time to 50% and osseointegration of 98% in clinical and radiographic examination.
Osman M, Ahmad AG, Awadalkreem F.  2020. Sudan.	“A novel approach for rehabilitation of a subtotal maxillectomy patient with immediately loaded basal implant- supported prosthesis: 4 years follow-up” doi:https://doi.org/10.1155/2020/9650164	<b>Longitudinal descriptive observational study.</b>	<i>Case Reports in Dentistry</i>	The case of a 22-year-old woman who presented an odontogenic myxoma is reported. A subtotal maxillectomy was performed. For the rehabilitation of this area, 4 basal implants were placed. After 4 years, the case was evaluated clinically and radiographically and she was in good health. peri-implant, and significantly improved its aesthetics.
Shaikh TA, Bhanotia D, Pacharne AP.  2022. India	“Bicortical implants: An alternative treatment modality for the hopeless: A case report.” doi:https://doi.org/10.21276/jamdsr.	<b>Longitudinal descriptive observational study.</b>	<i>Journal of Advanced Medical and Dental Sciences Research</i>	The case of a 38-year-old female patient is reported. With the use of 3D images, it is observed that the bone culture is not suitable for conventional dental implants, so basal implants were performed, having excellent stability of the implants and did not present postoperative complications.
Vajdi MG, Nikit A, Nupur S, Aishwarya K, Ponnamma CC, Raj A.  2023. India	“An evaluation of the efficacy and acceptability of basal implants in traumatically deficient ridges of the maxilla and the mandible” doi:https://doi.org/10.7759/cureus.43443	<b>Observational, longitudinal, prospective study.</b>	<i>Cureus</i>	It was analyzed in each patient the pain or discomfort they presented after placing basal implants using a visual. Analogue scale (VAS), and also evaluated the preoperative and postoperative results of the change in the level of the turbinate bone, resulting in an excellent result where the patients. They were satisfied with the treatment, with less pain, swelling and discomfort.

V.S.,Arjandas. 2019 .India	“Cone Beam Computed Tomography Evaluation of Basal Implant in Conserving the Inferior Alveolar Nerve: A Prospective Clinical Study” doi: <a href="https://www.proquest.com/openview/b6cc6525e58763c053f2358fcab27bd3/1?pq-origsite=gscholar&amp;cbl=2026366&amp;diss=y#">https://www.proquest.com/openview/b6cc6525e58763c053f2358fcab27bd3/1?pq-origsite=gscholar&amp;cbl=2026366&amp;diss=y#</a>	<b>Doctoral thesis</b>	<i>Rajiv Gandhi University of Health Sciences</i>	10 patients who presented loss of mandibular posterior teeth were selected through the analysis of radiographs, basal implants were placed, resulting in these being useful for the rehabilitation of posterior areas, however the sample of this study was too small to confirm the success of these basal implants.
Mustilwar R, Fatima N, Zameer Ahmed ,CM, Bagde H, Johnson L, Furkan AK.  2022. India	“Basal implantology- A review” Doi: 10.14704/nq.2022.20.11.NQ66133	<b>Systematic Review</b>	<i>NeuroQuantology</i>	Basal cortical implantology was created to restore atrophic jaws without needing increases in bone height and thanks to its design can be bent and thus adapt to different surfaces with good osseointegration however there are also difficulties such as osteolysis.
Vares YE, Filiposki AV, Filipaska TA, Riznyk Y.  2023. Ukraine	“Prosthetic rehabilitation of the patient after partial resection of the maxilla using basal dental implants. A case report. “ doi: <a href="https://www.proquest.com/scholarly-journals/prosthetic-rehabilitation-patient-after-partial/docview/2789303822/se-2?accountid=36749">https://www.proquest.com/scholarly-journals/prosthetic-rehabilitation-patient-after-partial/docview/2789303822/se-2?accountid=36749</a>	<b>Case report</b>	<i>International Journal of Medical Dentistry</i>	A 47-year-old male patient with loss of bone height is presented, who is rehabilitated with 3 basal implants and immediate loading, demonstrating that patients with post-resection defects of the maxilla can be successfully rehabilitated with basal implants and with fixed prostheses similar to bridges.
Polido WD, Machado-Fernandez A, Lin W, Aghaloo T.  2023.	“Indications for zygomatic implants: A systematic review” doi: <a href="https://doi.org/10.1186/s40729-023-00480-4">https://doi.org/10.1186/s40729-023-00480-4</a> .	<b>Systematic review.</b>	<i>International Journal of Implant Dentistry.</i>	The use of zygomatic implants is recommended to rehabilitate jaws that present moderate or severe atrophy, however, studies are needed to provide us with information on their indications considering the anatomy with 3D images, the type of restoration and specific considerations for each patient and their conditions needs.
<b>ACADEMIC GOOGLE</b>				
<b>Author; year; country</b>	<b>Article title/ DOI</b>	<b>Type of study</b>	<b>Journal</b>	<b>Type of study</b>
Chakranarayan A, Soni P, Kapri A, Kumar R.  2020.	“Effectiveness of strategic corticobasal implants in the management of edentulism” doi:10.18231/j.aprd.2020.018	<b>Observational, longitudinal, prospective study.</b>	<i>IP Annals of Prosthodontics and Restorative Dentistry</i>	265 implants were placed in order to carry out complete oral rehabilitation, segments and loss of a single tooth, of which 6 implants failed, and the rest did not present complications during the year of follow-up.

Sukumar H, Chinnakutti S.  2023. India.	“A Rare Case of Enamel Renal Syndrome Rehabilitated with Immediate Loading Basal Implants” doi: <a href="https://mmpubl.in/index.php/ijcmsr/article/view/18/16">https://mmpubl.in/index.php/ijcmsr/article/view/18/16</a>	<b>Case report</b>	<i>International Journal of Cranio - Maxillofacial Surgery &amp; Rehabilitation.</i>	Renal enamel syndrome is an autosomal recessive hereditary disorder, where the patient presents unerupted teeth, taurodontism and cement deposits. In this case, an 18- year-old patient who presented this Syndrome was Rehabilitated with basal implants, Resulting in an excellent aesthetic, and met the patient's expectations, however the patient was referred to a specialist to reduce the risk of kidney failure.
Ashish Chaturvedi, Vinay Kumar, Sankalp Mittal, Sunil Jakhar, Mohit Agrawal, & Sonal Priya Bhansali.  2022. India.	“Efficacy of Single Piece Basal Implant in Dentoalveolar Rehabilitation” doi: <a href="https://nrduhs.org/wp-content/uploads/">https://nrduhs.org/wp-content/uploads/</a>	<b>Observational, longitudinal,</b>	<i>National Research Denticon</i>	The efficacy of single-piece basal implants was evaluated, 50 implants were placed in 15 patients, and evaluated at 1.3, and 6 months of follow-up, resulting in all implants not having mobility, and the results were that all implants were not present. no radiolucency leaving the 50 implants with a survival rate of 100%
Gaur V, S. Mahendra Perumal, Rahmaan F, Pałka L.  2021. India	“A practical approach to orofacial rehabilitation in a patient after inferior maxillectomy and rhinectomy with mono framework construction supported on a zygomatic implant placed in the glabella: a case report.” doi: <a href="https://link.springer.com/article/10.1186/s40902-021-00312-8">https://link.springer.com/article/10.1186/s40902-021-00312-8</a>	<b>Case report</b>	<i>Maxillofacial Plastic and Reconstructive Surgery</i>	The use of basal implants with bicortical anchorage for maxillofacial reconstruction is described, using the frontal sinus as distant anchorage, improving the patient's quality of life.
Swathi A, Ravi Kumar Nagabhairava, Malathi Dayalan, Roopa J C.  2023. Bengaluru	“An Insight into Basal Implants” doi:10.35629/5252-0502973978	<b>Systematic review</b>	<i>International Journal Dental and Medical Sciences Research</i>	Basal implants are an excellent option for patients with atrophic ridges because the time and cost of treatment is reduced, and immediate loading can be performed, which helps with the patient's self-esteem. However, an operator who is knowledgeable about their condition is required. placement.
Fodor C., Ihde S.  2021. Germany	“A case of bilateral cleft treated with the Corticobasal® implants and fixed teeth using an immediate functional loading procedure” Doi: <a href="https://www.implant.com/fileadmin/publications/2021/ID_Vol15_Nr.1_2021_EN.pdf">https://www.implant.com/fileadmin/publications/2021/ID_Vol15_Nr.1_2021_EN.pdf</a>	<b>Observational, longitudinal, prospective study.</b>	<i>Cranio-Maxillofacial implant directions.</i>	Case report of a 42- year-old woman who presented periodontal disease and dental mobility. First, extractions were performed where bone was lost, so rehabilitation was performed with cortico-basal implants. At follow-up after 6 years, good results were observed. osseointegration, and did not present signs of peri-implantitis.

RS, Inbarajan A, KS A, et al.  2023. Chennai	“Esthetic Rehabilitation of a Young Patient With Immediately Loaded Single-Piece Basal Implants Following a Trauma Involving the Anterior Maxilla: Case Report With Five-Year Follow-Up” doi: 10.7759/cureus.42782	<b>Case report</b>	<i>Cureus</i>	When there is loss of teeth in the anterior area due to avulsion or trauma, it is very difficult to rehabilitate since the labial wall of the bone is very thin, which is why in this article a patient is rehabilitated with single-piece implants in basal bone giving resulting in minimal bone loss and patient satisfaction at a 5-year follow-up.
Vijayebenezer, Balakrishnan, Arunkummar M.  2023. India	“A review on basal implants” doi: <a href="https://www.nveo.org/index.php/journal/article/view/339">https://www.nveo.org/index.php/journal/article/view/339</a>	<b>Systematic review</b>	<i>Nat. Volatiles &amp; Essent. Oils,</i>	Basal implants have become an excellent option to rehabilitate atrophic mandibular, without requiring additional surgical procedures, however despite the benefits and existing information about basal implants, they have not yet gained confidence in implantologists for their implementation.
Thakur P, Kalra T, Kumar M, Bansal A, Malik S.  2021. India	“Basal implant: a remedy to restore resorbed alveolar ridges” doi: <a href="https://doi.org/10.1055/s-0041-1731102">https://doi.org/10.1055/s-0041-1731102</a>	<b>Systematic review</b>	<i>Dental Journal of Advanced Studies</i>	Conventional crestal implants are used when the height and width of the jaw are adequate. Conventional implants have a high success rate, but this decreases when extra surgical procedures are required. Therefore, it is preferable to opt for a basal implant when we do not have enough height of bone, however patients with extreme jaw atrophy do not benefit from crestal implants.
Moheb M, Cherine F, Sghaireen M, Pati SR, Alam MK, Elie A.  2019. France	“Basal Implant: An Overview” doi: <a href="https://seronjihou.files.wordpress.com/2021/07/262146.pdf">https://seronjihou.files.wordpress.com/2021/07/262146.pdf</a>	<b>Systematic review</b>	<i>International Medical Journal</i>	With basal implants we can rehabilitate one or more areas of the maxilla or mandible, they are placed in sockets after extraction or in already healed bone, and a flap is not made, which reduces the pain and recovery of the patient, this method It proved to be accepted by patients since it is a safe method.
Sikri A, Sikri J.  2023. India	The B BIG of Implant Dentistry- Basal Implants: A Narrative Review. Doi: <a href="https://urfpublishers.com/open-access/the-big-b-of-implant-dentistry-basal-implants-a-narrative-review.pdf">https://urfpublishers.com/open-access/the-big-b-of-implant-dentistry-basal-implants-a-narrative-review.pdf</a>	<b>Systematic review</b>	<i>Journal of Dentistry and Dental Materials.</i>	Basal implants are a good alternative to restore atrophic jaws where the use of bone graft is not required, and their placement requires less invasive surgery, however more research and concrete data are needed to consider basal implants as a safe alternative.

Fuente: Autoría propia.

#### 4. Discussion

When an area requires rehabilitation with dental implants but the anatomical conditions of the area do not meet the basic requirements for the placement of a conventional implant such as the necessary vertical bone height, a secondary surgical procedure may be required before placing the implant. which increases the cost and surgical time, however patients who present complex anatomical situations can be treated with a BOI basal implant, which as its name indicates obtains its support from the basal bone, with the aim of restoring function and aesthetics. with minimally invasive techniques and that present minimal postoperative complications (Moheb et. al, 2020).

Dr. Jean Marc in 1972 was the one who created the first one-piece implant which is still used effectively today, in 1980 it was modified by Dr. Gerard Scortecchi called "Diskimplants", from this design have been created and developed new systems leading finally to the creation of BOI implants or also called lateral implants that allow the transfer of masticatory forces in the vertical and basal area of the bone where they are placed (Mustilwar et. al, 2022).

The primary stability of these BOI implants is achieved through osseofixation, unlike conventional implants that achieve this stability through osseointegration, taking into account that at some point there will also be osseointegration in BOI implants, so they work in accordance with the principles (AO-) of the treatment in bone fractures, which will allow us to exert an immediate functional load after the placement of this system as in orthopedic surgery, which is considered an advantage since it reduces the patient's waiting time (Antonina et. al, 2020).

There are two types of basal implants: BOI (Basal Osseointegrated) and BCS (Basal Cortical Screw), both are placed in cortical bone with the difference that BCS can be screwed with a thread diameter of up to 12 mm and placed in alveoli. Immediately after extraction, BOI is inserted into the jaw bone through the lateral aspect. (Sikri et. al, 2023.) Both types of basal implants, both BOI and BCS, have a smooth and polished surface, taking into account that polished surfaces are less prone to irritation that generates mucositis or even more serious peri-implantitis. (Vijayebenezer et. al, 2023) In the subclassification of these systems we have:

-Lateral basal implants: They are inserted from the lateral side of the jaw bones (Thakur et. al, 2021). For its placement, it is required to lift a flap laterally and cut the bone with drills that match the size of the implant disc in a lateral direction, obtaining a "T"- shaped osteotomy, then the implant is placed laterally and the flap is closed over it. (Vijayebenezer et. al, 2023).

-Previous implantss that have two discs: the basal disc that osseointegrates and has a diameter of 9-10 mm and the bestiary disc that provides initial stability and has a diameter of 7mm. (Thakur et. al, 2021)

-Posterior implants: They are square in shape, the insertion can be made below the mandibular nerve and the thread carrier on the lateral surface of the nerve, where the height of the bone is less than 2 mm above the nerve. (Thakur et. al, 2021)

-Basal implant screw: They are inserted through the mucosa without an incision just like conventional implants. Bicortical screws are also considered basal implants, since masticatory forces are transmitted without osseointegration. (Thakur et. al, 2021)

When talking about a surgical technique or protocol for the placement of these BOI implants, we must keep in mind that 16 methods have been reported for their placement, which are the subject of extensive observations and tests, and each method will depend on individual anatomical considerations. of each patient (Antonina et. al, 2020). Furthermore, it is very important to evaluate the bone conditions in the preoperative and postoperative stages to determine the method to be used. Current imaging techniques are useful tools since a three-dimensional visualization of the bone is required. The method of choice is a cone beam computed tomography. (CBCT) (Sikri et. al, 2023).

However, regardless of the technique, the BOI implant placement method is simple to execute and does not require extensive penetration of bone drills, thus avoiding thermal injuries and reducing postoperative pain and inflammation (Vijayebenezer et. al, 2023). This flapless technique requires minimally invasive surgery, so unlike conventional implants that are root-shaped, these allow rapid, immediate loading, making it useful in the rehabilitation of atrophic jaws. (Vajdi et. al, 2023)

The prognosis of BOI implants is better, this is because the blood supply to the basal bone remains practically intact in the area where the implant is placed within the bone, unlike thecrestal implants with modified surface characteristics that can cause inflammation. peri-implant and cause resorption of the ridge, this would not happen in a BOI implant due to its emergence profile which is narrow, in addition the bacterial invasion is far from the place of force of chewing therefore the bone is not exposed to two tasks of inflammation and occlusion at the same time. (Thakur et. al, 2021). In addition, the basal bone is very

corticated, so it is very rare for it to be resorbed or infected, while the alveolar bone has a higher rate of resorption because it is thinner and more susceptible to infections that can be transmitted from the teeth, or caused by trauma. (Safiya et. al, 2023).

In general, studies and clinical practices show that basal dental implants have a high success rate, although this figure can vary between studies and specialists. It is usually around 95% and 98%, but it is always important that these implants are placed by specialized dentists and that the patient carefully follows the aftercare instructions to maximize the chances of success and avoid complications. (Sikri et. al, 2023).

Regarding the indications for the use of corticobasal implants, according to Ihde S., he mentions patients who have partial or total loss of teeth, patients who present severe bone atrophy in the jaw, patients who are not good candidates for bone augmentation and, Therefore, they are rejected for treatment with conventional dental implants and patients who require an equitable distribution of masticatory forces. The contraindications mentioned in your article are patients who present severe osteoporosis, malformations in the blood vessels of the jaws, such as aneurysms, patients with osteomyelitis and patients who have used denture adhesives for a long time before placing the implant (Ihde et. al, 2019).

Special contraindications may exist in the presence of unfavorable conditions, such as ongoing tumors (cancer), skin or soft tissue diseases, massive inflammations (for example, after trauma), or local interruption of arterial or venous blood flow (for example, a compartment syndrome). Although certain general medical conditions do not affect the success of the implant per se; However, medical treatment of the condition may affect treatment with oral implants or present a contraindication, which impairs the success rate, such as bisphosphonates are chemotherapeutic agents that act on the bone. According to current literature, this condition may also present a risk to the mechanisms of the Strategic Implant ® (corticobasal implantology), and therefore, it is recommended to exclude affected patients from implant treatment at least for some time after the last intravenous application. The half-life of these drugs is more than 10 years. Therefore, treatment with any type of dental implant should be significantly postponed. The presence of the drug within the jaw bones cannot be measured or estimated. (Ihde et. al, 2019)

Treatment with corticobasal implants can significantly improve a person's quality of life as they replace lost teeth, allowing an improvement in chewing function, facial aesthetics and self-esteem, however it must be taken into account that quality of life can be affected by factors such as general health, age, the presence of chronic diseases and the patient's ability to adapt to the treatment and therefore it is important for patients to discuss their expectations and concerns with their dentist or oral surgeon before undergoing surgery. any treatment with corticobasal implants. (Ihde et. al, 2019).

Additionally, a questionnaire on the Likert scale was used to evaluate patient satisfaction, which indicates that patients present less pain after surgery and reduced discomfort, less swelling and reduced discomfort (Vajdi et. al, 2023).

Regarding the complications associated with corticobasal implants, there could be an infection at the surgical site that may require treatment with antibiotics and additional care, healing problems, implant failure but these do not fail due to peri-implantitis, since it could not be develop no crater-shaped bone loss around its thin vertical if the position of the implant within the jaw bone is correct if not due to other factors such as a fracture and subsequent necrosis of the cortical bone of an extraction socket, which causes a lack of primary healing of the implant site, due to retrograde osteolysis due to pre-existing infections within the bone or due to the incorporation of foreign particles (ceramic chips, stones, etc.) when screwing the corticobasal implant or due to the presence of necrotic bone areas around the implant. same, etc (Ihde et. al, 2019) Basal implants make dental implant procedures accessible, safe and affordable for everyone, including smokers, people with advanced periodontitis, and people with controlled diabetes. (Safiya et. al, 2023).



## 5. Conclusion

Dental implants offer significant benefits in oral functionality, facial aesthetics, self-esteem and long-term health. However, there are important considerations that encompass postoperative care, costs, insurance coverage, and access to these treatments, postoperative care is essential for the success of the implant, highlighting the importance of following the instructions of the dentist or oral surgeon, maintaining good oral hygiene and attending regular check-ups. This ensures proper recovery and prevention of complications. In economic terms, implants can be expensive, limiting access for those with limited financial resources. This can contribute to inequalities in access to high-quality dental care.

In conclusion, BOI dental implants are a valuable option to restore oral health and improve the quality of life of patients who have unfavorable anatomical conditions. These procedures are safe and have a high success rate. In addition, it eliminates all the inconveniences of conventional implantology, however economic and access barriers may affect its availability for certain groups of people.

## Suggestions for future research

In addition to clinical and patient satisfaction aspects, it is crucial to consider the costs and accessibility of baseline implants. The cost-effectiveness analysis compares the economic costs and benefits of baseline implants against other treatment options, showing that while they may have a higher initial cost, long-term benefits such as reduced need for additional procedures and durability may justify the investment. However, the accessibility of these implants varies significantly depending on the region and economic context. It is essential to address disparities in the availability of this treatment to ensure that more patients can benefit from its benefits.

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