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Multidisciplinary Oral Rehabilitation of a Kennedy Class I Partially Edentulous Patient Using Corticobasal Implants with Immediate Functional Loading: A Case Report

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1. INTRODUCTION

Implant-supported prostheses are becoming a commonly acknowledged therapeutic option for people who are partially or totally edentulous.1 Basal implantology is an advanced approach in dental implantology that utilizes the dense cortical bone of the basal jaw regions for implant anchorage and load-bearing support. Unlike conventional implant techniques that rely primarily on the alveolar bone, basal implants are designed to engage the highly mineralized basal bone, which offers superior stability and resistance to resorption. This method is particularly advantageous in cases of severe bone loss or atrophy, where traditional implants may not be feasible without grafting procedures. The concept is derived from orthopedic practices, such as hip and knee replacements, where stable fixation is achieved through cortical bone engagement, thereby ensuring long-term functional success.2 The concept of single-piece basal implants where the implant body and abutment are integrated was first introduced by Dr. Jean-Marc Julliet in 1972.3,4 Basal Osseo integrated implants are placed into the jawbone through a lateral approach rather than the conventional vertical insertion. These implants are designed so that the chewing forces are primarily transmitted through the horizontal segments of the implant. As a result, the load is mainly distributed to the cortical bone structures, which are denser and more resistant to resorption compared to the spongy cancellous bone. This design enhances the implant's stability and functional performance, particularly in areas with limited vertical bone height.5 The concept was further advanced with the introduction of Disk implants, Basal Osseo-Integrated implants, and Lateral Basal Implants. Significant progress in this field was made by Dr. Stefan Idhe, who contributed to the development of dental implant technology by designing implants with bendable vertical shafts, allowing for improved adaptation to individual anatomical variations. Building on these innovations, screw-shaped basal implants intended for immediate loading known as Basal Cortical Screws were subsequently developed, marking an important evolution in basal implantology.6,7 Traditionally managed with removable prostheses or extensive fixed prostheses, advancements in implantology have revolutionized treatment protocols. Corticobasal implants have gained prominence for their immediate loading capabilities and reduced surgical morbidity. This case report describes the multidisciplinary management of a patient with multiple dental concerns, full mouth rehabilitation using corticobasal implants.8,9

CASE REPORT

A 59-year-old female with normal gait and stature reported to the Department of

Periodontics, Daswani Dental College and research centre with a chief complaint of fractured prostheses, missing teeth, and

difficulty in mastication. Patient is on medication for hypertensive and have controlled diabetic and history of cantilever prosthesis in fourth quadrant. Clinical examination revealed, partially edentulous ridge in the premolar and molar region of 3rd quadrant, Fractured FPDs in relation to 42 and 13, Deep caries: in 26, 27, Cantilever prosthesis: in the fourth quadrant, Deranged occlusal scheme

FIGURE 1: PREOPERATIVE OPG SHOWING MISSING TOOTH IN 3RD AND 4TH QUADRANT, CANTILEVER PROSTHESIS IN 4TH QUADRANT.

FIGURE 2: PREOPERATIVE PHOTOGRAPHS OF PARTIALLY EDENTULOUS RIDGE.

After taking an Several treatment options have been proposed, including removable dentures following complete tooth extraction, conventional implant-supported fixed prostheses, and fixed prostheses supported by basal implants. Impressions were made for study models. On the subsequent visit, study models and radiographs were studied. A comprehensive orientation session was conducted, detailing the clinical situation and available treatment options have been proposed, including removable dentures following complete tooth extraction, conventional implant-supported fixed prostheses, and fixed prostheses supported by basal implants. It was decided to pursue corticobasal implants due to bone conditions and patient preference for a fixed, immediate-loading solution. Taking her OPG findings into consideration, it was decided to rehabilitate the patients mouth with basal implant supported fixed partial denture. All routine blood tests, including a complete blood count (CBC), bleeding time, and clotting time, were within normal limits.

PROCEDURE:

Firstly all the old prosthesis were removed, then followed by necessary restorative and endodontic treatments were done. All required periodontal treatment done. After all temporary prosthesis were made. Proper occlusal harmony followed by Zirconium bridges. Three corticobasal implants were placed bilaterally in the third and fourth quadrants under local anaesthesia infiltration with Articaine 40mg/ml with Adrenaline 0.01mg/ml both buccally and lingually. Flapless technique was used. Koc Micro Implants (Simpladent, 3.7mm Diameter, 12mm length) were positioned Lingual to the Inferior Alveolar Nerve (IAN) Prosthesis loading with Zirconium bridge was done within 72 hours of placement. Occlusal scheme following the compensatory curves were established. Immediate postoperative radiographs and CBCT were done which confirmed

ideal implant placement. Functional loading prostheses were delivered, and the patient was instructed on maintenance protocols.

FIGURE 3: KOC MICRO IMPLANTS (SIMPLADENT, 3.7MM DIAMETER, 12MM LENGTH) WERE POSITIONED LINGUAL TO THE INFERIOR ALVEOLAR NERVE

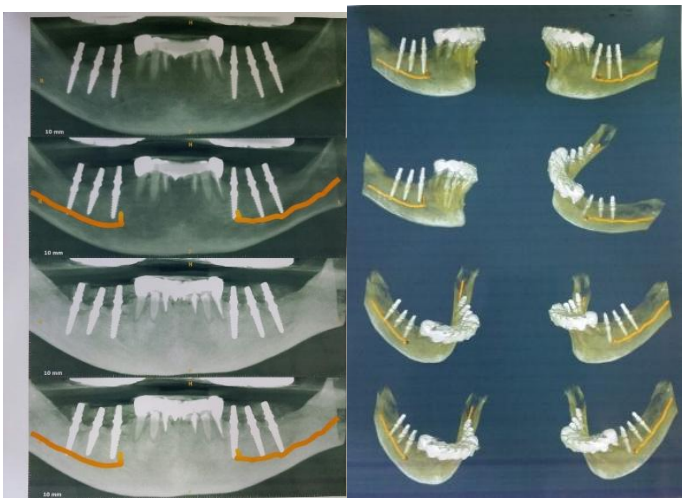

FIGURE 4: POSTOPERATIVE CBCT AFTER PLACEMENT OF IMPLANTS

FIGURE 5: POSTOPERATIVE PHOTOS AFTER FUNCTIONAL LOADING OF PROSTHESIS ON 3RD DAY AFTER IMPLANT PLACEMENT

2. DISCUSSION

Corticobasal implants, engaging the cortical bone, allow for immediate functional loading, bypassing the need for bone grafting or sinus lift procedures. The flapless approach minimizes postoperative discomfort and accelerates recovery. This case highlights the importance of a multidisciplinary approach, careful occlusal evaluation, and patient-centric treatment planning. Immediate rehabilitation not only restores function but also significantly enhances patient confidence and quality of life.

An important development in oral rehabilitation is corticobasal implantology, particularly for individuals with medical conditions or in cases that present anatomical challenges. Corticobasal implants accomplish Osseo fixation by anchoring into the second or third layers of cortical bone, in contrast to traditional implant systems that depend on osseointegration. This allows for instant functional loading and enhanced mechanical stability[1]. The applicability of corticobasal implants for patients with compromised health, such as those receiving chemotherapy, those suffering from cardiovascular disease, or those receiving bisphosphonate therapy, is one of its primary benefits. Despite being regarded as a risk factor, the evidence indicates that IV bisphosphonates can reduce difficulties if the right cases are chosen and recent IV treatment is avoided1. Additionally, there are certain contraindications that need to be treated before implant placement, such as active osteomyelitis, cancers of the soft and hard tissues, or persistent infections. Compatibility with flapless and minimally invasive surgery, frequently performed under local anaesthesia, is another advantage of this implant technique. This makes it possible to use it on patients who are not suitable for general anaesthesia. Additionally, the smooth surface of corticobasal implants reduces the possibility of peri-implantitis, a frequent reason for failure.

3. CONCLUSION:

Corticobasal implants with immediate loading provide a dependable and patient-friendly solution for complex partial edentulism cases, particularly when conventional implants may be contraindicated. A multidisciplinary, well-planned occlusal scheme ensures long-term success and patient satisfaction. In edentulous cases, particularly when there are atrophic ridges, a basal implant-retained prosthesis is the best option. The only method to address the patient's psychological issues is in this manner[1]..

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