

# IMMEDIATE COMPLETE DENTURE: A CONTEMPORARY VIEW

## ABSTRACT

**AIM:** The objective of this study was to describe the advantages, disadvantages, indications and some limitations of the Immediate Complete Denture (ICD) treatment. **MATERIAL AND METHODS:** An electronic and manual search was made in SciELO, SCOPUS, MEDLINE/PubMed databases from 1972 to 2015. Publications in Portuguese, Spanish and English were selected to write this narrative review of the literature. **CONCLUSION:** Despite the limitations of this study it was conclude that treatment with ICD is the best option because of its satisfactory results.

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## KEYWORDS

Immediate complete dentures. Complete prosthesis. Oral rehabilitation.

## INTRODUCTION

The world's population is aging considerably, and forecasts show that people over 60 years will surpass 2 billion by 2050, representing 16.4% of the global population. In Brazil, current projections indicate that the population will reach around 20% of the total population.<sup>1-3</sup> According to an epidemiological survey conducted in Brazil,<sup>4</sup> the absence of all teeth in at least one of the arches in the 60-year-old age group will be a clinical common finding. About 3 million Brazilian elderly people have no teeth in at least one of the arches, which accounts for approximately 63.1% of this population.

Complete denture rehabilitation is considered the most common treatment for total toothless patients<sup>5,6</sup> and, together with the improvement of osseointegrated implant rehabilitation, the number of studies evaluating full dentures has increased. Furthermore, assessment of quality of life and patient satisfaction indicate the importance of this kind of treatment as a viable alternative in accordance with the current rehabilitation context.<sup>7</sup>

Tooth loss leads to numerous consequences for the patient, such as problems with speech, poor chewing,<sup>8</sup> and loss of facial aesthetics.<sup>9,10</sup> Besides the physical aspect, poor oral health can trigger emotional or behavioral changes in patients, damaging their self-esteem and quality of life.<sup>11-13</sup>

This study sought to present some treatment features of edentulous patients through ICD, its advantages, disadvantages, indications, contraindications, and post-installation care. Guidelines for surgical procedures that must be followed prior to the placement of ICD in one or both dental arches were presented as well.

## LITERATURE REVIEW

### *CHARACTERISTICS OF TREATMENT WITH ICD*

ICDs are manufactured from models obtained prior to the extraction of all remaining teeth and placed at the same visit as the teeth are extracted.<sup>14,15</sup> In this type of treatment, the prosthesis is placed directly on the operated bone and gingival tissue.<sup>16</sup> It is evident, therefore, that this treatment is different from that with conventional dentures in which the average time to adapt after teeth extraction is approximately 6 months.<sup>17,18</sup>

According to buccal flange, ICDs can be classified into three categories: (i) immediate complete denture at the full labial buccal flange, which has a vestibule portion identical to a conventional denture; in this case, a surgical preparation of the mouth vestibule filling is required; (ii) immediate complete denture with partial buccal flange in which only the initial portion of the buccal side is made, above the cervical edge of artificial teeth. This procedure does not require bone surgery because it does not reach the undercut

area of the alveolar ridge; and (iii) immediate complete denture without vestibule flange, having teeth mounted directly on the alveolar ridge (it shows better aesthetic results but may fail to provide adequate lip support when there is a bone resorption).<sup>19</sup>

The treatment with ICD is quite complex, given that it involves surgical and implant areas, it is important to assess the patient's general condition and age. Furthermore, there must be a specific indication for removal of the remaining teeth due to the advanced periodontal disease.<sup>3,19</sup>

Therefore, contraindications for ICD procedure encompass patients with advanced age, poor general health, basal area changes, lack of restraint, and those undergoing radiotherapy, non-cooperative and with compromised mental state to support the previous surgical procedure.<sup>20,21</sup>

Although there are several treatment alternatives for toothless patients,<sup>22</sup> ICD has psychological advantages because it prevents edentulism,<sup>20,22</sup> optimizes the healing process, prevents the collapse of the muscles, facilitates chewing, helps control bleeding, and allows for the application of topical medication in the operated area because of the direct contact between the ICD and the gingival tissue.<sup>22-25</sup>

However, the need for further adjustments, lack of proper aesthetic and phonetic test, and the need to replace the prosthesis within a few months are cited as

possible disadvantages of this type of treatment.<sup>26-28</sup>

Along with these considerations, it is important to remember that prior to installation of the prosthesis, there will be a surgical procedure. All preoperative (appropriate imaging studies, laboratory tests and adequate clinical evaluation),<sup>21</sup> transoperative aspects (surgical area asepsis, appropriate instruments and anesthetic technique), and post-operative care (adequate drug's prescription) are taken into account to prevent bacterial infection.<sup>29</sup>

The fabrication of a surgical guide is of utmost importance to ensure appropriate placement of ICD, in addition to all the aforementioned care. The surgical guide should be transparent to allow for adjustments and visualization of ischemic areas of the alveolar mucosa that should be worn out. After removing the ischemic areas, the dental prosthesis can be installed.<sup>21</sup>

#### *OCCUSAL ASPECTS IN THE FABRICATION OF ICD*

Extraction of teeth leads to loss of the proprioceptive factor and the reflex arch in the periodontal ligament.<sup>30-32</sup> Restoring a balanced occlusion of ICDs provides a full mouth rehabilitation.<sup>33,34</sup>

When patients lose teeth in one or both arches, it is important to restore the mandibular position to enhance the

rehabilitation process. The ideal position of the mandibular jaw is the Centric Relation (CR) in which the head of the condyle is situated as far posteriorly and superiorly as the condyle possibly can, within the glenoid fossa, supported by the articular disc, ligaments and muscles.<sup>35-37</sup> However, Zarb et al.<sup>35</sup> advocates two concepts for CR: physiological and mechanical. The physiological concept states that the dominant factor in CR is the neuromuscular function because when the condyle is in the glenoid cavity, muscles, joints, teeth, and surrounding tissues are balanced. On the other hand, the mechanical concept considers the condyle position in the glenoid cavity.

After the position of centric relation is defined, the combining of the cusps of the upper teeth to the lower teeth, called maximum intercuspal position (MIP),<sup>33</sup> should be defined. By definition, MIP is the largest possible contact between the upper and lower teeth.<sup>36</sup> In ICDs, combining the MIP and CR is the ideal position to work because there is neither premature contact nor displacement, providing an ideal position of the condyles, more efficient chewing, better targeting of occlusal loads and optimal functioning of mastication muscles.<sup>35,38</sup>

Another important aspect in the ICD treatment is the inter-maxillary space of an individual, also known as vertical dimension (DV), which is the mandible position relative to

the jaw when the elevating and depressing muscles are balanced.<sup>37</sup> There are two specific types of vertical dimension: the rest dimension, which is measured when the muscles are in a slight contraction to maintain the jaw in clinical rest position, and the occlusal dimension, when the teeth are in maximum contact.<sup>35,37-40</sup>

#### *CLINICAL PROCEDURES IN THE FABRICATION OF ICD*

In some cases, the functional impression procedure is a complex one, and its results is not advantageous because of the need to remove teeth in different areas of the edge. In these cases, a simple molding to copy the contour and size of the vestibule is more interesting.<sup>23,26</sup> Under ideal conditions and as part of the surgical planning, the posterior teeth are extracted first,<sup>41</sup> and after the healing period in that area, the dental impression is prepared for the fabrication of ICD. Dental impressions are taken about 3-4 weeks after the extraction of the teeth.<sup>26,42</sup>

Dental mold must be performed with custom stock tray with wax in the peripheral sealing area; irreversible hydrocolloid is the material of choice. After selecting the appropriate dental impression tray, wax shields are added to prevent possible positional deviations in the basal area during insertion of the tray in the patient's mouth.<sup>43</sup>

After customizing the impression tray,

previously spatulated alginate is introduced in the patient's mouth, taking care of the proper positioning and amount of pressure to obtain a good impression for the denture.<sup>20,44</sup>

Once the denture is made from the irreversible hydrocolloid mold, a trial-fitting phase begins. A wax guide is provided with the primary purpose to guide the dental technician of a dental laboratory to mount the artificial teeth following aesthetic, functional and biological aspects. It is also intended to register the relationship between the maxilla and the mandible, and choose the teeth to be utilize in the ICD.<sup>30,44</sup>

The semi-adjustable articulator can be placed on the maxilla with or without the use of a facebow.<sup>31-33</sup> However, the use of a facial arc tends to minimize the risk of sending incorrect interocclusal records to the laboratory.<sup>23,29</sup> The interocclusal record may be done in wax plus zinc oxide-eugenol paste to obtain a perfect articulation between upper and lower model teeth.<sup>45</sup>

The next step of conventional complete denture is set the denture teeth in wax. Unlike traditional dentures, the "try-in" stage is omitted in the treatment with immediate dentures because they do not provide adequate information for neither the professional nor the patient. The lack of aesthetic assessment during the ICD process is a disadvantage of this type of treatment.<sup>25,46,47</sup>

#### *INSTALLATION AND SUBSEQUENT CONTROL OF THE ICD*

As previously mentioned, the prosthesis installation procedure should be performed after suture of the soft tissue. In these cases, the patient is instructed not to remove the mouth prosthesis under any circumstances because he/she will not be able to put it back in the right position. Furthermore, the oral surgeon should conduct further evaluation no later than 24 hours after the installation. The removal of the stitches should be performed 7 days after surgery.<sup>17</sup> Occlusal adjustment and any aesthetic adjustments should be performed by the dentist within certain limitations because the try-in stage of anterior teeth was omitted.

In order to monitor bone remodeling that occurs after extraction of teeth, it is recommended that dentures should be relined after a certain period of time, which can vary from 1 to 4 months, depending on the quality gingival healing. The importance of 1-year care for immediate denture patients must be explained and the consequences of neglecting this continuing care should be informed to patients and their relatives.<sup>24,48</sup>

#### **CONCLUSION**

ICD is a rehabilitation procedure that promotes an immediate rehabilitation of edentulous patients, providing a significant improvement of functional and esthetic

aspects, which, in turn, contributes to the improvement of the psychological and social well-being of patients. Such a health improvement increases self-esteem and quality of life.

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