International Journal of Early Childhood Special Education (INT-JECSE)
DOI:10.9756/INTJECSE/V14I5.293 ISSN: 1308-5581 Vol 14, Issue 05 2022

CONOMETRIC CONCEPT - A REVIEW OF LITERATURE

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ABSTRACT
Cone-in-cone (ACone-in-cone) is a term used to describe a To keep implant-supported definitive fixed dental prostheses in place, a Morse taper connection between abutments and crowns has been proposed (FDPs). This "Conometric Concept " prosthetic method was employed to keep both lithium disilicate (LS2) and zirconia restorations in place. A cone-in-cone connection between an abutment and the appropriate coping is used in the conometric concept to preserve an implant-supported restoration without the need of fasteners or cement. Prefabricated components are used to ensure a perfect fit between the abutment and the restoration. The friction between the abutment and the titanium coping allows the conical coupling abutments to maintain a prosthesis without the use of cement. There are no access holes in the restoration, and it can be simply removed with a spring-loaded partial denture remover.Without the chance of cement remaining at the abutment coping interface, the restoration's emerging profile can be placed subgingivally. The major goal of this research is to examine the clinical efficiency of the conometric idea by critically reviewing studies that have employed it. Up until the present, an electronic search was conducted in PubMed, Google Scholar, and the Cochrane Library. Predetermined selection criteria were used to appraise the papers. The research comprised randomized, non-randomized, prospective cohorts, prospective clinical trials, and in vitro studies. This review did not include case studies, case reports, conference papers, or animal research. The possibility of bias was assessed, and the results were compiled. The conometric idea offers a positive clinical outcome as a prosthetic therapy alternative, according to the conclusions of this review. To determine its viability as a commercial treatment option, more long-term research is required.

INTRODUCTION
Edentulism is a condition in which a person has lost some or all of their teeth (1). Partial edentulism refers to the absence of some teeth, whereas complete edentulism refers to the absence of all teeth (2). Edentulism can cause impairment, functional limitations, physical, mental, and social disabilities, as well as handicap (3). Complete dentures, removable partial dentures, fixed partial dentures, and implant-supported prosthesis are some of the therapy options available (4). The patient's treatment is determined by his or her physiological, anatomical, and socioeconomic state (5). Removable appliances are the most often used treatment for long-span edentulous regions. During the first few years following implantation, however, patient satisfaction tends to decline (6).In both partially and totally edentulous patients, endosseous implants are widely used to accomplish dental prosthesis support and retention. Since edentulism is a common occurrence, especially among the elderly, modern implantology is a significant therapy advancement(7) . Depending on the number and position of

implants, the prosthetic design and material, and the kind of retainer, many implant-supported prostheses are possible(8) . Removable or fixed implant-supported prostheses are available as treatment alternatives. A removable implant-retained prosthesis is a removable prosthesis that is held in place by various types of retainers (9). On the other hand, implant-supported fixed dental prostheses are the only way to produce a truly stable dentition. Two forms of connections between implants and prosthesis have been primarily used for this sort of restoration. The connections are screw-retained and cement-retained (10),(11)Both systems are effective and predictable, although they do have certain flaws. Screw-retained prostheses provide excellent retention, although they are more prone to mechanical issues such as screw loosening and fractures. Cement-retained prosthesis are more aesthetically pleasing, but they have more biological issues, such as soft tissue irritation around the implant neck, residual cement, unretained prosthesis, and prosthesis dislodgement, to name a few(12),(13)(14) .

To retain implant-supported definitive fixed dental prostheses, Degidi et al. proposed using a cone-in-cone Morse taper connection between abutments and crowns in 2018. The "Conometric Concept," a prosthetic approach, was employed to keep both lithium disilicate and zirconia restorations(15) .A cone-in-cone connection between an abutment and the appropriate coping is used in the conometric idea to keep an im- plant supported restoration in place without the use of screws or cement (16). It features a tapered coping attached to the prosthesis that goes into a tapered abutment. Prefabricated components are used to ensure a perfect fit between the abutment and the restoration (17).The friction between the abutment and the titanium coping allows the conical coupling abutments to maintain a prosthesis without the use of cement. The cervical margin of the coping is somewhat distorted by wedge effects when an insertion force is applied, causing elastic stress fields within both the coping and the abutment. Even if the insertion force is eliminated, such strains will persist in some form(17,18).The use of cone-in-cone abutments to support final prosthetics has yielded outstanding short-term results. As a result, the goal of this systematic review is to assess the conometric concept's therapeutic usefulness(19),(20) .Our team has extensive knowledge and research experience that has translated into high quality publications(21–40).

MATERIALS AND METHODS

Up until the present, an electronic search was conducted in PubMed, Google Scholar, and the Cochrane Library. Predetermined selection criteria were used to appraise the papers. The research comprised randomized, non-randomized, prospective cohorts, prospective clinical trials, and in vitro studies. This review did not include case studies, case reports, conference papers, or animal research. The possibility of bias was assessed, and the results were compiled.

CONOMETRIC CONCEPT IN DENTAL IMPLANTOLOGY

Dental implantology is a safe and effective treatment option for patients who are partially or completely edentulous. Implant-supported permanent or removable dental prostheses are used to establish a stable dentition(41). Titanium dental implants expanded edentulous patients' treatment options by allowing them to use implant-retained fixed or removable prostheses. 'Implant-Supported Rehabilitation of Completely and Partially Edentulous Patients' (Implant-Supported Rehabilitation of Completely and Partially Edentulous Patients) (42). The best connection between a fixed restoration and an implant is still up for dispute in dentistry.Overall, screw-retained restorations have fewer difficulties, but cement choice had little effect on the failure rate of cemented-retained restorations. Excess cement in cement-retained restorations has been linked to an increased risk of peri-implant disease and bone loss. The

screw-retained prosthesis, on the other hand, is less expensive since it allows for easier retrieval of the prosthesis without the risk of injuring it(43) (43,44)(45).

To hold an implant-supported fixed dental prosthesis, the conometric idea entails using a cone-in-cone morse taper connection between the abutment and the prosthesis. The absence of cement and screws, ease of maintenance, good emerging profile, and cost effectiveness are all cited benefits of this design (46). The conical coupling abutments retain the prosthesis without the use of cement due to friction between the abutment and the coping (47). The mechanism is activated when an insertion force is applied. The wedge effect slightly deforms the cervical margin of the coping, creating elastic stress fields within both the coping and the abutment. Even if the insertion force is eliminated, some tension will remain. The system's retentive capability is provided by this residual tension(48) .

According to a two-year prospective study by Degidi et al, the Cone in cone approach was successful with a mean probing depth of 20.90, framework fracture of 8.7%, and patient satisfaction of 79 percent in the two-year follow-up (49). Another in-vitro study done by Bressan et al showed that there was minimal bacterial invasion in both internal conical and morse taper internal connection(50) .

CONCLUSION

The conometric idea offers a positive clinical outcome as a prosthetic therapy alternative, according to the conclusions of this review. To determine its viability as a commercial treatment option, more long-term research is required.The lack of randomized control trials comparing conometric coupling to other abutment prosthesis connections is one of the primary shortcomings of this review. More research is needed in this area to see if conometric coupling may be used as a standard retention mechanism in commercial dental implants.

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