

A REVIEW OF DENTAL IMPLANT PROBLEMS AND REMEDIES

Jayant P. Morey¹, Abhijeet A. Raut², Ashish Bodhade³

¹Department of Mechanical Engineering, GHRCE, Rashtrasant Tukadoji Maharaj Nagpur University,

²Assistant Professor at Department of Mechanical Engineering, GHRCE, Nagpur, MH, India.

³Associate Professor V.S.P.M's Dental College and Research Centre, Nagpur, MH, India.

Abstract

The purpose of this study is to show the usefulness of dental implant. In this paper include different types of abutments, tier system and structure which is used in dental implant. In this study shows the types of connections of abutments. There are various types of stresses which reason to diseases related dental implant. Forces act initially on the neck of dental implant. There are many types of abutments which are used for fixation of crown. The main objective is to perform analysis of failure on dental implant and post. The more focus of this study on abutment. Objective is to provide alternative solution to overcome on failure due to infection, diseases which are comes after implant. This paper includes diseases.

Failures of dental implants are frequently clinical problems. So there is need of analysis of abutment in dental implant is essential. Purpose of this study is analysis and process which used for evaluation of abutment and implant.

Key words:- Dental implant, stresses, abutment connection, Evaluation

INTRODUCTION

Artificial teeth which is used to replace and support to real teeth is known as a dental implant. Dental implant is an fabricated supporter which fill the space of real teeth. There are various types of lengths and diameters used in implant fixtures. There are crown, abutment, abutment screw and implant which make completed to dental implant. Dental implant fix where there is teeth is loss due to age, accident, diseases, etc. It is surgically implanted into the jaw bone. Abutment and implant can be attached. Attachments are available in number of design. Crown is the tooth which fixed into the jaw bone with the help of implant. The root is the part of the tooth that is effectively replaced by an implant. The abutment is fixed by an abutment screw in implant, which is mechanically screwed then crown is fixed on to the abutment.

Structure of dental implant:-

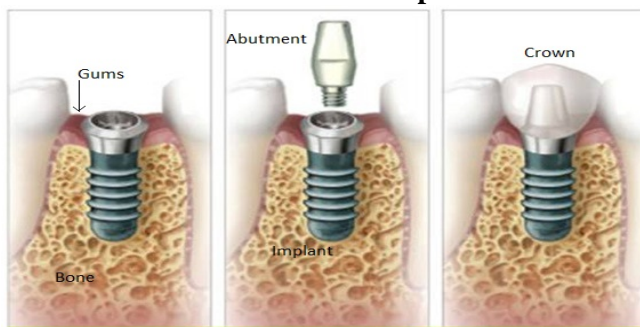
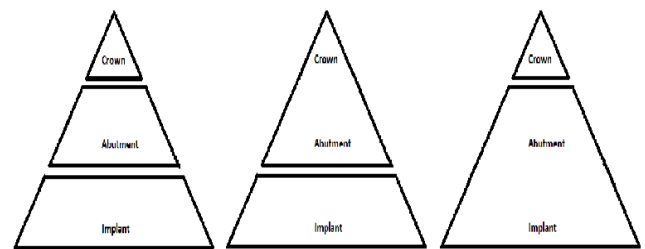


Fig 1.

In the bone, dental implant fixed surgically and the abutment screwd internally into implant which help to fix crown. After fixation of implant and abutment with the help cement crown placed on abutment. In this way dental implant placed which completed the need of real teeth. Figure shows the basic process of dental implant fixation.

Tier of dental implant:-



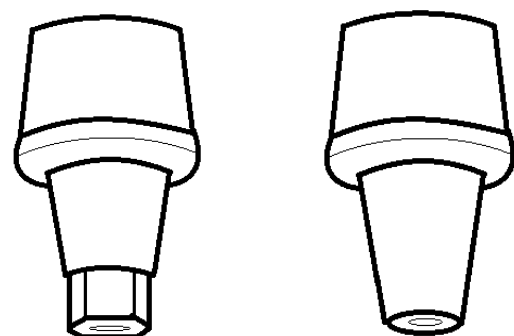
Three tier system

Two tier system

Fig 2.

A dental implant with three tier system includes three individual parts like crown, abutment and implant. A dental implant with two tier systems includes two individual parts like crown and abutment form a single part and the implant is a separate part or opposite of that abutment and implant makes a single part and crown is individual in dental implant system. Figure shows separate form about tier system of dental implant.

Abutment connection:-



Internal hexagonal

Internal conical

Fig 3.

Micro motion is at lower portion of internal hexagonal abutments if we compared to internal conical abutment. In internal hexagonal connection stresses occur so there is increase the chances of failure of dental implant. Edges are present in internal hexagonal design at the connection of abutment. In between implant and abutment these edges are used to fix.

Stresses on dental implant:-

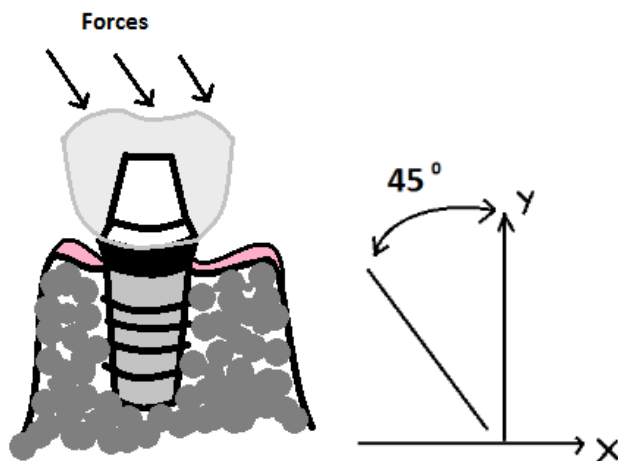


Fig 4.

Stress distribution in the bone around an implant under vertical load and combined load of vertical angle of 45° is investigate.

External Hex implant-abutment used. The implant-abutment complex was fixed in bone and subjected to load of 200,500,1000N vertically and in angle of 45° of Masticatory force were used..

Problem Statement:-

Study the existing dental implant design and find out the failure due to the stress, diseases in those design. Select solution for drawback which comes due to the stress.

Optimization process

The crown is made to be fixed directly to the implant by cement. The abutment provides the retention and support to dental implant body.

Availability of a maximum number of parts or components of implant body is increases the dentist confusion at the selection process of parts. The method of classification of appropriate abutments for implant body is focused. The tier system for selection of dental implant is provided. This provide the understanding of the best available options of parts or components of implant for the treatment of patients.[1]

If microgap is find in the dental implant and bone after fixed it may cause the disease around dental implant. It is an initial stage of diseases and due to micro gap peri-implant hard and soft tissue leads to bone loss and implant failure. There is micro motion at the lower position of internal hexagonal abutments. Internal hexagonal connection leads to produce stress of dental implant so it is increases the

possibilities to be failure dental implant. The Edges in abutment is used to connect the abutment and implant. Over the abutment crown fixed. These abutment edges are used to fix in system and abutment classified into two types which are the conical type and internal hexagonal type of abutment.

Micro gap leads to the infection of tissue due its damage gums and it may cause to the future failure of dental implant. Internal hexagonal connections helps to lock abutment to the implant and it increase the retention. Reduce the gap is increase the durability of implant.[2]

Stress are generally occur at the neck of the implant as well as around the implant body. When the thickness is reduced, stresses are increase in external thread of dental implant. Masticatory force is found on implant. The stresses changes as different implant thicknesses increases of various diameters. An implant body system includes of an crown, abutment, abutment screw and implant.

The process of assembly is includes screwing the implant in the bone. First implant fixed into the bone then abutment placed into implant. After that crown is fixed on the abutment.[3]

According to clinical and animal studies bone loss around the implants that may cause to implant failures.

Diameter of implant body, implant shape, length of dental implant, and abutment type is not the only reason for bone loss.

External hex implant body abutment generated the maximum stress under vertical loading condition of forces. Internal Hex generated less as compare to the external. Bone quality like spongy bone define more stress.[4]

Micro gap between abutment and implant can leads to problems such as peri-implantitis and fatigue failures. This study consist the value of microgap of external and internal connections. The abutment and implant is affected due to the masticatory force by means of chewing and biting force. There is comparison between the abutment and implant and micro gaps for the two piece kind of abutments as external hexagon joints means external connection and as hexagon antirotational device means internal connection. To find the level of stress at which the sample supported.

Cases of failure find due to the abutment screw loosening and later fracture. The internal connection had a smaller microgap than the external connection. Gap leads to disease which may leads to implant fail.[5]

Evaluation of effect of taper on retention in straight and angled implant in abutment The retention of straight abutments in implant was more as compared to angled abutment. Using angled abutment, permanent join be the choice for cementation in the implant.

The force required for tensile failureness of straight abutments is 54.9 (4.14 standard deviation) and in the use of angled abutment was 39.0 .

In preangled abutments with angulation varying from 15° to 35° is commercially available. It can be concluded that straight abutments had more bond strength as compared to angled abutment in dental implant. In straight abutments, provical can be used to join and for angled abutment the cement selected.[6]

In different bone qualities with angled and straight abutments, comparison of stress distribution around an dental implant is investigate . In three dimensional finite element model with angled and straight abutment of the premaxilla region and 4mm, 3mm, 9mm, 10 mm dimensions of dental implant process were done.

For study an operation done with different bone qualities. A load which is known as static load is applied on each abutment as 178 N.

Around the dental implant values of Von Misses stress were found. If the angle of abutment change then distribution of stresses also changed. In the study found that Von Misses stress found more in straight kind of abutment if the bone quality has changed. In angled abutments high stresses induced.[7]

In the study found that the peri-implantitis and Peri-implant mucositis kind of bacteria which is leads to fail the dental implants. These

Studies also focused on the bacteria which is the reason for loose of dental implant in jaw bone. If periodontal disease found then it sign of dental implant is at the risk for failure.

Failing or loose the dental implant found because of peri-implant disease, peri-implant mucositis, and the peri-implantitis

Peri-implant diseases

Peri-implant mucositis:-

Around the dental implant the soft tissues surrounded.

Peri-implantitis:-

There is an loss of bone which is supported around an dental implant.[8]

CONCLUSION

From the review of research paper it is concluded that proper implant design is needed to increase durability of implant. The combination of sharp thread and narrow cross section might be delete for fatigue resistance in dental implant. Solution for implant failure is need to find impeccable design of Dental Implant.

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