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Stresses around dental implant and its failures: A Review

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Abstract:-Dental implant is more important for failures of real teeth. Dental implant is an option for the damaged teeth. This paper shows the important value of dental implant and the when masticatory forces acts on the surface of the upper portion which is known as crown then stresses occurs as per the forces that stresses shows the effects on the dental implant. At the time of chewing, forces from various directions comes on the teeth and the place where the dental implant placed. In dental implant titanium material is used which is biomaterial. Crown which is the placed over the abutment part is made up of porcelain material. Whenever more stresses occurs the retention capacity of dental implant is start to loose. Forces come from various directions on dental implant. It loses the dental implant and then dental implant started to damage to some tissue. These stresses are also damaged the bone which is surrounded to the dental implant.
Key words:- Dental implant, abutment, stresses, failures, jawbone.

I. INTRODUCTION

Dental implant is a best option for those patient whose teeth loss due to some accident, diseases and by other problems.
Initial steps to fix the dental implant into the jawbone is to drill the proper into bone then implant part with suitable diminsion is placed into that jaw bone. After a while abument which is selected is fixed into the implant. Crown is selected on the basis of abutment then it is cemented and after that it is fixed on the crown.

II. DENTAL IMPLANT

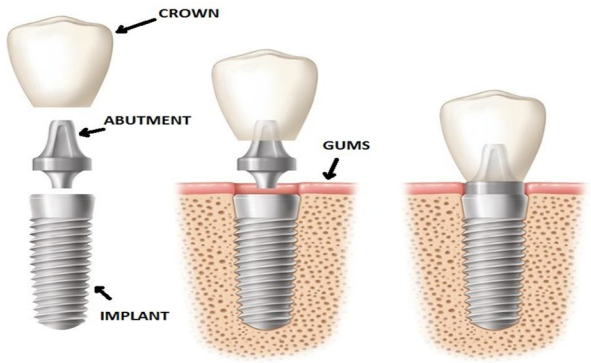

Fig 1. Dental implant

Dental implant made by some part such as crown, abutment and implantwhich is shown in figure1. First layer around the dental implant is cancellous bone then cancellous bone coverd by cortical bone. The cortial type of bone layer is minimum as compared it to the cancellous bone. Cancellous bone has maximum layer.
In the quality of bone is also difference and the retention capacity depends on the both bone. If bone soft then stability of dental implant is low but if the quality of is hard the retention of dental implant is high. There are various types of bones and as per the quality of bone diameter of dental implant system also decided. It helps to keep patient to free from damage of bone. There are various types of dental implants with its sizes and shapes are available.

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III. DENTAL IMPLANT'S STRESSES AND FAILURES

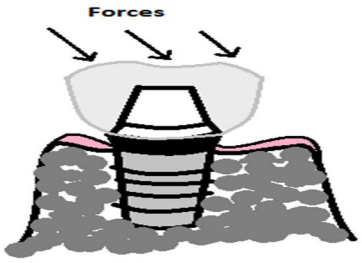

Fig. 3 forces on dental implant

Forces on dental implant is comes when chewing start. The stresses around the dental implant are distributed. Cancellous bone helps to stability of dental implant because of its thickness as compared to cortical bone. To remove or to minimize the stresses is an essential part in dental implant.

The dental implant has various the forces on crown. Forces may be vertically or inclined direction acts on the dental implant. It leads to the some micro motion and after micro motion dental implants starts to move and leads to the infection.

Dental implant failures are happens due to reasons such as smoking, bad habits of eating, poor care. Some time it happened due to improper design, minimum space between two implants.

IV. PROBLEM STATEMENT

It is studied that forces leads to the stresses and it leads to the motion of dental implant. Forces acts directly to the upper portion of implant part. Failures of dental implant occur due to the infection, damage gums and diseases.

V. OPTIMIZATION PROCESS

Dental implant failures has some reasons that may leads it to the failure. Tissues which are around the dental implant is also creates problems if there is micro motion occur due to more masticatory forces. According to the medical problem includes such as other kind of bone diseases and diabetes problem.

Habits as tobacco, smocking are also reasons to fail the implant by its diseases. Sometime patient ignores the care of dental implant. Proper cleaning of dental implant is also need to free from germs. Some surgical factors are also includes into the failure such as applying more pressure while implanting it, implant not choose as per the bone quality, mistakes in placement of dental implant, lack of stability in first stage, improper placement of two implant[1].

Diseases are leads to implant failures and it defined such as Peri implant disease which find around gums of the dental implant, Peri implant mucositis this is reacted on the soft tissues, peri implantitis this is reacted with loss of bone where dental implant is fixed [2].

Gap occurs due to micro motion and microorganism around the dental implant in gums. Peri implatitis includes the soft gums and loss of bone.

The range of higher percentage of peri implant diseases occurs into the smokers. Dental implant failure include variety of the reasons such as improper cleaning, improper placement, some surgical reasons are also fails the dental implant [3].

The diameter and length according to the quality of bone is also important factor to avoid the failure of dental implant. Proper diameter and length of dental implant is leads to increases the stability of dental implant.

Stresses which occurs due to the masticatory forces it acts or find at the neck of implant near gums. It find because of the overloading or more forces by chewing condition. When proper dental implant chooses as per bone quality and sizes of dental implant is not micro then its stability and retention capacity increases by decreasing stresses which comes by chewing condition. Stresses distributed in cancellous bone as compared it to the bone which covered on it by means of cortical bone. If implant diameter increases and length also increases at the time of chewing condition forces effects on dental implant more to failure [4].

To prevent the bone loss use of larger diameter of implant and abutment diameter included. When straight abutment is compared with the angular abutments results shows such as stresses occurs more on the cortical bone as compared to cancellous bone because of its thickness which covered it to the dental implant.

In angular abutment variations are also occurs. When angle of abutment increases its stress also increases on dental implant due to masticatory forces. When forces applied on dental implant over the crown then maximum stresses occurs at the time of straight abutment as compared it to the angular abutment. At the lingual site maximum stresses occurs of cortical bone because it has minimum thickness of layer. Cortical bone layer is covered on the cancellous bone. Dental implants with the use of straight abutments are higher stresses values in jawbone [5].

VI. CONCLUSION

The review from the research papers it is concluded that the proper sizes and shapes of dental implant is essential to avoid the failure of dental implant and infection related tissues. To avoid the diseases the proper implantation process is needed. Diameter of dental implant and length also need proper selection. If bone quality is soft the dental implant selection must proper. In the cases of peri implant diseases the proper care is necessary.

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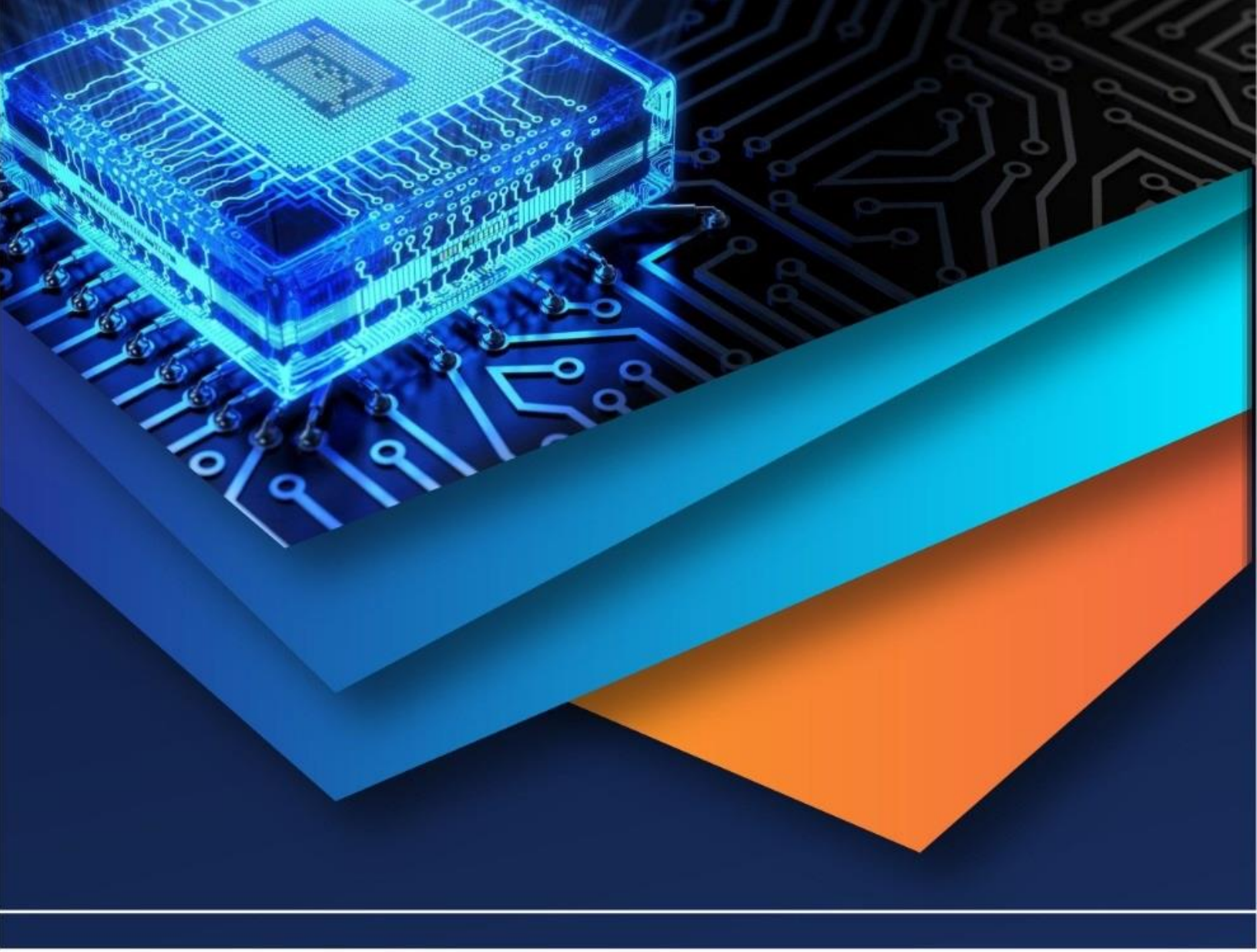

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