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Original ARTICLE

Effect of Age on Dental Implants

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ABSTRACT:

Aging is a global physiological phenomenon, and with the increase in life expectancy, the concern of geriatric patients with oral health has been enhanced. Age alone should not be used to exclude patient from being prescribed implants. Oral implant biotechnology appears to lend itself equally well to diverse prosthodontics applications in young and older adults and despite average tendency for slight amount of ongoing crestal bone loss, both young and older adults should anticipate many years of implant prosthesis function in context of bone behavior pattern.

Key words: Age, Dental, Implants

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INTRODUCTION

Rehabilitation strategies for partial edentulous patients range from a provisional removable partial denture, a definitive cast partial denture, a resin bonded prosthesis and fixed partial denture or osseointegrated prosthesis.¹

Tooth loss is very common and it can happen as a result of disease and trauma; therefore, the use of dental implants to provide support for replacement of missing teeth has a long and multifaceted history.²

The use of dental implants to rehabilitate the loss of teeth has increased in the last 30 years. Before dental implants, dentures and bridges were used, but dental implants have become a very popular solution due to the high success rate and predictability of the procedure, as well as its relatively few complications.³

Such loss occurs very often in the elderly, influencing mastication, speech, and esthetics, also aggravating factors such as diabetes and hypertension, which commonly occur in aging individuals.⁴ Implant is a welcome alternative to complex fixed or removable prosthesis as it simplifies the complex reconstructions.¹

Thus, oral rehabilitation through osseointegrated implants has become an important instrument for promoting quality of life.⁴ Current endosseous implants allow increased masticatory

efficiency and safety, improved psychological factor and self-esteem.⁵

Patient's condition is distinctly different among individuals especially in the elderly. Implant failure seems to be a multifactorial problem; therefore, it is unclear that aging itself is a risk factor for the placement of implants.

Age as a prognostic factor in implant success has been discussed by several authors. Older patients, theoretically, have potentially longer healing times, more systemic health factors, and the likelihood of poorer local bone conditions.⁶

Material and methods

All the patients were informed about the purpose and nature of study and consent was taken. The subjects were evaluated based on chief complaints requiring placement of missing teeth.

They were divided into 2 groups.

Group A: Patients belong to the age group 18-39 years.

Group B: Patients belong to the age group 40-60 years.

The selection criteria included

Subjects consented to participate in study, All partially dentate patients requiring dental implants, Sufficient amount of bone and keratinized tissue, Adjacent control teeth periodontally healthy.

- Preliminary assessment of soft and hard tissue was done radiographically and clinically.
- Cone Beam Computed Tomography (CBCT): Once the satisfactory results were obtained from IOPA , 3D CBCT was done to determine position of bony walls (buccal and lingual/palatal), their height and width and accordingly the position and orientation of implant in relationship to critical structures was analyzed. Final planning for the size of implant was done.

The patients were pre-medicated with antibiotics (Amoxy-Clav-625 mg). Before anesthetizing the patient, the patients were asked to rinse the mouth with 0.2 % chlorhexidine mouth wash.

The patients were recalled for follow up for clinical and radiographic evaluation which was made at immediate postoperative, 3 months and 6 months of implant placement for evaluation of crestal bone changes with help of radiographs^{7,8}

After implant placement, implants were left for osseointegration for a period of 1 and a half months following early loading protocols and abutments were placed thereafter.

The measurements were recorded at Immediate postoperative, 3 months following dental implant placement, 6 months following dental implant placement^{7,8}



Figure 1: Intra-oral mandibular view with osteotomy site



Figure 2: Intraoral View (Sutures Placed)

DISCUSSION

Aging tends to involve a compromise in the potential for both soft-tissue and skeletal healing processes. The current age groups are taken from article by Brocard et al,¹⁸ here success rates were calculated according to age (under 40 years, 40 to 60 years, and over 60 years), medical health status, existence of a risk factor, and surgical corrections of the implantation sites

There is more bleeding on probing in implants compared to control teeth . The results are attributed to the fact that after loading the implant hygiene could not be well maintained in subgingival region but later when reinforcement of oral hygiene measures were given to the patient the inflammation subsided. The lower inflammation around implants also is due to the fact that due to oral hygiene and home care procedures.^{4,9,10} The slightly higher BOP scores indicated that the junctional epithelium around implants might be more fragile than that of natural teeth¹¹.



Figure 3: IOPA postoperatively



Figure 4: IOPA taken with prosthesis on implant

There is no significant difference in terms of bleeding on probing in between two age groups in implants and in adjacent teeth(separately)while on comparing implants and adjacent tooth(together) significant difference was found in BOP. There is more probing depth in implants (most)compared to teeth and further that probing depth decreased with time .The results of decreasing probing depth could be attributed to the fact that implant mucosa was kept in health condition throughout and patients were cooperative.^{12,13,14} The higher probing depth in implants than control teeth is probably due to difference between periodontal and periimplant tissues.PD depends totally on degree of penetrability of probe .Collagen fibres are parallel to the implant surface This facilitates deeper probe penetration in implants and it occurs even with low degree of inflammation in implants.The destructive parameters in implants is expected due to tissue remodeling.¹² There is no significant difference in terms of clinical pocket depthin between two age groups in implants and in adjacent teeth(separately)while on comparing implants and adjacent tooth(together) non significant difference was found in PD.

Bone loss was more in implants compared to adjacent tooth .^{15,16} The results could be due to fact that initial bone loss might be the result of reflection of periosteum ,preparation of implant osteotomy,bacterial invasion,level of microgap between abutment and implant body ,establishment of biological width,the implant crest module design,surgical trauma,stress concentration from excessive tightening of implant and occlusal overload and bone remodeling occurs and so bone loss occurs ⁷ This supports the hypothesis and implies that both older and younger adults should anticipate many years of implant prosthesis function. This study suggests that crestal bone loss around dental implants does not differ with age. There is no significant difference in terms of radiographic bone loss in between two age groups in implants and in adjacent teeth (separately) while on comparing implants and adjacent tooth (together) significant difference was found in bone loss around implants and adjacent tooth in both age groups. Bryant and Zarb¹⁷ in which there is no relationship of marginal bone loss and age of patient. This supports the hypothesis and implies that both older and younger adults should anticipate many

years of implant prosthesis function. This study suggests that crestal bone loss around dental implants does not differ with age.

CONCLUSION

A strict comparison could not be performed because the different implants were not placed in comparable anatomic situations (in identical positions), small sample size was there and a follow-up for a short period was done. The different outcomes of this study might be related to a learning curve involving factors that could not be properly elucidated by the present study protocol. Further observational and randomized controlled studies with a longer follow-up could provide deeper evidence based conclusion

For successful dental implant therapy, there should be adequate bone level around implants and adjacent teeth. The presence of healthy periodontium ensures higher success rate. It seems that aging is a risk factor for the placement of implants but implant failure seems to be a multi-factorial problem and age is not a single factor alone. Older patients, theoretically, have potentially longer healing times. Age alone should not be used to exclude patient from being prescribed implants. Oral implant biotechnology appears to lend itself equally well to diverse prosthodontics applications in young and older adults and despite average tendency for slight amount of ongoing crestal bone loss, both young and older adults should anticipate many years of implant prosthesis function in context of bone behavior pattern. The findings that the use of implants in older patients suggest that bone has a reserved capacity for osseointegration.

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