EVALUATION OF SUCCESS RATE AND MARGINAL BONE CHANGES AFTER IMPLANT PLACEMENT : A 8-YEAR RETROSPECTIVE STUDY

Background

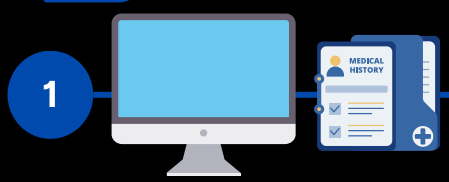
The dental implant is a device of biomaterial to replace the root of the missing tooth and fuse to alveolar bone. The implant crown replaces a missing tooth. It covers the abutment and reestablishes normal tooth shape, appearance, and function.

Objective

- To evaluate the success rate of fixed implant prosthesis
- To evaluate marginal bone change after implant placement
- To evaluate the risk factors which affect the success rate of dental implant

Material & Method

1



100 patients at the Intramural clinic of College of Dental Medicine at Rangsit University during 2017 - 2024

2

Recall appointment
- Intraoral Examination
- Periapical Radiographs
- Recall Questionnaire

Patient
- Medical History
- History of periodontitis
- Smoking
- Bruxism
- Interdental cleansing aids
- Satisfaction

Site
- History of GBR
- Surgical procedure
- Types of prosthesis
- Post-operative Antibiotic
- BOP
- PD
- Mobility
- Peri-implant mucosa
- Signs and Symptoms

3

INCLUSION CRITERIA
- Implant patient from 2017-2024
- Dental implant followed by fixed prosthesis
- Patients with follow up periapical radiographs

EXCLUSION CRITERIA
- Patients without enough information
- Patients without follow up appointments

4

Data Collecting

5

Bone measurement

Platform to the implant base - 1.8 = Implant length

Statistical analysis

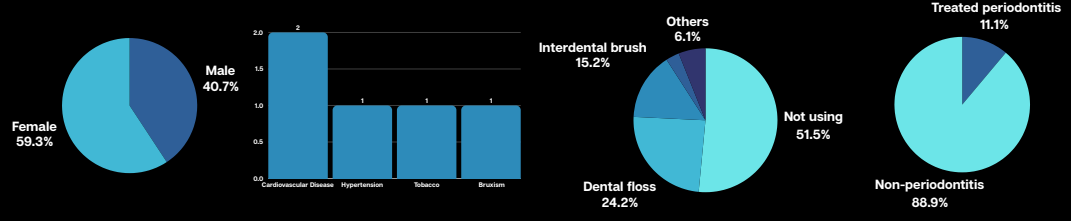
- Kaplan-Meier analysis : evaluate success rate of implant and present in cumulative success rate percent.
- Assess the radiographic marginal bone changes between the baseline and follow-up periods, statistical analysis performed by using Fisher's exact test. A significance level of P<0.05 applied to determine statistically significant differences.
- The Logistic regression analysis used for evaluating factors that related to clinical outcome of patient treated with dental implant. A significance level of P <0.05 would be used.

Result

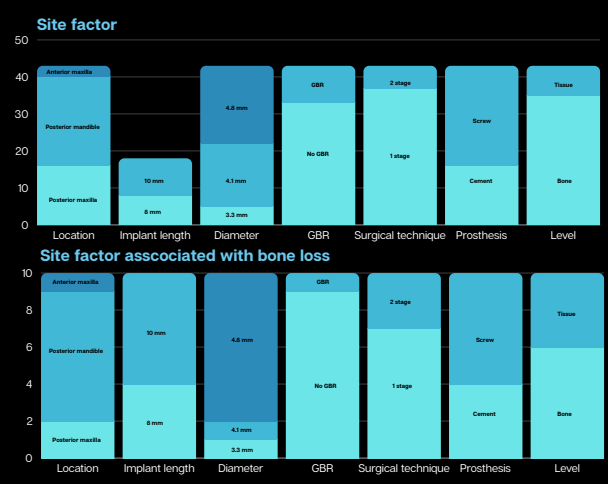
After meeting the inclusion and exclusion criteria, from 100 patients to 43 patients

Patient demographic data

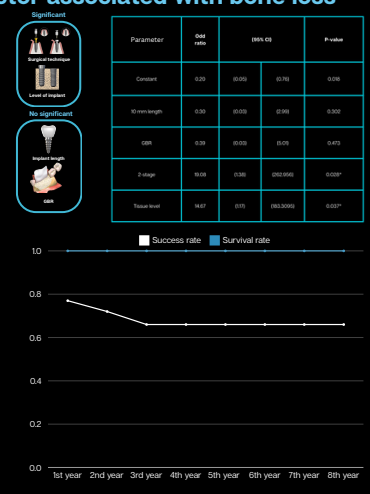
Age: 59.16 ± 11.93 years old



Site demographic data



Factor associated with bone loss



Discussion

The study examined follow-up data from 27 patients with 43 implants, focusing on factors influencing marginal bone loss. Key findings included:

1. Surgical Technique: Both 1-stage and 2-stage surgical techniques were significant factors in bone loss. However, 1-stage implants, exposed to the oral environment, showed more bone loss than 2-stage implants, which are protected during the healing period.
2. Implant Diameter: Implants with a 4.8 mm diameter had the highest bone loss, particularly in Asian patients, due to narrower bucco-lingual ridge widths compared to Europeans.
3. Implant Level: Bone-level implants showed more bone loss compared to tissue-level implants, likely due to greater exposure to stress.
4. Other Factors: Guided bone regeneration and implant length were associated with bone loss but not significant.

Limmitation of the study was small sample size and loss of follow-up.

Conclusion

- Significant factors associate with marginal bone changes were surgical procedures, implant diameter, and implant level.
- The cumulative survival rate had been found to be 1.00 since 1st year while the cumulative success rate was found to be 1.00 at 4th year.
- Marginal bone loss is most prominent during the first three years of follow-up attributed to natural bone remodeling and higher follow up frequency.
- There is only 10 implants with bone loss due to the patient being treated at a university. The patient was well-prepared before the treatment and was thoroughly educated on proper oral health care.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