ASA STATUS OF PATIENTS UNDERGOING DENTAL IMPLANT - A RETROSPECTIVE STUDY

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Abstract:

Introduction:
Patients receiving dental implants usually get categorised into the first two physical status criterion of the Classification System of the American Society of Anesthesiology (ASA): P1, a normal healthy patient; or P2, a patient with any mild systemic disease. For very severe and acute medical problems, calculating the risk of failure in affected subjects seems impossible, simply because patients with such conditions hardly ever receive implants.

Aim of the Study:
The aim of the present study is to assess the ASA status of patients undergoing dental implants.

Methodology:
A Retrospective analysis of all the cases with their ASA status of patients who underwent implant was retrieved among the overall data of patients visiting Saveetha Dental College from November 2020- August 2021. The data for 389 patients who want to undergo stage 1 implant surgery was entered in Excel Spreadsheets. Data was analysed using SPSS software version 19 and Chi square test was used to statistically evaluate the results.

Results:
As per our results, various age populations of patients were undergoing dental implant, the highest [40%] were seen in the 18-35 years age group and the lowest [2.06%] were from the age group above 70. Our results imply that among the age group 18-35, majority of the patients were categorised as ASA I (3.28%), 2.31% from ASA II criteria and only 0.26% from ASA III criteria.

Conclusion:
The degree of systemic disease control can be labile so the influence of ASA status assessment for patients on dental implant survival is important as per literature since there are few randomized controlled trials that have been carried out with this association.

Keywords: Age;ASA; Gender ;Implant; Prognosis; Association; Innovative

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1. Introduction:

Over the last few decades, endosseous dental implants have become very tough procedures to facilitate the prosthetic replacement of teeth (1). The progressive success rate of dental implants, there is a growing interest among the dental physicians in identifying factors associated with implant and causes of failure. To achieve and maintain the osseointegration, indications and contraindications must be carefully observed, and proper patient selection is thus a key issue in the treatment planning. Many authors have identified situations for which dental implants are not needed (2), but it often remains unclear on what type of evidence these statements are based. The replacement of missing teeth with endosseous implants for the rehabilitation of edentulous or partially edentulous patients has become a standard of care in the past two decades.

Group 1 (very high risk): Patients with a serious systemic disease such as rheumatoid arthritis, osteomalacia and osteogenesis imperfecta; immunocompromised patients such as HIV and immunosuppressive medications; drug abusers (alcohol); noncompliant patients (psychological and mental disorders)

Group 2 (significant risk): Patients with irradiated bone (radiotherapy), severe diabetes (especially type 1), bleeding disorders (hemorrhagic diathesis, drug-induced anticoagulation), heavy smoking habit Systemic diseases may affect oral tissues by increasing their susceptibility to other diseases or by interfering with healing.

Patients receiving dental implants generally get put under the first two physical status criterion of the Classification System of the American Society of Anesthesiology (ASA): P1, a normal healthy patient; or P2, a patient with mild systemic disease (3,4). For very severe and acute medical problems, calculating the risk of failure in affected subjects seems impossible, simply because patients with such conditions hardly ever receive implants. These patients fall into the ASA physical status categories P3 to P6 that is; patients with severe systemic disease (P3); patients with severe systemic disease that is a constant threat to life (P4); moribund patients who are not expected to survive without an operation (P5); and subjects declared brain dead whose organs may be removed for donor purposes (P6). ASAPS classification system implicitly assumes that age is unrelated to physiological fitness, an assumption which is not true since neonates and the very elderly, even in the absence of disease, are far more "fragile" in their tolerance of anesthetics compared to adults. In spite of these and other well-known limitations, the ASAPS classification is made use in providing a convenient description of a surgical patient's overall condition (5).

Systemically healthy patients demonstrate 90 and 95 % success rates of dental implants as reported over 10 years of follow-up (6). Dental implants fail due to lack of osseointegration during early healing or when already in function due to breakage, or infection of the peri-implant tissues leading to loss of implant support. Early complications after implant insertion can include pain, infection, and occasionally neuropathy (7).Severe early complications such as hemorrhage, infection, facial spaces cellulitis, or descending necrotizing mediastinitis have also been described (8,9). There are very few accepted absolute medically related contraindications to dental implant treatment, although a number of conditions may increase the risk of treatment failure or complications. The degree of systemic disease control may be far more important than the nature of the disorder itself, and individualized medical equilibrium should be established prior to implant therapy. For many of these pa- tients, the life quality and functional benefits from dental implants may outweigh the risks. Principally, only patients with an ASA (American Society of Anesthesiologists) (10) grade I or II should qualify for an elective surgical procedure, such as dental implant placement, and the patient's surgical risks should be weighed against the potential benefits offered by the dental im- plant (11).

The contraindications were recommended for dental implantation, such as children and adolescents, epileptic patients, severe bleeding tendency inherited or acquired, endo- carditis risk, osteoradionecrosis risk, and myocardial infarction risk (12).The reported relative contraindications include the following: adolescence, aging, osteoporosis, smoking, diabetes, positive interleukin-1 genotype, human immunodeficien- cy virus positivity, cardiovascular disease, hypothyroidism, and Crohn's disease. Suggested absolute contraindications include recent myocardial infarction and cerebrovascular accident, cardiac transplant or valvular prosthesis surgery, pro- found immunosuppression, severe bleeding tendency, active treatment of malignancy, drug abuse, and psychiatric illness, as well as intravenous bisphosphonate (BPs) use (13).The literature review by Diz et al. (14) also mentions very few absolute contraindications to dental implantation, although a number of conditions may increase the risk of treatment failure or complications. As in any clinical decision in

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dentistry, the range of treatment options and their relative advantages and dis- advantages should be carefully assessed in relation to the pa- tient's needs and wishes.

In patients with systemic health problems, it is important to carefully consider the cost efficiency analysis with the patient's mode of life and life expectancy itself; it is very necessary to proceed with the implant surgical procedures under strict asepsis, minimal trauma, avoid stress, and probable cause of hemorrhage. It is crucial among these patients to ensure proper maintenance therapy with balanced standards of oral hygiene, cessation of tobacco consumption and smoking, and prevention of any other controllable risk factor.

The purpose of this study was to evaluate the impact of systemic diseases, and/or medications used to treat systemic diseases, on the success of dental implant.The role of systemic factors in early failures (ie, during the healing period up to initiation of prosthetic treatment) and late failures (ie, after implant loading) was analyzed.

2. Materials and Methods:

A retrospective study was carried out among young adults reporting to Saveetha Dental College and Hospital. The study was conducted between November 2020- August 2021.The study population consisted of ASA status of patients undergoing implant surgery. Ethical approval was obtained from the Institutional Ethical Committee and Scientific Review Board (SRB) of Saveetha Dental College. The data were collected by analyzing the records of 86,000 patients between November 2020-August 2021. The data consisted of 389 patients who reported for placement of implants. The data includes the patient's details, ASA status and the tooth region. The ASA status was assessed clinically. Variables such as age, gender, ASA status and the tooth region of implant placement were recorded. Incomplete, censored and repeated data were excluded from the study.

Statistical analysis

The Data analysis was done by collecting data and was entered in an Excel sheet and subjected to statistical analysis using SPSS software. Chi square tests were done between the gender, age, tooth region and ASA status of the patients. The independent variables were patient name and PID number while dependent variables were age, ASA status and gender. The level of significance is $p < 0.05$.

3. Results:
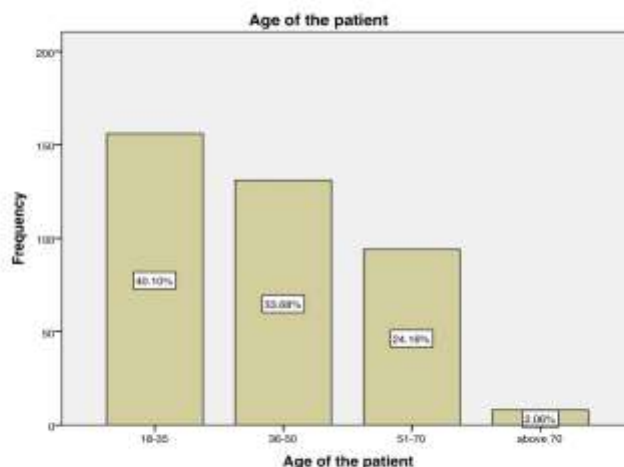
Graph 1: Graph depicts the distribution of the study population based on age. X axis shows age groups and Y axis shows Number of patients. It shows the various age populations of patients undergoing dental implant [40%] were seen in the 18-35 years age group followed by [33.68%] in the 36-50 years age group, [24.16%] in the 51-70 age group and [2.06%] were from the age group above 70.

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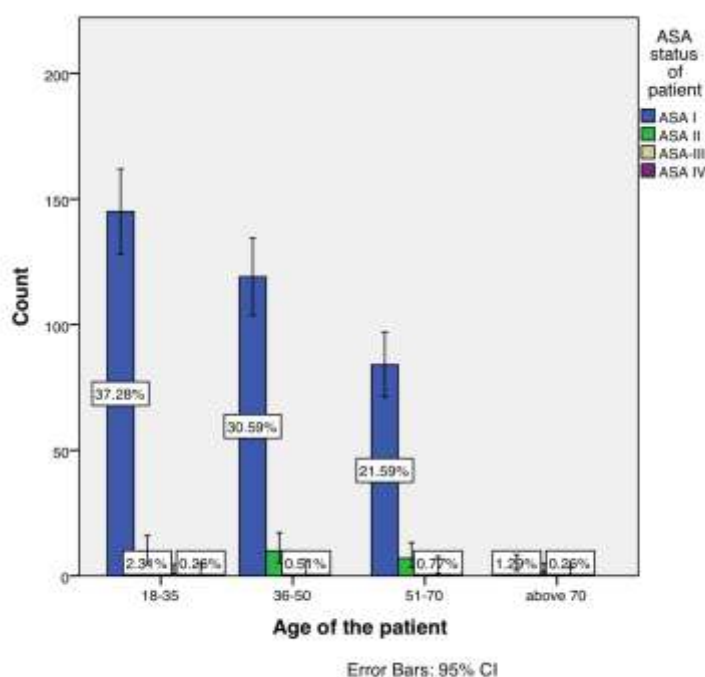
Graph 2: Graph depicts association between ASA status of patients and age of the patients where the colour blue represents ASA I, green colour represents ASA II , Brown colour represents ASA III , Purple colour represents ASA. X axis represents Age of the patient's Y axis represents ASA status of patient. In the age group 18-35 majority of the patients were from ASA I category (3.28%), 2.31% from ASA II criteria and only 0.26% from ASA III criteria. From the age group 36-50 there were 0.51% in ASA criteria II. Among the 51-70 age group there were 0.77% of them in ASA II category and in the above 70 age group there were 0.26% of them. There was no one from the ASA IV criteria taken for surgery. Chi square test was done (pvalue= 0.003), and it was found to be significant.
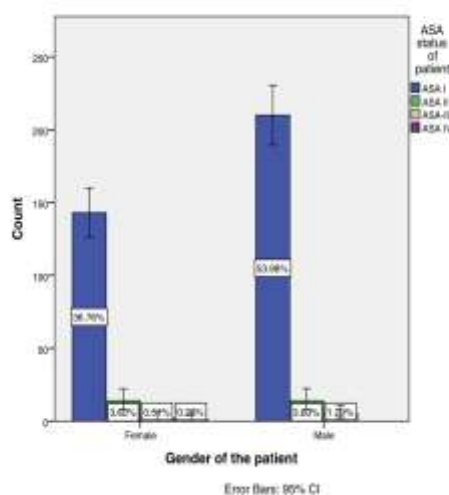
Graph 3: This Graph depicts association between ASA status of patients and gender of the patient where the colour blue represents ASA I, green colour represents ASA II , Brown colour represents ASA III , Purple colour represents ASA. X axis represents gender of the patient's Y axis represents ASA status of patient. Among the Female patients 36.76% was from ASA I , 3.60% was from ASA II, 0.51%was from ASA III, 0.26% was from ASA IV. Among the Male patient 53.98% was from ASA I , 3.60% was from ASA II, 0.51%was from ASA III. Chi square test was done (pvalue= 0.004), and it was found to be significant.

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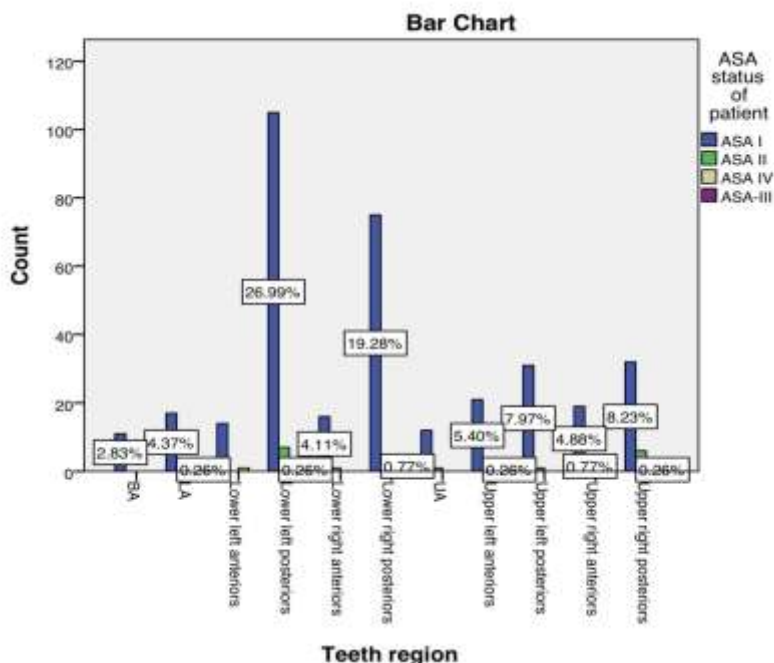
Graph 4: This Graph depicts association between ASA status of patients and teeth region where the colour blue represents ASA I, green colour represents ASA II , Brown colour represents ASA III , Purple colour represents ASA. The X axis represents the teeth region of implant placement and Y axis represents ASA status of the patient. All the patients that placed full arch implants in the upper, lower and both arch respectively were under ASA I criteria. Majority of the patients were in ASA I criteria who placed implants in lower left and right anteriors. Only 0.26% of patients fell under ASA 2 criteria who placed implants in the lower left posteriors and upper right posteriors. Chi square test was done (p value= 0.001), and it was found to be significant.

4. Discussion:

The American College of Surgeons National Surgical Quality Improvement Program (ACSNSQIP) surgical risk calculator is a decision making support entity shared with patients during the treatment consent procedure. Now it serves as a comprehensive risk prediction suite for dental and medical procedures.

As per our results, various age populations of patients underwent dental implants; the highest [40%] were seen in the 18-35 years age group, and the lowest [2.06%] were from the age group above 70.

Technically the ASA status assesses the severity of preoperative co-morbid illnesses, and it does not include age as a criterion. However, few anaesthetists routinely assign an ASA II classification to otherwise healthy patients over 70.

Our results imply that among the age group 18-35, most of the patients were categorised as ASA I (3.28%), 2.31% from ASA II criteria and only 0.26% from ASA III criteria. No one was categorised into ASA IV taken for surgery.

Previous literature suggests examples of cases that fall under ASA IV criteria as those with functional limitation due to life-threatening diseases such as unstable angina, poorly controlled COPD, CHF and recent myocardial infarction or stroke as high risk for undergoing dental implants. Hence, the institution does not approve of such cases to proceed.

According to our census, the majority of the male patients, 53.98% was from ASA I and 0.51% was from ASA III, and it was followed by the female patients, among which 36.76% was from ASA I 0.26% was from ASA IV. Most of the patients were under ASA I criteria who placed implants in the lower left and right anterior. Only 0.26% of patients fell under ASA 2 criteria who placed implants in the lower-left posteriors and upper right posteriors.

According to recent scientific progression, ASA classification is widely applied in medicine and dentistry but has received significant criticism. This is the first study to assess the consistency of medical risk assessment in dentistry about implants.

5. Conclusion:

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Even though only a small percent of adult patients are taken from dental implant treatment due to contraindications, surgical placement of an implant in these individuals may have serious consequences such as possible implant failure, refractory healing, and even life-threatening sequelae. The American Society of Anesthesiologists (ASA) has developed a classification system to stratify patients' physical status and recommended that elective treatment, implant placement, should be reserved for the classification of I–III.

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