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Virtual Treatment Planning In Oral Implantology

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Abstract:
The goal of dental implant rehabilitation is to bring the patient's dentition to proper aesthetics, form, and function. This is best achieved when the clinician can visualise and make mental judgement of the same with the recent introduction of new 3D diagnostic and treatment planning modalities in implant dentistry, accurate planning as well as precise placement of implants that are restoratively driven can be achieved. With A variety of different software and associated surgical instrumentation available, dental implant diagnosis and treatment has become more simplified. This development has created an interdisciplinary environment in which better communication and precise execution leads to better patient care and outcomes.
Aim*- To study prevalence of using virtual aids in treatment planning of implant supported prosthesis.*
Objective*- To gain knowledge of clinicians about the type of virtual planning aids for implant planning.*
Discussion
From the above results we can interpret that implants are the most sought after treatment modality in todays dayand age and use of virtual aids are a necessity to have more predictable results and avoid complications.
Dentists have entered a new era in implant dentistry. The major excitement and buzz in the field of implant dentistry in recent years involves the introduction of three-dimensional (3-D) "virtual" evaluations of patients using computed tomography (ct) scan technology.
Conclusion *- Dentist and patient goals can be accomplished accurately, predictably, safely, comfortably, quickly, and with minimal stress by treating implant patients using CT-based virtual 3-D implant planning and placing implants through surgical guides.Technology can now be used for 3-D diagnoses, virtual treatment planning, and designing surgical guides that allow the surgeon to duplicate A virtual treatment plan at the time of surgery.*
Predictability of implant placement is no longer related to A surgeon's "best guess" followed by "exploratory" surgery on the patient. Virtual treatment planning and computer-generated drilling guides allow minimally invasivesurgery, reduced surgical time, and reduced patient discomfort and swelling.
Key Word*:CT based 3-D implant planning, rehabilitation, predictability, guides, minimally invasive.*

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I. Introduction

The goal of dental implant rehabilitation is to bring the patient's dentition to proper aesthetics, form, and function. This is best achieved when the clinician can visualise and make mental judgement of the same. The recent introduction of new 3D diagnostic and treatment planning modalities in implant dentistry, accurate planning as well as precise placement of implants that are restoratively driven can be achieved. With A variety of different software and associated surgical instrumentation available, dental implant diagnosis and treatment has become more simplified. This development has created an interdisciplinary environment in which better communication and precise execution leads to better patient care and outcomes.

II. Material And Methods

A quick questionnaire based on survey was conducted by circulating google forms among clinicians across tier 1and tier 2 cities.
Data obtained from the input to this questionnaire was analyzed and demonstrated in the following format.

Do you practise implant supported rehabilitation cases?

- Yes
- Refer
- Call in A Consultant

Patient awareness & acceptance about this treatment modality is

- Good

- Fair
- Poor
- Questionnable

Which specialist do you prefer?
- Implantologist
- Prosthodontist
- Periodontist
- Oral surgeon
- Other

Does the treatment planning team include A Radiologist?
- Yes
- No
- Maybe
- Other:

What is your preferred imaging technique for case selection ?
- IOPA
- OPG
- CBCT
- Other:

Do you prescribe CBCT for all cases?
- Yes
- No
- Maybe
- Other:

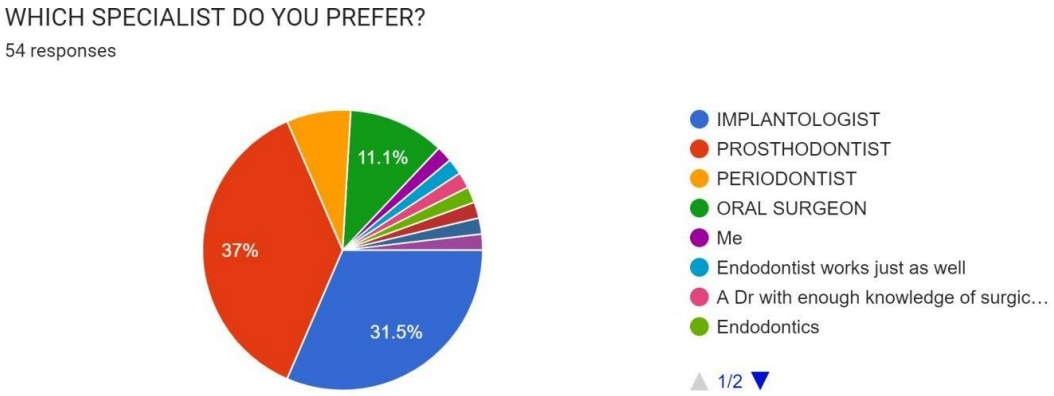
Software preferred for treatment planning
- PLANMECA ROMEXIS
- CARESTREAM
- INVIVO ANATOMAGE
- VISION
- NAVIDENT
- Other:

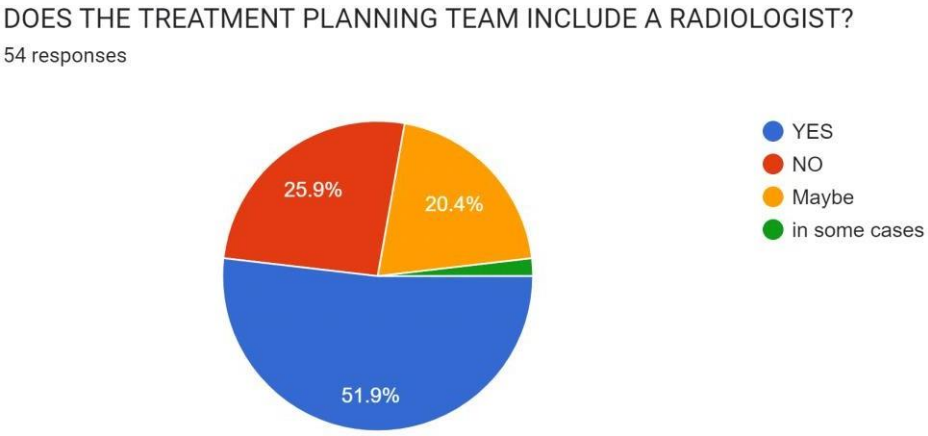
Mobile applications preferred for treatment planning
- 3D DIAGNOSTIX CONNECT
- SMOP
- IMPLANTO PUC
- DENTICALC
- SWISS MEDIA
- Other:

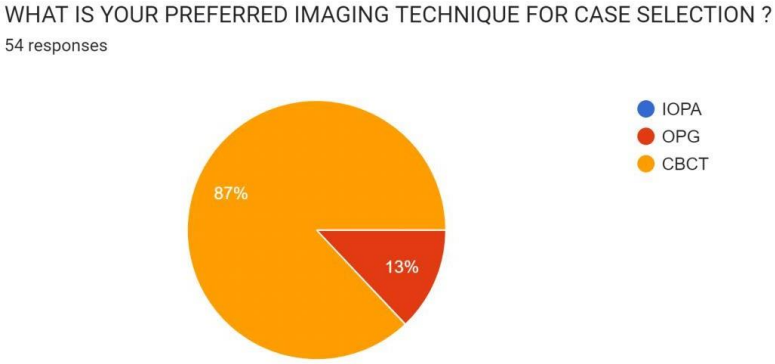
What aids do you prefer to mock the prosthesis position during treatment planning?
- Wax up with artificial teeth
- Radiographic marker like ball bearing
- Other:

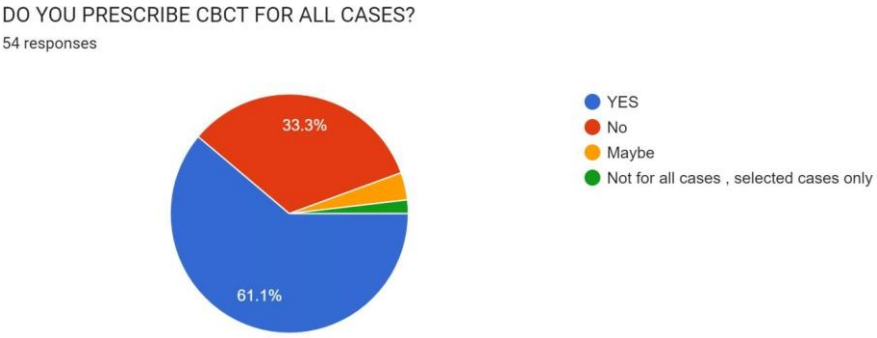
Implant material selection is predominantly based on
- Brand
- Implant design and surface properties
- Years of experience
- Budget
- Other:
- Preferred brands (and reason for the same)

III. Observation and Result



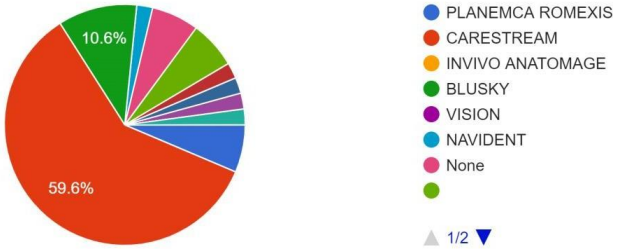






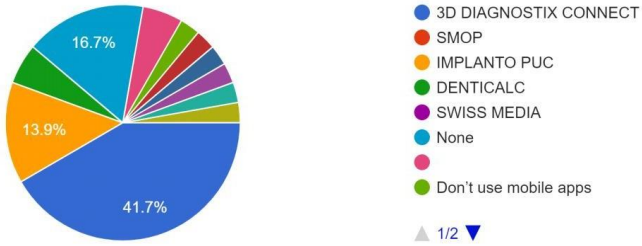
SOFTWARE PREFERRED FOR TREATMENT PLANNING

47 responses



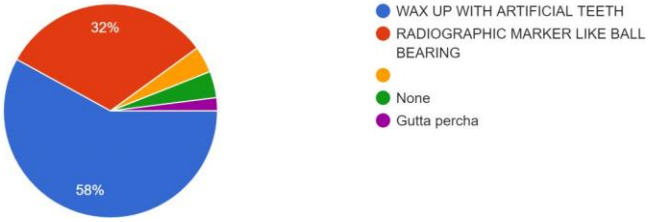
MOBILE APPLICATIONS PREFERRED FOR TREATMENT PLANNING

36 responses



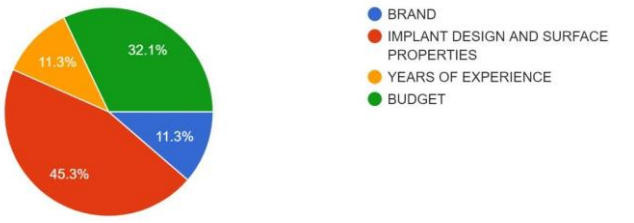
WHAT AIDS DO YOU PREFER TO MOCK THE PROSTHEIS POSITION DURING TREATMENT PLANNING?

50 responses



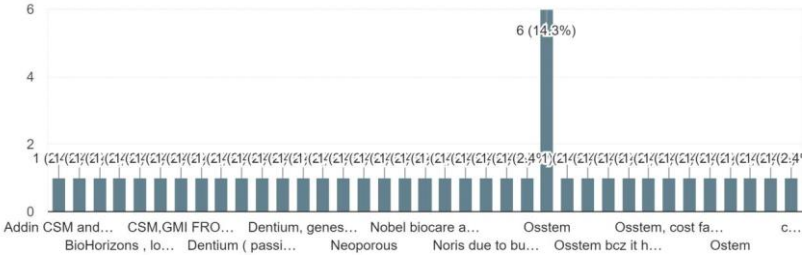
IMPLANT MATERIAL SELECTION IS PREDOMINANTLY BASED ON

53 responses



PREFERRED BRANDS (AND REASON FOR THE SAME)

42 responses



IV. Discussion

From the above results we can interpret is implants are the most sought-after treatment modality in today's day and age and use of virtual aids are a necessity to have more predictable results and avoid complications.

Use of digital scans to record patient data not only helps in keeping the procedure transparent but also more accurate with less chances of manual errors and interexaminer discrepancy and with the entire systematic workflow has made implant dentistry less time consuming and more predictable. Procedures made cost effective for the clinician owing to less reliability on material property in analogue dentistry also issues like material management and shelf life is no longer a big concern.

Thorough clinical examination and experience are *irreplacable* but no longer are these factors are solely responsible for success of implant practice.

The advent of advanced diagnostic aids like CBCT and treatment planning software like PLANEMCA ROMEXIS, CARESTREAM, Bluesky bio, and many more have made these surgical procedures more predictable and (3-d) printed models and guides have made the current implant practice more predictable and precise.

In dental implantology, the accurate placement of dental implants is essential to meet the required functional and aesthetic demands. Virtual reality has been extensively applied using the preoperative CBCT to determine the implant size, position, direction and proximity to vital structures.

All the record collected from digital scans and CBCT can be used to print guides before surgical placement of implants.

These guides are a "Boon for Beginners" as is makes the procedures less invasive and more accurate faster and free of manual errors.

Mobile applications have aided clinicians in gaining acces and guidance by sharing the cases within the community to seek guidance from senior clinicians and

Post operative complications are least and no post operative swellings are noted in these cases.

V. Conclusion

Dentist and patient goals can be accomplished accurately, predictably, safely, comfortably, quickly, and with minimal stress by treating implant patients using CT-based virtual 3-D implant planning and placing implants through surgical guides. It is the authors' opinion that this technology is the future of implant dentistry.

Technology can now be used for 3-D diagnoses, virtual treatment planning, and designing surgical guides that allow the surgeon to duplicate A virtual treatment plan at the time of surgery.

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