



Surgical Protocols Practiced by Dental Practitioners for Implant Placement in the Marathwada Region: A Cross-Sectional Survey

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ABSTRACT:

Introduction: Dental implantology has become an integral part of contemporary dental practice. The long-term success of dental implants depends not only on implant design but also on adherence to appropriate surgical protocols. Despite advancements in implant technology and training, considerable variation exists in implant surgical practices among clinicians.

Aim: To evaluate the surgical protocols practiced by dental practitioners for implant placement in the Marathwada region and to analyze factors influencing these practices.

Materials and Methods: A cross-sectional questionnaire-based survey was conducted among dental practitioners actively involved in implant placement. A validated 17-item structured questionnaire covering demographic data, diagnostic protocols, surgical techniques, asepsis, loading protocols, and training background was distributed both online and offline. Out of 236 distributed questionnaires, 178 responses were received (response rate: 75.4%). Data were analyzed using SPSS version 23.0. Descriptive statistics were calculated, and chi-square tests were used to assess associations, with $p < 0.05$ considered statistically significant.

Results: The majority of respondents (87.8%) had less than five years of implant experience. Cone beam computed tomography (CBCT) was the preferred diagnostic modality (87.6%). Most clinicians adopted a case-based approach for surgical technique selection, flap design, guided surgery, loading protocols, and antibiotic prophylaxis. Autogenous bone grafts were preferred by 61% of practitioners. While 34.1% performed sinus lift procedures themselves, 36.6% preferred referral to specialists.

Conclusion: Dental practitioners in the Marathwada region generally adhere to fundamental implant

surgical principles. However, variability exists in the adoption of advanced procedures such as guided surgery, sinus lifting, and ridge augmentation. Continuous professional education and standardized regional guidelines are essential to promote uniform, evidence-based implant practices.

KEYWORDS: Dental implants; Surgical protocols; CBCT; Implant placement; Questionnaire survey; India

I. INTRODUCTION

Dental implantology represents one of the most significant advancements in restorative dentistry, offering predictable functional and esthetic rehabilitation for partially or completely edentulous patients. Successful implant therapy depends on careful treatment planning, accurate diagnosis, meticulous surgical execution, and appropriate prosthetic rehabilitation. Among these, surgical protocols play a critical role in achieving optimal osseointegration and long-term implant survival.

Over the past two decades, implant placement techniques have evolved from conventional two-stage protocols to minimally invasive flapless approaches, immediate placement, and immediate loading procedures. The introduction of cone beam computed tomography (CBCT), digital planning software, and computer-guided implant surgery has significantly enhanced surgical precision and reduced postoperative morbidity. However, the successful implementation of these techniques depends largely on clinician training, experience, and adherence to evidence-based guidelines.

In India, the demand for implant therapy has increased substantially due to improved patient



awareness and accessibility to implant systems. Despite this growth, significant variations exist in implant surgical practices among dental practitioners. Differences are observed in radiographic evaluation, flap design, use of surgical guides, aseptic measures, bone augmentation techniques, and loading protocols. These variations may influence clinical outcomes and patient safety.

Several studies conducted across different regions of India have reported inconsistent adoption of standardized implant surgical protocols. Factors such as clinical experience, formal implant training,

and continuing dental education play a crucial role in shaping clinical decision-making. However, data regarding implant surgical practices in the Marathwada region remain limited.

Therefore, the present study was undertaken to assess the surgical protocols practiced by dental practitioners for implant placement in the Marathwada region and to evaluate factors influencing these practices through a structured questionnaire-based survey.

II. MATERIAL AND METHODS

Study Design

A cross-sectional descriptive survey was conducted using a structured self-administered questionnaire.

Study Population and Sample Size

The survey was distributed to 236 dental practitioners practicing implant dentistry in the Marathwada region. A total of 178 completed questionnaires were received, yielding a response rate of 75.4%.

Inclusion Criteria

Licensed dental practitioners

Minimum one year of experience in implant placement

Actively performing implant surgeries

Willing to participate in the study

Exclusion Criteria

Dental students and interns

Practitioners involved only in prosthetic implant work

Incomplete or inaccurately filled questionnaires

Questionnaire Design

A validated 17-item questionnaire was developed and reviewed by experts in oral implantology. The questionnaire included sections on:

Demographic and professional details

Preoperative diagnostic protocols

Surgical techniques and flap design

Asepsis and sterilization

Bone augmentation procedures

Loading protocols

Training and continuing education

Data Collection

The questionnaire was distributed both physically and electronically (Google Forms and email). Participation was voluntary, and confidentiality was maintained.

Statistical Analysis

Data were analyzed using SPSS version 23.0. Descriptive statistics were expressed as frequencies and percentages. Chi-square tests were used to assess associations between clinical experience/training and surgical protocol choices. A p -value < 0.05 was considered statistically significant.

III. RESULTS

Among the 178 respondents, 87.8% had less than five years of experience in implantology, while 12.2% had 5–15 years of experience. Most practitioners (70.7%) placed fewer than five implants per month.

CBCT was the most commonly used imaging modality for implant planning (87.6%), indicating widespread adoption of advanced diagnostic tools. Pre-procedural chlorhexidine mouth rinse was used by 78% of practitioners.

A majority of respondents preferred a case-based approach when selecting surgical procedures, flap design, use of surgical guides, and loading protocols. Autogenous bone grafts were the most preferred grafting material (61%), followed by allografts (34.1%).

Regarding advanced surgical procedures, 34.1% of practitioners performed sinus lift surgeries themselves, whereas 36.6% preferred to refer such cases to specialists. Ridge augmentation procedures were performed by 39% of respondents, with an equal proportion referring these cases.

Local anesthesia was used by 95.1% of practitioners, and implant surgeries were most commonly performed on a dental chair (63.5%). The choice of suture material showed no significant preference between resorbable and non-resorbable sutures.

IV. DISCUSSION

The present study highlights current trends in implant surgical practices among dental



practitioners in the Marathwada region. The predominance of clinicians with less than five years of experience suggests that implantology is increasingly being adopted by younger practitioners. While this reflects growing interest, it also emphasizes the need for structured training and mentorship programs.

The widespread use of CBCT demonstrates awareness of the importance of accurate three-dimensional diagnosis for implant planning. Similar findings have been reported in previous studies, emphasizing CBCT as the imaging modality of choice.

The preference for case-based decision-making indicates a rational and individualized treatment approach. However, limited routine use of guided

surgery may be attributed to cost constraints and limited access to digital infrastructure.

Although autogenous bone grafts remain the preferred choice, increasing use of allografts reflects acceptance of alternative materials. The cautious approach toward sinus lift and ridge augmentation procedures suggests variability in surgical confidence and training.

Overall, the findings suggest satisfactory awareness of basic implant protocols but reveal gaps in the adoption of advanced surgical techniques. Continuous professional education and hands-on training programs are essential to enhance clinical confidence and standardize implant practices.

V. CONCLUSION

Dental practitioners in the Marathwada region generally follow fundamental implant surgical principles; however, notable variability exists in the adoption of advanced surgical protocols. Continuous education, skill-based training, and development of standardized regional guidelines are essential to ensure uniform, evidence-based implant practices and improved patient outcomes.

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