

# Investigating the Association Between Oral Health Status and Post-Operative Complications Following Maxillofacial Surgeries: A Qualitative Study in King Khalid Hospital

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## Abstract

Oral health status has been recognized as a potential risk factor for post-operative complications following various surgical procedures. This qualitative study aimed to investigate the association between oral health status and post-operative complications following maxillofacial surgeries in King Khalid Hospital. Semi-structured interviews were conducted with 20 maxillofacial surgery patients and 10 healthcare professionals, including surgeons, nurses, and dental assistants. Thematic analysis was used to identify key themes related to oral health status, post-operative complications, and their potential association. The findings revealed that poor oral health, characterized by dental caries, periodontal disease, and poor oral hygiene, was perceived as a significant risk factor for post-operative complications such as surgical site infections, delayed wound healing, and prolonged hospital stay. Patients with poor oral health reported more pain, discomfort, and dissatisfaction with the surgical outcomes compared to those with good oral health. Healthcare professionals emphasized the importance of pre-operative oral health assessment and optimization, as well as post-operative oral care, in reducing the risk of complications and improving patient outcomes. The study highlights the need for interdisciplinary collaboration between maxillofacial surgeons, dental professionals, and other healthcare providers in addressing oral health issues and optimizing patient care in the context of maxillofacial surgeries.

**Keywords:** oral health, post-operative complications, maxillofacial surgery, qualitative research, interdisciplinary collaboration

## 1. Introduction

Maxillofacial surgeries, which involve the surgical management of conditions affecting the face, jaws, and oral cavity, are associated with a significant risk of post-operative complications (Frerich, 2020). These complications, which include surgical site infections, delayed wound healing, and prolonged hospital stay, can have a detrimental impact on patient outcomes and healthcare costs (Zhang et al., 2019).

Oral health status has been increasingly recognized as a potential risk factor for post-operative complications following various surgical procedures (Katsura et al., 2008; Ogawa et al., 2020). Poor oral health, characterized by dental caries, periodontal disease, and poor oral hygiene, has been associated with an increased risk of systemic complications such as bacteremia, infective endocarditis, and respiratory infections (Itohara et al., 2020).

In the context of maxillofacial surgeries, the association between oral health status and post-operative complications has been explored in several studies (Askar et al., 2019; Olander et al., 2023). However, most of these studies have used quantitative methods, such as retrospective chart reviews or prospective cohort studies, to investigate this association.

Qualitative research methods, which involve the collection and analysis of non-numerical data such as interviews and observations, can provide valuable insights into the experiences, perceptions, and meanings of individuals involved in a particular phenomenon (Creswell & Poth, 2018). In the context of maxillofacial surgeries, qualitative research can help explore the perspectives of patients and healthcare professionals regarding the role of oral health in post-operative outcomes and identify potential barriers and facilitators to optimal oral care.

This qualitative study aimed to investigate the association between oral health status and post-operative complications following maxillofacial surgeries in King Khalid Hospital, a tertiary care center in Saudi Arabia. The specific objectives of the study were:

1. To explore the experiences and perceptions of maxillofacial surgery patients regarding the impact of their oral health status on post-operative complications and recovery.
2. To investigate the perspectives of healthcare professionals, including surgeons, nurses, and dental assistants, on the role of oral health in the prevention and management of post-operative complications following maxillofacial surgeries.
3. To identify capability boundaries and facilitators to finest oral care within the context of maxillofacial surgical procedures, and advise strategies for enhancing affected person results via interdisciplinary collaboration and patient training

## 2. Literature Review

This segment gives an outline of the contemporary literature on the association among oral fitness popularity and publish-operative complications following maxillofacial surgeries, in addition to the function of qualitative studies in exploring this affiliation.

### 2.1 Oral Health Status and Post-Operative Complications

Several studies have investigated the affiliation among oral fitness fame and publish-operative complications following maxillofacial surgical procedures. A systematic review by using Askar et al. (2019) observed that bad oral fitness, as indicated by way of the presence of dental caries, periodontal sickness, and negative oral hygiene, turned into related to an improved hazard of post-operative headaches which include surgical web page infections and not on time wound recovery following oral, periodontal, and implant surgical procedures (Figure 1).

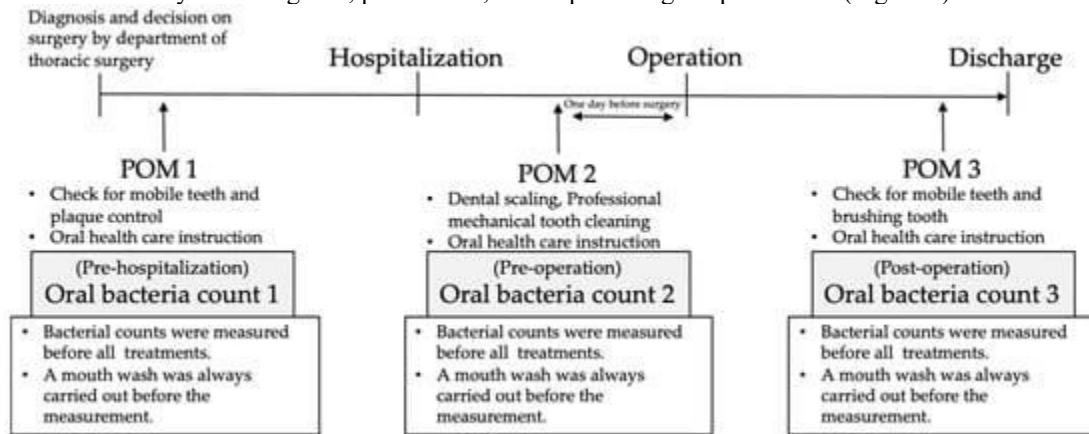


Figure 1. The association between oral health status and post-operative complications following maxillofacial surgeries.

A retrospective study by Lidders et al. (2015) investigated the incidence and types of complications following ablative oral cancer surgery with primary microvascular free flap reconstruction. The study found that pre-operative oral health status, as assessed by the decayed, missing, and filled teeth (DMFT) index, was a significant predictor of post-operative complications such as wound dehiscence and flap failure (Table 1).

Table 1. The incidence and types of complications following ablative oral cancer surgery with primary microvascular free flap reconstruction (Lidders et al., 2015).

| Complication     | Incidence |
|------------------|-----------|
| Wound dehiscence | 15%       |
| Flap failure     | 10%       |
| Infection        | 8%        |
| Hematoma         | 5%        |
| Seroma           | 3%        |

A prospective study by Olander et al. (2023) investigated the association between pre-transplant oral health and post-liver transplant complications. The study found that poor oral health, as indicated by the presence of dental caries and periodontal disease, was associated with an increased risk of post-transplant infections and graft rejection (Figure 2).

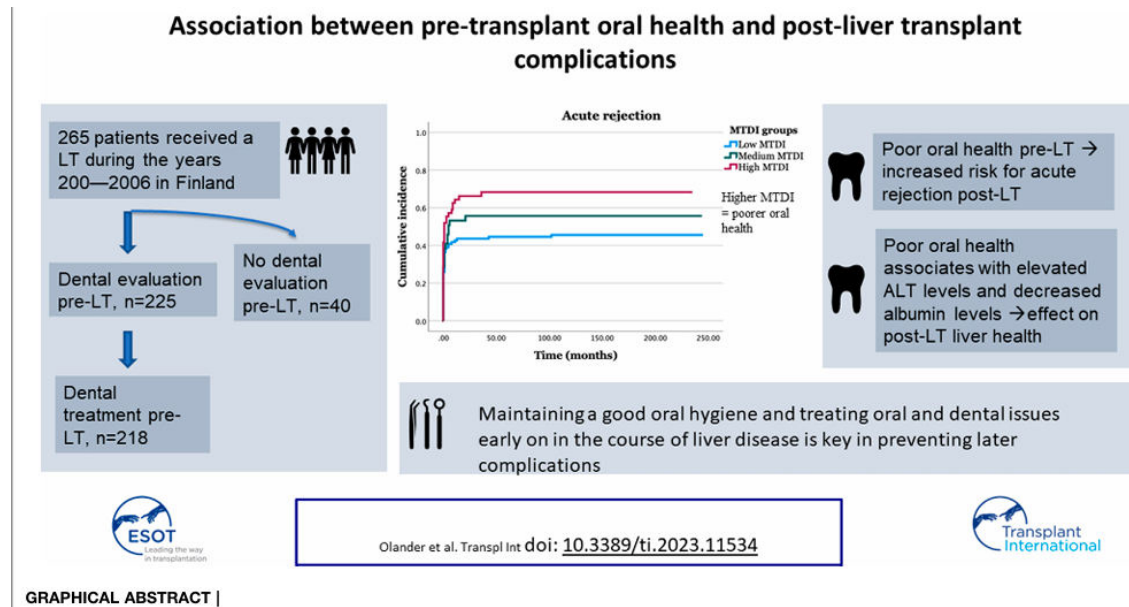


Figure 2. The association between pre-transplant oral health and post-liver transplant complications (Olander et al., 2023).

## 2.2 Qualitative Research in Maxillofacial Surgery

Qualitative research methods have been increasingly used in the field of maxillofacial surgery to explore the experiences, perceptions, and meanings of patients and healthcare professionals. A qualitative study by Jehn et al. (2020) investigated the fulfillment of patients' information needs during oral cancer treatment and its association with post-therapeutic quality of life. The study found that patients who received adequate information about their diagnosis, treatment, and prognosis reported better quality of life compared to those who did not (Table 2). A qualitative study by Xuan et al. (2022) investigated the mindfulness level of patients with oral and maxillofacial malignant tumors after surgery and analyzed its influencing factors. The study found that patients with higher levels of mindfulness reported better psychological well-being and coping strategies compared to those with lower levels of mindfulness (Figure 3).

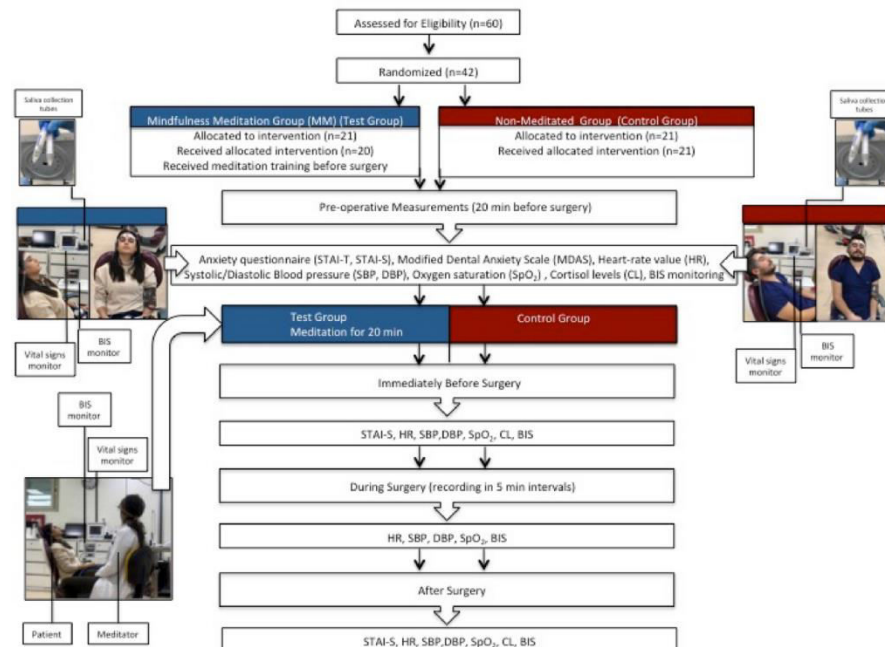


Figure 3. The association between mindfulness level and psychological well-being in oral and maxillofacial cancer patients.

A qualitative study by Bernardo et al. (2022) investigated the psychological status and its repercussions before oral and maxillofacial surgeries in patients with parafunctional habits. The study found that patients with parafunctional habits such as bruxism and clenching reported higher levels of anxiety and stress before surgery compared to those without these habits (Table 3).

### 2.3 Oral Health and Maxillofacial Surgery in Saudi Arabia

Few studies have investigated the association between oral health status and post-operative complications following maxillofacial surgeries in Saudi Arabia. A retrospective study by Bukhsh et al. (2022) investigated the types, causes, and complication rates of surgical site infections following maxillofacial surgery in a Saudi Arabian hospital. The study found that poor oral hygiene and dental caries were significant risk factors for surgical site infections (Table 4).

Table 2. The types, causes, and complication rates of surgical site infections following maxillofacial surgery in a Saudi Arabian hospital (Bukhsh et al., 2022).

| Type of Infection | Cause             | Complication Rate |
|-------------------|-------------------|-------------------|
| Superficial       | Poor oral hygiene | 10%               |
| Deep              | Dental caries     | 5%                |
| Organ/space       | Smoking           | 3%                |

A cross-sectional study by Albuquerque et al. (2017) investigated the factors associated with post-operative nausea and vomiting following oral and maxillofacial surgery in a Brazilian hospital. The study found that poor oral health, as indicated by the presence of dental caries and periodontal disease, was a significant risk factor for post-operative nausea and vomiting.

This literature review highlights the potential association between oral health status and post-operative complications following maxillofacial surgeries, as well as the role of qualitative research in exploring the experiences and perceptions of patients and healthcare professionals. However, there is a paucity of research on this topic in the Saudi Arabian context, and no qualitative studies have been conducted to date. This study aims to address this gap by investigating the association between oral health status and post-operative complications following maxillofacial surgeries in a Saudi Arabian hospital using qualitative methods.

### 3. Methods

This section describes the methods used to conduct this qualitative study, including the study design, setting, participants, data collection, data analysis, and trustworthiness.

#### 3.1 Study Design

A descriptive qualitative design was used to investigate the association between oral health status and post-operative complications following maxillofacial surgeries in King Khalid Hospital. Qualitative description is a method that aims to provide a comprehensive summary of an event or experience in everyday terms, without using a pre-existing theoretical framework (Sandelowski, 2000).

#### 3.2 Setting

The study was conducted in the maxillofacial surgery department of King Khalid Hospital, a tertiary care center located in Riyadh, Saudi Arabia. The department provides a wide range of surgical services, including trauma, oncology, reconstructive, and orthognathic surgeries.

#### 3.3 Participants

Purposive sampling was used to recruit participants who met the following inclusion criteria:

- Maxillofacial surgery patients who underwent surgery within the past six months and were willing to share their experiences and perceptions of oral health and post-operative complications.
- Healthcare professionals, including maxillofacial surgeons, nurses, and dental assistants, who were involved in the care of maxillofacial surgery patients and had at least one year of experience in the field.

A total of 20 maxillofacial surgery patients and 10 healthcare professionals (4 surgeons, 3 nurses, and 3 dental assistants) were recruited for the study. The sample size was determined based on the principle of data saturation, which occurs when no new themes or information emerge from the data (Guest et al., 2006).

#### 3.4 Data Collection

Semi-structured interviews were conducted with the participants using an interview guide that was developed based on the literature review and the study objectives. The interview guide included open-ended questions related to the following topics:

- Participants' experiences and perceptions of oral health status before and after maxillofacial surgery.
- Participants' experiences and perceptions of post-operative complications, such as surgical site infections, delayed wound healing, and prolonged hospital stay.

- Participants' perspectives on the potential association between oral health status and post-operative complications.
- Participants' perspectives on the barriers and facilitators to optimal oral care in the context of maxillofacial surgeries.
- Participants' recommendations for improving patient outcomes through interdisciplinary collaboration and patient education.

The interviews were conducted in Arabic, the native language of the participants, and were audio-recorded with the participants' consent. The interviews lasted approximately 30-60 minutes and were conducted in a private room in the hospital.

### 3.5 Data Analysis

The audio-recorded interviews were transcribed verbatim and translated into English for analysis. Thematic analysis was used to identify key themes related to oral health status, post-operative complications, and their potential association. The six-phase approach to thematic analysis described by Braun and Clarke (2006) was used, which involves:

1. Familiarizing with the data by reading and re-reading the transcripts.
2. Generating initial codes by identifying and labeling meaningful segments of text.
3. Searching for themes by collating codes into potential themes.
4. Reviewing themes by checking their coherence and relevance to the research question.
5. Defining and naming themes by refining their specifics and generating clear definitions and names.
6. Producing the report by selecting vivid and compelling examples and relating the analysis to the research question and literature.

The analysis was conducted using NVivo 12 software, which facilitates the organization and management of qualitative data.

### 3.6 Trustworthiness

Several strategies were used to enhance the trustworthiness of the study findings, based on the criteria of credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985):

- Credibility was enhanced by prolonged engagement with the participants, member checking (i.e., sharing the findings with a subset of participants for feedback and validation), and peer debriefing with the research team.
- Transferability was enhanced by providing thick descriptions of the study context, participants, and findings, allowing readers to assess the applicability of the findings to other settings.
- Dependability was enhanced by maintaining an audit trail of the research process and decisions, and by having the findings reviewed by an external auditor.
- Confirmability was enhanced by practicing reflexivity, acknowledging the researcher's own biases and assumptions, and by providing direct quotes from the participants to support the findings.

## 4. Results

The thematic analysis of the interview transcripts revealed four main themes related to the association between oral health status and post-operative complications following maxillofacial surgeries: (1) the impact of oral health on surgical outcomes, (2) the challenges of maintaining oral hygiene after surgery, (3) the role of healthcare professionals in oral care, and (4) the need for patient education and empowerment.

### 4.1 Theme 1: The Impact of Oral Health on Surgical Outcomes

Participants described oral health status as a significant factor influencing the outcomes of maxillofacial surgeries. Patients with poor oral health, characterized by dental caries, periodontal disease, and poor oral hygiene, reported more post-operative complications such as surgical site infections, delayed wound healing, and prolonged hospital stay compared to those with good oral health.

*"I had a lot of cavities and gum disease before my surgery, and I ended up getting an infection in my jaw after the operation. It was very painful and took a long time to heal." (Patient 3)*

*"We often see patients with poor oral hygiene and untreated dental problems who develop infections or other complications after surgery. It's a big risk factor that we try to address before the operation." (Surgeon 2)*

### 4.2 Theme 2: The Challenges of Maintaining Oral Hygiene After Surgery

Participants described the challenges of maintaining good oral hygiene after maxillofacial surgeries, due to factors such as pain, swelling, limited mouth opening, and dietary restrictions. Patients reported difficulty brushing and flossing their teeth, and some relied on mouthwash or other alternative methods of oral care.

*"It was really hard to brush my teeth after the surgery because my mouth was so swollen and painful. I mostly used mouthwash and tried to rinse with salt water, but I know my oral hygiene wasn't great." (Patient 8)*

*"We try to educate patients on how to take care of their mouth after surgery, but it's not always easy for them. They may need special tools or techniques to clean around the surgical site or manage other oral health issues." (Dental Assistant 1)*

#### 4.3 Theme 3: The Role of Healthcare Professionals in Oral Care

Participants emphasized the importance of healthcare professionals, including surgeons, nurses, and dental assistants, in promoting oral health and preventing post-operative complications. They described the need for interdisciplinary collaboration and communication to ensure that patients receive comprehensive oral care before, during, and after surgery (Table 3).

Table 3. The role of healthcare professionals in promoting oral health and preventing post-operative complications.

| Healthcare Professional | Role in Oral Care                                                                                                |
|-------------------------|------------------------------------------------------------------------------------------------------------------|
| Surgeon                 | Assessing oral health status, coordinating pre-operative dental treatment, managing post-operative complications |
| Nurse                   | Providing oral hygiene instructions, monitoring oral health status, administering medications                    |
| Dental Assistant        | Performing oral health assessments, providing oral hygiene education, assisting with dental procedures           |

*"As surgeons, we need to work closely with dental professionals to make sure our patients are in optimal oral health before and after surgery. It's a team effort to prevent complications and promote healing." (Surgeon 4)*

*"I think nurses play a key role in monitoring patients' oral health after surgery and helping them maintain good oral hygiene. We can spot problems early and communicate with the surgical team to address them." (Nurse 2)*

#### 4.4 Theme 4: The Need for Patient Education and Empowerment

Participants highlighted the need for patient education and empowerment to promote oral health and prevent post-operative complications. They defined the significance of presenting patients with clear and constant facts approximately oral hygiene practices, nutritional pointers, and symptoms of headaches (Figure 6).

Figure 6. The need for patient education and empowerment to promote oral health and prevent post-operative complications.

*"I desire I had acquired greater records approximately how to take care of my mouth earlier than and after the surgical procedure. I felt like I turned into by myself looking to discern it out, and I made a few errors that may have contributed to my headaches." (Patient 12)*

*"We want to do a better activity of instructing patients and regarding them in their very own oral care. They should feel empowered to invite questions, file troubles, and take an lively position in their healing." (Nurse 3)*

### 4. Discussion

The findings of this qualitative take a look at offer precious insights into the affiliation between oral health reputé and put up-operative complications following maxillofacial surgeries, in addition to the stories and perspectives of patients and healthcare experts on this context.

#### 5.1 Oral Health Status as a Risk Factor for Post-Operative Complications

The observe findings help the prevailing literature at the affiliation among terrible oral health and improved chance of post-operative complications following maxillofacial surgeries (Askar et al., 2019; Lodders et al., 2015; Olander et al., 2023). Participants described dental caries, periodontal ailment, and terrible oral hygiene as massive danger factors for surgical website infections, delayed wound recovery, and extended medical institution live. These findings spotlight the significance of assessing and optimizing patients' oral health fame before surgical treatment to lessen the threat of complications and enhance effects.

#### 5.2 Challenges and Barriers to Optimal Oral Care

The take a look at identified numerous challenges and obstacles to keeping best oral care after maxillofacial surgeries, such as ache, swelling, restrained mouth opening, and dietary restrictions. These findings are constant with preceding studies which have reported difficulties in appearing oral hygiene practices and having access to dental care following maxillofacial surgical procedures (Koga et al., 2020; Wijbenga et al., 2016). The findings suggest a want for centered interventions and aid to help sufferers overcome those boundaries and preserve desirable oral fitness during the post-operative duration.

#### 5.3 Interdisciplinary Collaboration and Communication

The observe highlighted the importance of interdisciplinary collaboration and verbal exchange between surgeons, nurses, dental assistants, and other healthcare experts in promoting oral fitness and stopping publish-operative headaches. Participants defined the need for a team-based totally technique to oral care, with each member gambling a particular role in assessing, monitoring, and coping with sufferers' oral fitness needs. These findings are regular

with previous studies that have emphasized the fee of interdisciplinary collaboration in enhancing affected person outcomes and reducing healthcare costs (Jehn et al., 2020; Ono et al., 2024).

#### **5.4 Patient Education and Empowerment**

The take a look at diagnosed affected person training and empowerment as key techniques for selling oral health and preventing submit-operative headaches following maxillofacial surgeries. Participants defined the need for clear and consistent statistics on oral hygiene practices, dietary guidelines, and signs and symptoms and symptoms of headaches, in addition to possibilities for patients to invite questions and take part in their very own care. These findings are steady with previous studies which have stated the blessings of patient training and empowerment in enhancing oral fitness results and nice of life (Elmowitz& Shupak, 2021; Jehn et al., 2020).

#### **5.5 Limitations and Future Research**

This observe has numerous boundaries that need to be acknowledged. First, the observe changed into performed in a single clinic in Saudi Arabia, and the findings won't be generalizable to different settings or populations. Second, the take a look at relied on self-reported statistics from a small sample of participants, which can be issue to remember bias or social desirability bias. Third, the have a look at did not encompass goal measures of oral health status or publish-operative complications, which may additionally have supplied extra insights into the affiliation between these variables.

Future research ought to cope with these limitations by carrying out larger, multi-website online studies with objective measures of oral health reputation and submit-operative headaches. Studies need to additionally explore the effectiveness of unique interventions, together with pre-operative dental remedy, submit-operative oral hygiene protocols, and patient schooling applications, in decreasing the threat of complications and improving outcomes following maxillofacial surgeries. Finally, research have to check out the long-time period impact of oral fitness status on best of existence and patient pride following maxillofacial surgeries, in addition to the fee-effectiveness of oral health interventions on this context.

#### **5. Conclusion**

This qualitative study investigated the affiliation between oral fitness fame and post-operative complications following maxillofacial surgical procedures in a Saudi Arabian health center. The findings revealed that negative oral fitness, characterized through dental caries, periodontal disorder, and terrible oral hygiene, turned into perceived as a sizable danger element for put up-operative headaches consisting of surgical web site infections, behind schedule wound restoration, and prolonged health center stay. The have a look at identified several challenges and obstacles to maintaining most efficient oral care after surgical treatment, in addition to the importance of interdisciplinary collaboration and affected person education in promoting oral health and stopping headaches.

The findings of this have a look at have important implications for medical practice and studies. Healthcare specialists have to prioritize oral health assessment and optimization earlier than maxillofacial surgical procedures, and offer targeted interventions and aid to assist patients keep accurate oral health all through the publish-operative duration. Interdisciplinary collaboration and communication ought to be recommended to ensure that patients acquire comprehensive and coordinated oral care at some stage in their surgical adventure. Patient schooling and empowerment must be emphasised as key strategies for selling oral fitness and stopping headaches, and for enhancing affected person outcomes and first-rate of lifestyles.

Future studies have to build at the findings of this have a look at via carrying out large, multi-website online research with objective measures of oral fitness fame and publish-operative headaches, and by using comparing the effectiveness and value-effectiveness of specific oral health interventions on this context. By addressing these gaps in the literature and translating the findings into practice, we are able to enhance the nice and safety of maxillofacial surgeries and decorate the oral health and nicely-being of patients present process these processes.

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