Birjand University of Medical Sciences

Journal of Surgery and Trauma

Case Report

Navigating post-surgical challenges: long-term retention of an arch bar post surgery

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Abstract

Maxillo-Mandibular Fixation (MMF) is a commonly employed technique in maxillofacial fractures to stabilize fragments and maintain normal dental occlusion during healing. While MMF is frequently utilized in maxillofacial surgery, extended intraoral retention for an extended period is unusual. Therefore, the presence of such hardware for a prolonged duration without patient complaints raises questions about the circumstances leading to this situation. This case study presents a scenario involving the retention of arch bars for 6 years. It underscores the importance of regular follow-up and timely removal of hardware. Consideration of each patient's unique social and financial context is crucial in this regard, and implementing a structured office recall system could help prevent similar complications.

Keywords: Surgery, Oral Trauma, Post-Surgical Care, Jaw Fixation Techniques, Trauma Nursing

Citation: Shahraki M, khazaei A.H , Amirpour Haradasht S. Navigating post-surgical challenges: long-term retention of an arch bar post surgery.J Surg Trauma.2024; 12(1): 38-42.

Received: March 16, 2024 ***Revised: May 29, 2024*** ***Accepted: July 20, 2024***

[DOI: 10.61186/jsurgtrauma.12.1.38]

Introduction

Surgical procedures, particularly in the complex anatomy of the oral cavity, demand precision and vigilance during the operation and the postoperative period. Maxilla-Mandibular Fixation (MMF) or intermaxillary fixation (IMF) is a commonly employed technique in maxillofacial surgery to stabilize fractures and maintain proper dental occlusion during healing. While arch bars are effective in facilitating proper alignment and healing, they can present challenges in terms of long-term retention(1-3). Several factors can influence the long-term retention of arch bars following surgery. These include patient compliance, oral hygiene practices, diet restrictions, and the quality of surgical techniques. Patients must adhere to post-operative instructions provided by their healthcare providers, including maintaining proper oral hygiene and following a soft diet to prevent dislodgement of the arch bars. Additionally, the skill and precision of the surgical team in placing and securing the arch bars play a crucial role in their long-term retention. To address these challenges and promote successful long-term retention of arch bars post-surgery, several management strategies can be implemented. Regular follow-up appointments with healthcare providers are essential to monitor healing progress and address any concerns or complications promptly. Patients should be educated on proper oral hygiene practices and diet restrictions to minimize the risk of dislodging or damaging the arch bars. In cases where complications arise, timely intervention by a skilled healthcare provider is crucial to prevent further issues from developing (2, 4-6). Despite efforts to ensure proper retention, challenges may arise that compromise the stability of arch bars post-surgery. Common complications include loosening or displacement of the arch bars, infection at the surgical site, discomfort or pain for the patient, and difficulty in performing routine oral hygiene practices. These issues can lead to delayed healing, prolonged recovery times, and potential risks for infection or further complications (2,7,8). The rare phenomenon of long-term retention of arch bars is a condition that, while uncommon, has been observed. Prolonged retention of arch bars on the teeth, like any other foreign body, leads to increased food impaction, plaque accumulation, difficulty in maintaining oral hygiene, and consequently, bacterial load, severe dental decay, gingival infections, and severe gingival recession. A review of literature and research in this regard indicates that only two articles exist on the subject of long-term retention of arch bars. Sandilya et al. published a report on the 17-year retention of arch bars in the mouth of a 51-year-old man, who claimed that despite their presence, he did not seek removal due to lack of discomfort (9). Upon presentation, the patient had severe archbar impaction in the buccal region and an infected ulcerated area. Brooker et al. documented a case where a 30-year-old male revisited the trauma center for the extraction of arch bars after approximately 14 years. (10). Similar to the previous article, the individual cited indifference to the necessity of seeking the removal of their arch bars as the reason for the delay in their presentation. It seems that these two patients did not seek the removal of the arch bars until they felt personally bothered, failing to recognize the urgency of their extraction (9, 10). Prolonged retention of a foreign object, such as an arch bar utilized for maxillofacial stabilization, presents notable risks, including infection, chronic pain, and delayed healing. This paper provides a detailed examination of a case involving the extended retention of an arch bar following surgery, underscoring the necessity of thorough post-surgical follow-up.

Case

The patient, a 40-year-old male, visited Zahedan Dental School with complaints of discomfort and restricted mouth opening. Upon examination, it was revealed that the patient had undergone maxillofacial surgery 6 years prior (due to car accident), during which arch bars were placed to stabilize the fractured mandible. The procedure was initially considered successful, and the patient was discharged with routine follow-up instructions. The surprising aspect of this case was the extended retention of the arch bars, which should have been removed after the appropriate healing period (Figure 1).Upon further investigation, it was found that the patient's prolonged retention of arch bars was attributed to a series of unfortunate circumstances. Firstly, the patient had been imprisoned for 4 years shortly after

[DOI: 10.61186/jsurgtrauma.12.1.38]

the initial surgery, during which he was unable to seek follow-up care or have the arch bars removed. In addition, the patient continued to face financial problems for two years after his discharge, which prevented him from dental care. Lack of access to appropriate dental care during this time resulted in the patient's arch bar remaining in place well beyond the recommended duration. Such prolonged retention can lead to various complications, including discomfort, restricted mouth opening, and an increased risk of infection. Before removing the arch bars from the patient's mouth, a thorough intraoral examination was conducted, revealing no signs of infection. Although the arch bars were in place for an extended period of time, the panoramic x-ray did not show any significant gingival recession, but did reveal severe tooth decay in the cervical surface of teeth (Figure 2).

After the examination, the patient underwent local anesthesia to remove the arch bars from both jaws. He was then educated about the importance of oral hygiene and his decayed teeth were restored.

Ethical approval was obtained from the Institutional Review Board of Zahedan University of Medical Sciences with approval number (IR.ZAUMS.REC.1402.288).

Figure 1. Clinical View

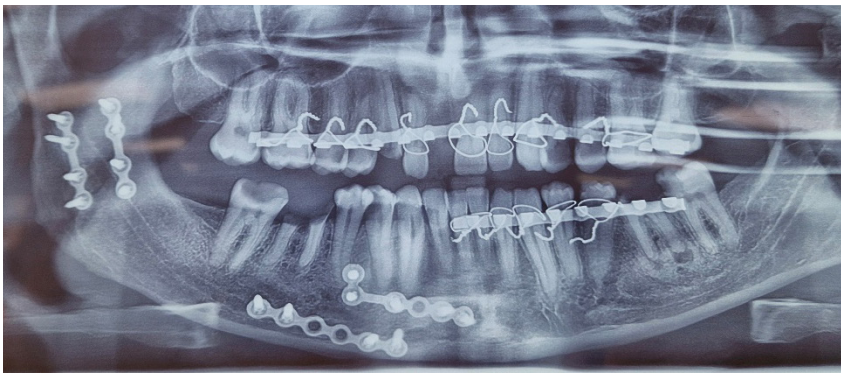

Figure 2. Panoramic View

Discussion

The importance of regular follow-up visits and timely hardware removal cannot be overstated to prevent such complications. In studies by Sandilya et al. and Brooker et al., it appears that inadequate explanations from the treatment team and failure to prioritize the timely removal of arch bars greatly affect the long-term effectiveness of the treatment (9, 10). While foreign objects in the mouth can increase the risk of food debris accumulating, potentially leading to serious dental problems such as tooth decay, gingival recession, increased risk of tooth loss, and decreased quality of life, the patient in this study only showed a notable increase in dental caries, with no other concerns observed (3,5,6).

This case underscores several critical aspects of post-surgical care:

1. Importance of Follow-Up: Regular and thorough follow-up appointments are crucial for identifying any anomalies early on. Patients must be informed of symptoms and when to promptly meet medical care (8).
2. Documentation and Communication: Meticulous documentation of all surgical procedures and clear communication between the surgical team

[DOI: 10.61186/jsurgtrauma.12.1.38]

and patient can prevent such oversights (11).
3. Patient Education: Patients should be informed about the nature of their surgery, including any foreign objects used during the procedure and their intended duration within the body (12, 13).
4. Preventive Measures: Implementing checklists and surgical counts, especially in procedures involving small or multiple objects, can significantly reduce the risk of retention (11, 14).
5. Ethical Considerations and Transparency: Healthcare providers must maintain transparency with their patients, especially when complications arise. Addressing mistakes and taking corrective action is fundamental to patient trust and professional integrity (15).

Conclusion

Long-term retention of an arch wire after surgery, while rare, brings to light the broader challenges of postoperative care and the importance of vigilance in the follow-up period. This case serves as a reminder of the potential for human error in surgical practices and the critical need for structured protocols to ensure patient safety.

By learning from such incidents, the medical community can improve surgical outcomes and uphold the highest standards of patient care. It emphasizes the significance of accessible dental services, patient education, and the implementation of structured recall systems to avoid similar complications. Efforts should be made to ensure that patients have the necessary support and resources to receive timely dental care, even in challenging situations Healthcare facilities should review and possibly enhance their post-operative care protocols, emphasizing the importance of follow-up, patient education, and the use of surgical checklists. Continuous education and training on these aspects can further equip medical professionals to navigate the complexities of post-surgical care effectively.

Acknowledgement

Special thanks to the Research Committee and the Department of Oral and Maxillofacial Surgery of Zahedan University of Medical Sciences especially Dr. Shahriar Khanlari and Dr. Fatemeh Shafiei. No financial support for this study.

Conflict of Interest

There is no conflict of interest to be declared.

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[DOI: 10.61186/jsurgtrauma.12.1.38]