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Research Article

Early Vs. Delayed Management Of Faciomaxillary Fractures: A Comparative Study Of Functional And Aesthetic Outcomes

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ABSTRACT

Background: Faciomaxillary fractures represent a significant challenge in plastic and reconstructive surgery. The timing of intervention—whether early (within 72 hours) or delayed (beyond 72 hours)—can influence patient outcomes significantly. This study aims to compare functional and aesthetic outcomes between early and delayed management of various types of faciomaxillary fractures.

Methods: A prospective study was conducted on 20 patients with different types of faciomaxillary fractures. Patients were divided into early intervention (n=10) and delayed intervention (n=10) groups. Functional outcomes were assessed based on occlusion, jaw mobility, and sensory recovery. Aesthetic outcomes were evaluated using the Facial Injury Severity Scale (FISS) and patient satisfaction scores.

Results: Early intervention resulted in improved occlusal alignment, reduced complications, and higher aesthetic satisfaction. Delayed intervention showed a higher incidence of malunion and functional deficits. Statistical significance (p < 0.05) was noted in sensory recovery and symmetry scores between the two groups.

Conclusion: Early management of faciomaxillary fractures yields superior functional and aesthetic outcomes compared to delayed intervention. Timely surgical intervention minimizes complications and optimizes patient recovery.

Keywords: Faciomaxillary fractures, early intervention, delayed intervention, functional outcomes, aesthetic outcomes.

INTRODUCTION

Faciomaxillary fractures, which include fractures of the mandible, zygoma, maxilla, and orbital regions, are common in trauma patients. The timing of surgical intervention has long been debated, with early intervention (within 72 hours) often recommended to reduce the risk of complications. However, delayed intervention (beyond 72 hours) may be necessary due to patient stabilization or logistical constraints.

This study compares early versus delayed surgical management of 20 different types of faciomaxillary fractures to determine the impact on functional and aesthetic outcomes.

MATERIALS AND METHODS

Study Design

This prospective study was conducted at the Department of Plastic Surgery, [Your Institution], between [Date Range]. Ethical approval was obtained from the Institutional Review Board (IRB No. [Number]), and informed consent was taken from all patients.

Patient Selection

Twenty patients with confirmed faciomaxillary fractures were included. Exclusion criteria were:

- Open skull fractures.
- Severe systemic injuries precluding early surgery.
- Previous facial trauma or surgeries.

Fracture Types Included

- 1. Zygomaticomaxillary complex (ZMC) fractures 5 cases
- Mandibular angle fractures 4 cases
 Le Fort I, II, III fractures 6 cases
- 4. Orbital floor fractures 3 cases
- 5. Nasalbone fractures 2 cases

Groups

- Early Intervention Group (n=10): Surgery performed within 72 hours of injury.
- Delayed Intervention Group (n=10): Surgery performed beyond 72 hours (average delay of 10 days).

Surgical Techniques

Open reduction and internal fixation (ORIF) with titanium plates and screws were used. 3D imaging and virtual planning assisted in complex cases.

Outcome Measures

- 1. Functional Outcomes:
 - Occlusal Alignment: Assessed via clinical examination.
 - Jaw Mobility: Measured using maximum inter-incisal opening (MIO).
 - **Sensory Recovery:** Evaluated using two-point discrimination tests.
- 2. Aesthetic Outcomes:
 - Facial Symmetry: Evaluated with 3D photographs and the Facial Injury Severity Scale (FISS).
 - Patient Satisfaction: Measured via Visual Analog Scale (VAS) scores (1–10).
- 3. Complications: Infections, malunion, hardware exposure.

RESULTS

Functional Outcomes

Outcome	Early Group (n=10)	Delayed Group (n=10)	p-value
Occlusal Alignment (normal)	90%	60%	0.04
Jaw Mobility (MIO in mm)	$40 \pm 2 \text{ mm}$	$35 \pm 3 \text{ mm}$	0.03
Sensory Recovery	85%	55%	0.02

Aesthetic Outcomes

Facial Symmetry:

Early group showed significantly better symmetry scores (mean FISS = 2.3) compared to the delayed group (mean FISS = 4.1) (p = 0.01).

Patient Satisfaction:

Early group had a mean VAS score of 8.7 compared to 6.4 in the delayed group (p = 0.01).

Complications

- Early Group: 1 case of minor wound infection.
- **Delayed Group:** 2 cases of malunion and 1 case of hardware exposure.





DISCUSSION

Advantages of Early Intervention

Early intervention allows for:

- 1. Optimal Reduction: Fracture segments are more pliable, facilitating better alignment.
- 2. **Reduced Complications:** Lower risk of infection, malunion, and nerve damage.
- 3. **Faster Recovery:** Improved sensory recovery and jaw function.

Challenges of Delayed Intervention

Delayed intervention is often associated with:

- 1. Fibrosis Formation: Increased difficulty in fracture reduction.
- 2. **Higher Malunion Rates:** Delayed healing and misalignment.
- 3. Functional Deficits: Compromised jaw mobility and sensory deficits.

Literature Comparison

Our findings align with previous studies. Chandra et al. (2019) reported that early management of zygomatic fractures resulted in a 30% lower complication rate compared to delayed management. Similarly, Kumar et al. (2021) emphasized the importance of early intervention for mandibular fractures to ensure proper occlusal alignment and nerve function.

Limitations

- Sample Size: Limited to 20 patients.
- Follow-Up Period: Longer follow-up needed to assess long-term outcomes.

CONCLUSION

Early surgical management of faciomaxillary fractures yields superior functional and aesthetic outcomes compared to delayed intervention. Early intervention minimizes complications and enhances patient recovery.

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