

REVIEWER'S REPORT

Manuscript No.: IJAR- 59130

Title: HIGH SUBCONDYLAR FRACTURES: SURGICAL VERSUS FUNCTIONAL TREATMENT.

Recommendation:

Accept after minor revision

Rating	Excel.	Good	Fair	Poor
Originality		✓		
Techn. Quality			✓	
Clarity			✓	
Significance	✓			

Reviewer's ID: Bilquees Hamza

Detailed Reviewer's Report

The manuscript entitled "HIGH SUBCONDYLAR FRACTURES: SURGICAL VERSUS FUNCTIONAL TREATMENT" addresses a prominent and ongoing controversy in craniomaxillofacial trauma management: the comparative evaluation of open reduction and internal fixation (ORIF) against functional (conservative) management for high subcondylar fractures of the mandible. Because high subcondylar fractures are located in close anatomical proximity to the facial nerve trunk and its peripheral branches—and present restricted surgical access due to the overlying parotid gland and zygomatic arch—determining the optimal treatment paradigm remains an important clinical endeavor.

This single-center retrospective comparative study evaluates a cohort of 22 patients managed at the Department of Oral and Maxillofacial Surgery of Mohammed V Military Teaching Hospital (HMIMV) over an extended follow-up period ranging from 3 to 36 months (mean 20.0 months). The study population comprised 20 men and 2 women with a mean age of 26.5 years. Among the cohort, 14 patients underwent surgical treatment via ORIF, utilizing primarily a high subangulomandibular (SMH) approach ($n=12$) or a retromandibular (RM) approach ($n=2$) with single 3D trapezoidal miniplates (TCP) or X-shaped miniplates. The remaining 8 patients received functional treatment consisting of early active mandibular rehabilitation initiated within 2 to 3 days post-injury, without intermaxillary fixation or rigid immobilization.

The clinical findings demonstrated marked differences between the two treatment modalities across multiple functional and occlusal parameters:

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- **Maxillary Mouth Opening:** The surgical cohort achieved a superior mean maximal mouth opening of 35.9 mm (range: 28–40 mm) compared to 30.4 mm (range: 25–39 mm) in the functional cohort.
- **Occlusal Alignment:** Pre-injury normal occlusion was restored in 78.6% of operated patients (11/14) compared to only 12.5% of functionally treated patients (1/8).
- **Mandibular Kinematics:** Persistent deviation upon mouth opening was observed in 21.4% of the surgical group (3/14) versus 87.5% of the functional group (7/8).
- **Temporomandibular Joint (TMJ) Pain:** Chronic or residual TMJ pain was reported by 28.6% of surgical patients (4/14) compared to 62.5% in the functional group (5/8).
- **Surgical Morbidity:** Transient facial nerve weakness was documented in 2 patients (14.3%), both of whom experienced full spontaneous neurological recovery without permanent deficits. Three cases of self-limiting postoperative hematoma were also observed.

The authors candidly acknowledge the intrinsic methodological limitations of their series, specifically highlighting the retrospective study design, indication bias, small sample size, lack of objective compliance monitoring during functional rehabilitation, and institutional constraints regarding dedicated TMJ physical therapy. Overall, the manuscript is concise, logically structured, and clinically relevant. However, several methodological, statistical, data-reporting, and narrative refinements are required to enhance the rigor and clarity of the paper.

Suggestions for Improvement

1. Reconciliation of Internal Data Discrepancies

- **Hardware Inconsistency Between Abstract and Table 1:** There is a numerical discrepancy regarding the distribution of osteosynthesis plates. In the Abstract (lines 20–21), the text states: "*12 TCP plates and 2 X-shaped miniplates*". However, in Table 1 (lines 90–91), the table lists "*TCP plate: 10 (45.5%)*" and "*X-shaped miniplate: 4 (18.2%)*" for the total series. The authors must thoroughly audit the surgical operative records and harmonize these figures across the Abstract, Results section, and Table 1.
- **Table 1 Formatting and Missing Cells:** Table 1 contains several blank cells under the subgroup columns ("Surgical $n=14$ " and "Functional $n=8$ ") for rows such as "Mean age", "Associated mandibular fracture", "Displacement", and "Condylar dislocation". The authors should populate all cells with explicit numerical values and percentages for both subgroups to enable direct comparative inspection by the reader.

2. Methodological Rigor, Selection Criteria, and Indication Bias

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- **Explicit Surgical Indications:** Because this is a non-randomized retrospective study, treatment allocation was dictated by clinical judgment. The authors must clearly define the baseline criteria that led surgeons to choose ORIF over functional management. For example, was surgery selected based on specific radiological parameters (e.g., ramus height loss $>5\text{ mm}$, angulation $>30^\circ$, or mechanical blockade/dislocation)? Clarifying these baseline decision rules is essential to contextualize the higher rates of displacement (63.6%) and dislocation (31.8%) in the series.
- **Standardization of the Functional Protocol:** The functional rehabilitation protocol is currently described in brief terms ("early active mandibular rehabilitation... without immobilization"). To ensure reproducibility, the authors should detail the specific therapeutic exercises prescribed (e.g., active vertical opening, lateral excursion exercises, isometric strengthening), the recommended daily frequency, whether guiding elastics or acrylic splints were utilized, and the exact timeline for clinical follow-up.

3. Statistical Analysis and Comparative Inference

- **Inferential Statistical Testing:** The manuscript presents descriptive data (means and percentages) without inferential statistical testing. Despite the modest sample size ($N=22$), applying non-parametric comparative tests—such as Fisher's exact test or Chi-square test for categorical variables (occlusion, deviation, TMJ pain) and the Mann-Whitney U test for continuous variables (maximal mouth opening)—would add analytical value. Reporting exact p-values will assist readers in determining whether the observed differences between the surgical and functional arms reach statistical significance.

4. Biomechanical and Surgical Considerations

- **Biomechanical Rationale for Fixation Material:** AO Foundation craniomaxillofacial principles generally recommend two miniplates or dedicated 3D trapezoidal miniplates along the lines of strain to resist complex bending and torsional forces in the condylar neck and subcondylar region. The authors should briefly discuss their rationale for using single TCP or X-miniplates in high subcondylar fractures. Did single-plate constructs provide sufficient osteosynthesis stability, or were any signs of hardware fatigue, screw loosening, or secondary displacement noted on long-term radiographs?
- **Surgical Approaches (SMH vs. RM):** The high subangulomandibular (SMH) approach was utilized in 85.7% of surgical cases. The authors should expand upon the technical execution of the SMH approach relative to the retromandibular (RM) approach. Specifically, discuss surgical

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exposure of the high subcondylar fragment, protection of the marginal mandibular and facial nerve branches, and aesthetic outcomes regarding scar placement.

5. Radiological Definitions and Objective Metrics

- **Criteria for "Satisfactory Reduction":** The manuscript states that reduction was "satisfactory in 12 cases" and "unsatisfactory in 2 cases". The authors should define the objective radiological metrics used to judge reduction quality on postoperative panoramic radiographs or CT scans (e.g., anatomical alignment of the posterior ramus border, restoration of vertical ramal height, residual gap formation).
- **Quality of Figures:** Figure 1 provides a clear schematic diagram of the topographic classification. Figure 2 demonstrates a postoperative panoramic radiograph showing an X-shaped miniplate in good position. Ensure that Figure 2 is supplied at high resolution (minimum 300 DPI) and that radiograph orientation markers (R/L) are standardized.

6. Expansion of Discussion and Local Context

- **Impact of Specialized Physiotherapy:** The discussion thoughtfully highlights the local contextual constraint: the limited availability of specialized TMJ physiotherapists in the military hospital or regional setting. The authors should elaborate on how unmonitored home-based rehabilitation might account for the suboptimal occlusal outcomes (12.5% normal occlusion) and high rates of opening deviation (87.5%) in the functional cohort.
- **Comparison with Contemporary Meta-Analytic Literature:** Contextualize the findings against recent systematic reviews and meta-analyses comparing open versus closed treatment of condylar process fractures. Emphasize how the present findings align with or diverge from global trends regarding post-operative maximal mouth opening, occlusal stability, and facial nerve safety profiles.

Final Recommendation

Decision: Accept with Minor Revisions

This manuscript provides valuable real-world comparative data on the surgical and functional management of high subcondylar mandibular fractures from a specialized tertiary military medical center. The study addresses an important surgical topic, presents a well-followed patient cohort, and offers a candid, balanced appraisal of clinical outcomes and institutional constraints.

The scientific quality and reader impact of the manuscript will be substantially strengthened by completing the minor revisions outlined above—specifically harmonizing osteosynthesis plate counts between the text and tables, populating missing subgroup data in Table 1, incorporating basic inferential statistical comparisons (p-values), defining objective radiological reduction criteria, and expanding on

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baseline surgical selection indications. Upon satisfactory completion of these refinements, the manuscript will be well-suited for publication.