

Mandibular Condylar Neck Fractures: A Treatment Algorithm

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Background

Operative fixation of condylar neck fractures reduces malocclusion, incomplete jaw opening, jaw deviation, and jaw pain via several approaches. Our study aims to present a management algorithm that incorporates patient and fracture characteristics.

Objectives

To simplify management of condylar neck fractures and evaluate the safety and efficacy of treatment using this algorithm

Methods

Retrospective review was performed of patients who underwent operative treatment of condylar neck fractures from 2016-2023 (n=22).

At our institution, patients with an isolated fracture with no loss of height were treated with a soft diet. Patients with malocclusion due to a second mandibular fracture but no loss of height of the condylar neck fracture were managed with closed reduction and mandibular maxillomandibular fixation (MMF) during ORIF of the second fracture.

Patients with malocclusion and fracture displacement only (loss of height) were treated with operative fixation using either a retromandibular (n= 5) or an intraoral endoscopic-assisted approach (n=9).

Patients with both displacement and dislocation were first treated with a preauricular approach for the dislocation, then with operative fixation via retromandibular or with an intraoral endoscopic-assisted approach (n=8).

We analyzed these cases and their respective outcomes to develop our treatment algorithm. Assessment included operative time, occlusion, interincisal opening, jaw deviation, post-operative pain, and post-op complications.

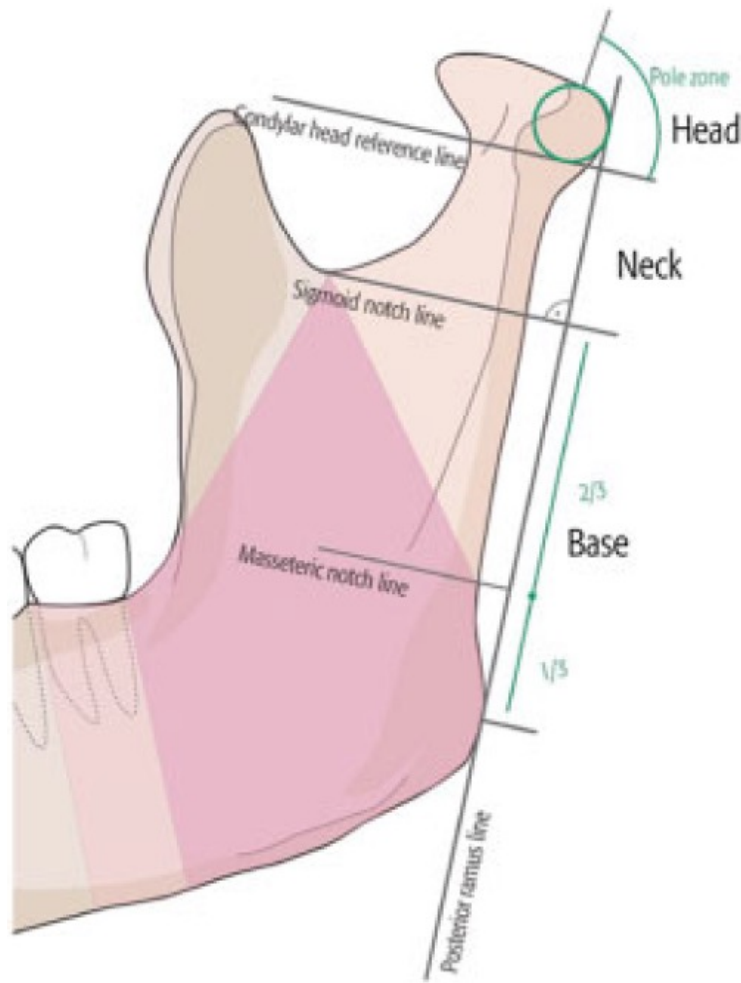


Figure 1. AO CMF Classification, Mandibular Condyle Fractures

Protocol

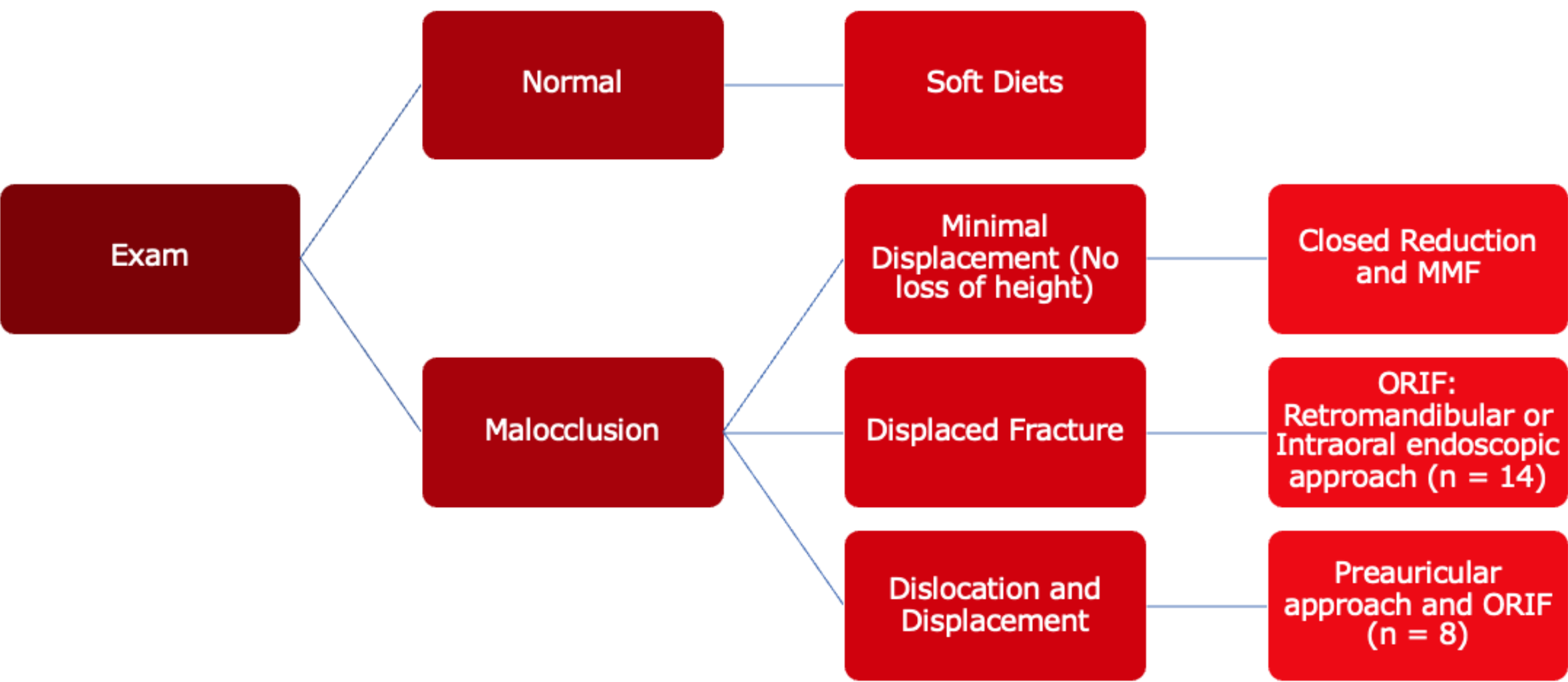


Figure 2. Treatment Algorithm for Condylar Neck Fractures

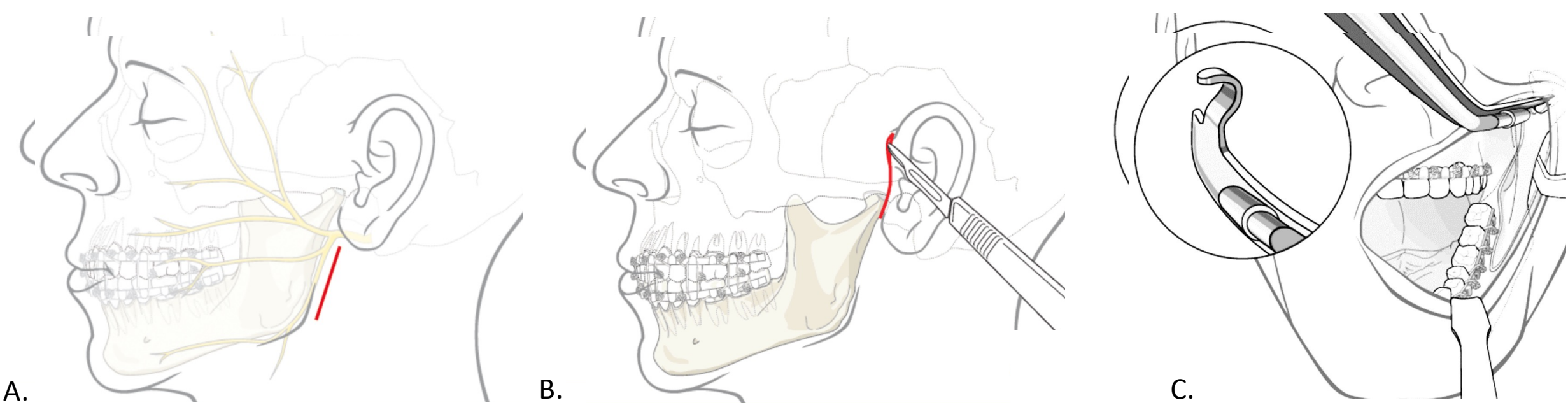


Figure 3. Operative Approaches: A. Retromandibular, B. Preauricular, C. Intraoral

Results

Condylar neck fractures were predominantly observed in males (81%), often combined with other mandible fractures (59%). Patients with condylar dislocation required longer operations (n=8, median time 215 minutes) than those with displacement (n=14, median time 172 minutes). Among the 22 patients, 13 underwent adequate follow-up for a minimum of one month.

The average duration of follow-up for these patients was 4.3 months [range: 1.03 to 24.6 mo]. Seven patients were lost to follow-up prematurely, (mean 0.44 months, range 0-0.7 months), and two patients had incomplete documentation of outcomes.

Table 1. Patient Characteristics	
Sex	
Male	18 (81.8%)
Female	4 (18.1%)
Age* (years)	30.9 [23.5-37.0]
Comorbidities	
Psych diagnosis	2 (9.1%)
Smoking status	
Smoker	14 (63.6%)
Nonsmoker	8 (36.4%)
Other injuries	
Mandible fracture#	13 (59.1%)
Symphysis	5 (22.7%)
Parasymphysis	2 (9.1%)
Body	4 (18.2%)
Angle	2 (9.1%)
Ramus	1 (4.55%)
Condylar head	1 (4.55%)
Condylar base	1 (4.55%)
Other facial fracture (non-mandible)	5 (22.7%)
Follow-up duration* (months)	1.28 [0.66 - 2.23]
Lost to follow-up	14 (63.6%)
Pre-op malocclusion	
Y	20 (90.9%)
N	2 (9.1%)

*Median [IQR] reported

#Some patients had mandibular fractures in multiple sites

Among the 13 patients with adequate follow-up, 85% (11 of 13) successfully achieved restoration of their premorbid occlusion.

Additionally, 23% with a mean follow-up of 1.1 months experienced abnormal interincisal opening post-operation. The same proportion exhibited jaw deviation; none of the patients reported pain while chewing. 15% of these patients experienced complications, including ongoing malocclusion and sialoceles, neither of which required a secondary procedure.

Table 2. Operative Details		
	Displacement (n = 14)	Displacement and Dislocation (n = 8)
Operative Approach		
Open Reduction Internal Fixation (ORIF)		
Retromandibular	5	
Intraoral	9	2
Preauricular + ORIF		6
Operative Time* (mins)	172 [134-247]	215 [140-276]

*Median [IQR] reported

Table 3. Clinical Outcomes Data	
Total Patients	22
Patients with ≥ 4 weeks of follow up and all outcomes documented	13 (59.1%)
Post-op MMF	12 (54.5%)
MMF Duration (days)	19 [15-33]
Post-op Malocclusion*	2 (15.4%)
Incomplete Jaw Opening (<40 mm)*	3 (23.1%)
Jaw Deviation*	3 (23.1%)
Pain with Palpation*	2 (15.4%)
Pain with Chewing*	0 (0 %)
Complications*	
Persistent Malocclusion	1 (7.69%)
Sialocele	1 (7.69%)
Taken to the OR for Complications*	0 (0 %)

* Calculated with respect to the number of patients who had adequate follow-up and all outcomes documented (13 total)

Conclusion

We present a case series of our algorithm for management of condylar neck fractures. The majority of patients achieved restoration of premorbid occlusion without long-term complications. Using this algorithm has simplified the decision-making process and allowed for effective treatment of challenging mandibular condylar neck fractures.

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