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관절낭내 하악과두골절의 관혈적 정복 및 내고정술에서 이전 경이하선 접근법의 타당성

(Feasibility of the preauricular transparotid approach in open reduction and internal fixation of intracapsular mandibular condyle fracture

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Background: Mandibular condyle fractures pose surgical challenges owing to their proximity to the facial nerve and the complex temporomandibular joint anatomy. Traditional approaches limit exposure and hinder effective fracture management. The preauricular transparotid approach is a potential alternative. We aimed to assess the feasibility of this approach and the postoperative complications.

Methods: This retrospective study analyzed 45 patients with intracapsular condylar fractures treated using open reduction and internal fixation via a preauricular transparotid approach.(Fig.1) The surgical incision begins at the root of the helix, follows the preauricular crease, and extends around the earlobe. A skin flap is elevated above the SMAS layer, followed by blunt dissection of the parotid gland. The temporal and zygomatic branches of the facial nerve are carefully identified and preserved during dissection. A vertical incision is made in the masseter muscle to expose the condylar head. Fractures are reduced and fixed using positional screws or mini-plates depending on fragmentation. Preoperative CT scans evaluate displacement, segment distance, cortical height difference, fracture angle, and ramus height, as well as nerve distance based on Pitanguy's line. (Fig. 2.) Postoperative outcomes include radiologic assessment of reduction, screw angle, ramus height, mouth opening, and chin deviation. (Fig. 3.)

Results: This study included 45 patients who underwent OR/IF for intracapsular condylar head fractures, with an average age of 35.2 years, a mean time to surgery of 9.5 days, hospital stay of 5.5 days, and operation time of 193.5 minutes.(Table 1.) Preoperative CT showed multidirectional displacement, with fracture segments located 17–24 mm from the condylar stump despite smaller displacement distances. (Table 2.) The fracture line averaged 44.2° in inclination, and anatomical considerations indicated screw placement within 9.6 mm, close to the facial nerve. Postoperatively, ramus height and symmetry significantly improved, with anatomical or near-anatomical reduction achieved in most patients. (Table 3.) Temporary facial nerve weakness occurred in some cases but resolved within weeks without permanent damage. Overall, functional outcomes were favorable, with good mouth opening and minimal complications such as mild joint symptoms or slight deviation.

Conclusion: The approach enhances visualization, facilitates precise fixation, and results in inconspicuous scarring during OR/IF of intracapsular condylar fractures. It requires careful surgical techniques and increases the risk of transient facial nerve weakness. Further research should compare its outcomes with those of traditional approaches and optimize surgical outcomes.

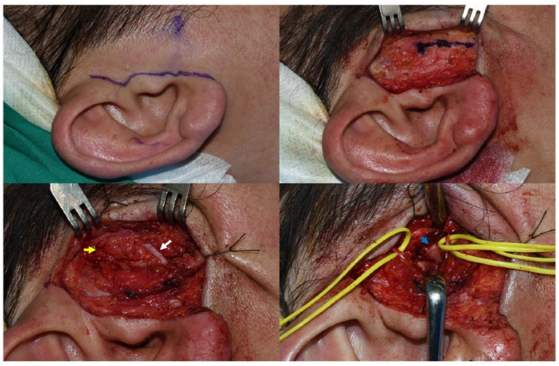

Fig. 1. Surgical procedure of the preauricular transparotid approach with ear lobular extension. (Above, left) An incision line is designed starting from the root of the helix and following the natural crease of the preauricular skin down to the earlobe. This incision then extends further, encircling the earlobe. (Above, right) The skin flap is elevated above the superficial musculoaponeurotic system (SMAS) layer. The SMAS incision site is drawn by palpating the condyle head. (Below, left) After SMAS incision, the parotid gland is bluntly dissected, and the facial nerve temporal (yellow arrow) and zygomatic (white arrow) branches of the facial nerve are dissected from the surrounding tissues. (Below, right) A vertical incision is made in the masseter muscle, and the condyle head (blue arrow) is exposed.

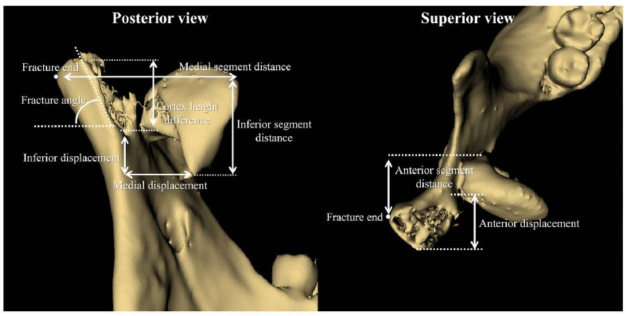

Fig. 2. Methods for measuring displacement distance and segment distance.

Fig. 3. Methods for measuring nerve distance and screw angle. Nerve distance is determined as the shortest distance from the Pitanguy's line, a line extending from 0.5 cm below the tragus to 1.5 cm above the lateral eyebrow, to the end of the condylar stump (red arrow). Screw angle refers to the angle between the horizontal reference line and the screw on the coronal view of postoperative CT images.

Table 1
Summary of patient demographics, duration of surgery, and hospital stay (n = 45).

Demographics		
Sex (n)	Male	28
	Female	17
Age (years)		35.2 ± 10.1
Sides (n)	Right	19
	Left	26
Etiology	MVA	6
	Fall	35
	Assault	4
Duration of surgery (minutes)		193.5 ± 20.1
Hospital stays (days)		5.5 ± 0.8

MVA: motor vehicle accident.

Table 2
Displacement distance, segment distance, cortex height difference, fracture angle, and nerve distance measured from the preoperative CT images.

		Average	Range
Displacement distance (mm)	Anterior	7.2 ± 2.9	(2.3–14.7)
	Medial	9.3 ± 3.4	(3.3–18.7)
	Inferior	9.9 ± 2.8	(5.3–17.9)
Segment distance (mm)	Anterior	17.0 ± 2.6	(10.1–21.9)
	Medial	24.0 ± 3.9	(11.9–30.6)
	Inferior	17.8 ± 3.7	(8.8–25.2)
Cortex height difference (mm)		9.6 ± 2.7	(6.7–14.4)
Fracture angle (degrees)		44.2 ± 10.6	(10.7–44.2)
Nerve distance (mm)		5.5 ± 2.8	(1.2–12.3)