

**Title: Mandibular Distraction Osteogenesis for Severe Neonatal Airway
Obstruction: A Follow-up Study**

Objective: Micrognathia in neonates can lead to adverse outcomes affecting breathing, feeding, growth, and development. When conservative therapy is unsuccessful, selected patients have been managed with mandibular distraction osteogenesis (MDO). We previously reported airway, feeding and growth outcomes and this study evaluates MDO over a longer time and with a larger cohort.

Study Design: Retrospective chart review

Setting: Tertiary care referral center

Methods: A retrospective review over a 15-year period of patients with micrognathia who underwent MDO within the first 90 days of life was performed. Demographic data, hospital course, associated syndromes, duration of distraction, need for additional procedures, and growth data were included. The Cormack-Lehane classification was used to evaluate the grade of laryngeal view pre and post MDO. Descriptive statistics along with Mixed-Effects growth curve analyses were utilized.

Results: Sixty-three patients were included. The age at MDO was 36.0 days (SD±24.3), the duration of distraction was 7.62 days (SD±2.11), and discharge was on postoperative day 19.4 days (SD±11.9). Ninety-six percent of patients showed objective improvement in airway grade following MDO with 95% obtaining a grade II view or better. Fifty-six percent of patients were able to feed exclusively with oral intake at discharge and no patients required tracheostomy placement following MDO.

Conclusion: Our results support early intervention with MDO as a successful option for neonates with symptomatic micrognathia refractory to conservative measures. Airway improvement is significant as tracheostomy is avoided, and ease of future intubation is enhanced. Feeding outcomes are encouraging as many patients avoid gastrostomy tube placement.