Mandibular Distraction Osteogenesis in the Pierre Robin Sequence Patient: Preoperative Evaluation Determines Success

Nathan Bodily, BS, Soham Roy, MD, Sancak Yuksel, MD, John Teichgraeber, MD, Michael Lypka, MD, DMD

Introduction

The selection of patients with Pierre Robin Sequence for distraction osteogenesis of the mandible depends on a number of factors. Common to most centers is an interdisciplinary approach to the selection of appropriate patients. The decision to distract the mandible relies heavily on the pre-operative assessment of multiple specialists. It is the purpose of this study to review a series of 10 consecutive cases, review the outcomes of distraction, and specifically highlight pre-operative assessments that resulted in unfavorable outcomes.

Methods

Mandibular distraction was performed on patients with Pierre Robin sequence from July 2011 to July 2013 at Children’s Memorial Hermann Hospital. All patients had pre-operative L and B by an experienced pediatric otolaryngologist. Pre- and post-op sleep studies were obtained in 8 of 10 cases. Age at distraction, associated syndromes and medical conditions, pre- and post-operative sleep studies, and complications were evaluated. Follow-up ranged from 6 months to 2 years.

Results

10 patients: 4 syndromic
Mean AHI: Pre-op - 31.5  Post-op - 4.5
Mean distraction length was 24 mm.
8 of 10 patients had successful outcomes defined by subjective relief of obstructive apnea, objective reduction in AHI toward normal, and improved feeding at 2 months.

2 patients had unfavorable outcomes:
One case who had pre-operative respiratory failure and retrognathia who did not respond to the distraction procedure, and had a delayed diagnosis of spinal muscular atrophy, ultimately resulting in death.
Another patient had multiple congenital anomalies and failed to respond to the procedure. The patient had significant laryngomalacia on post distraction repeat L and B, required tracheostomy, and later died of cardiac shunt failure.

Conclusion

In the properly selected patient, mandibular distraction in patients with Pierre Robin Sequence can be successful. Pre-operative assessment involves both art and science, but ultimately determines the success or failure of the distraction procedure.