The Role of Injection Laryngoplasty (IL) in Treating Deep Interarytenoid Notch (DIN) associated Dysphagia in Young Children


Abstract

Background:
Deep Interarytenoid Notch (DIN) is the mildest form of laryngotracheoesophageal cleft defect and is frequently found in young children with dysphagia and aspiration. Treatment guidelines are not defined. Injection Laryngoplasty (IL) is a surgical procedure injecting polymer gel into the tissue around the defect. Our objective was to evaluate the efficacy of IL in pediatric populations with severe dysphagia and aspiration.

Methods:
We conducted a pilot retrospective chart review of patients with DIN treated in a 3-year period at a tertiary care medical center. All patients treated with IL, independent of benefit, were included for analysis. Statistical analysis was performed using paired two sample t-tests with a p value of 5 percent.

Results:
Twenty-three patients under 36 months of age were included for analysis. All patients were followed for a minimum of two years (mean follow-up period was 4 years). The population was divided into two groups: patients who benefited from IL and those who did not. Benefit was defined as a reduction in MBS scores greater than 0 points. A paired t-test was used to calculate the change in MBS scores between pre- and post-IL treatment. The change in MBS scores was statistically significant (p < 0.0005) for patients who benefited from IL. The mean initial MBS score was 8.2 (min score of 7) and the mean final MBS score was 5.4 (max score of 0). Table 1 shows an analysis of the two populations’ starting MBS scores. Group with Benefit (B) and group with no benefit (NB) have statistically different disease at initial presentation. p < 0.00003. Patients who benefited from IL had mean initial MBS scores of 5.4 (max score of 7) and an average final score of 6.0. The two groups’ symptom and points are not statistically different from each other. Possible implications: first, patients with a MBS score greater than seven are more likely to benefit from an intervention with IL than those with a score of less than seven. Second, all patients treated with IL, independent of benefit, do not, on average, improve beyond a score of 5.6 at about Nectar.

Conclusions:
IL in young children can be very helpful in multidisciplinary treatment approach of dysphagia with oral aspiration. IL scores and clinical reports are more likely to benefit from an intervention with IL than those with a score of less than seven. Second, all patients treated with IL, independent of benefit, do not, on average, improve beyond a score of 5.6 at about Nectar.

Study Limitations:
No standardized clinical protocol was in place during the period we reviewed. We focused on MBS and clinical reports are more likely to benefit from an intervention with IL than those with a score of less than seven. The patients’ initial MBS score was taken at the time of presentation and did not include any improvement from prior treatment. The patients’ initial MBS score was taken at the time of presentation and did not include any improvement from prior treatment.

Future Directions:
Further studies are needed to evaluate the long-term effects of IL in children with severe dysphagia and aspiration. A randomized controlled trial with outcome measures that include quality of life and feeding behaviors would be beneficial.

References:

Table 1: Patient Demographics, Benefit vs No Benefit Populations

Table 2: Patients before and after IL

Table 3: Benefit versus No Benefit starting MBS score comparison

Table 4: Final MBS scores between the two populations compared

Table 5: Percentage remaining symptoms

Table 6: Patient MBS scores raw data
not, was evaluated using Unpaired t-test with unequal variances. p<0.05.

- Retrospective chart review of 23 patients aged 1-3 who were diagnosed DIN who had underwent Laryngoplasty Injection
- Patient records were evaluated for comorbidities, documented symptoms, documented improvement/worsening.
- MBS scores were recorded and reported as months pre/post IL.