

Factors Affecting Outcomes in Airway Stenosis Dilations

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Objectives: Tracheal and subglottic stenosis are often managed with dilation procedures, with additional interventions often added in an attempt to delay recurrence of the stenosis. The goal of this retrospective case series is to evaluate the efficacy of such various factors in prolonging airway stenosis recurrence.

Methods: A total of 345 dilation procedures belonging to 148 patients who presented for endoscopic dilation of clinically significant subglottic and/or tracheal stenosis were reviewed. Data was collected on patient demographics, comorbidities, surgical history, dilation type, adjuvant therapies, type of endoscopic intervention, and if needed, time until next dilation procedure. The patient data was divided into adult and pediatric groups based on age at the time of operation. Bivariate models were performed for both the adult and pediatric patient groups.

Results: The charts for 95 adults receiving 220 dilation procedures were reviewed. None of the adjuvant therapies (cryotherapy, steroid injection, topical mitomycin) were statistically associated with an increase in the number of weeks until next dilation. However, procedures involving 14mm balloon dilators ($p < 0.0108$) and interventions with sharp, radial incisions ($p < 0.0286$) were found to be associated with a significant increase in the number of weeks until next dilation when compared to other dilator types and interventions with laser incisions, respectively. Jackson dilator ($p < 0.0446$) was found to negatively affect outcomes by decreasing the weeks until next dilation. The charts for 53 pediatric patients receiving 125 dilations were reviewed separately, and in these cases, cryotherapy ($p < 0.0428$) was the only factor significantly associated with an increase in weeks until next dilation.

Conclusions: In comparing various factors involved in airway stenosis dilations, balloon dilators and sharp radial incisions were found to significantly increase time needed before the next procedure in adults, while cryotherapy was found to significantly increase time needed before the next procedure in pediatric patients.