Adductor Spasmotic Dysphonia: Treatment Efficacy
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Background of Adductor Spasmotic Dysphonia
Eskander, Fung, McBride, & Hogikyan state that “Adductor spasmotic dysphonia (ASD) is a dystonia of the adducting muscles of the vocal folds leading to irregular voice stoppages and a voice quality that is typically described as strained or strangled” (2010).
- ASD is the most prevalent type of spasmotic dysphonia.
- The etiology of ASD is unknown.
- There is no cure for ASD only treatments.
- ASD is more prevalent in females.
- ASD has a average age of onset at 40 years old.

Type II Thyroplasty
Sanuki & Ishik state that a type II thyroplasty is when “the thyroid cartilage is incised at the midline, leaving the underlying soft tissue intact. During phonation, the incised cartilage edges were pulled apart at varying distances from 2 to 6 mm (average 3.72 mm, s69) to see whether any voice change occurred.” (2009)

Advances in type II thyroplasty:
Initially silicone shims were used to fix the incised cartilage edges. Silicone shims were used initially and gave generally satisfactory results as its biocompatibility had been established and it was easy to remodel during surgery as needed. However the shims were prone to break post operatively. In order to remedy this issue it is now the standard practice to use two titanium bridges instead of silicone shims. The titanium bridges allow for lateral pull of the thyroid cartilage during surgery as needed. However the shims were prone to break post operatively.

Chemodenervation of the Thyroarytenoid Muscles With Botulinum Toxin
Chemodenervation using botulinum toxin (botulin) is the most common treatment to manage ASD voice symptoms. Mendelsohn, Berke & Gerald state “This procedure works by blocking the irregular nerve impulses at the neuromotor units level by inhibiting the presynaptic release of acetylcholine” (2012). Most physicians usually inject the thyroarytenoid muscles through the cricothyroid membrane submucosally, however some choose to inject the thyroarytenoid muscles through the cricothyroid membrane through the lumen. Very few physicians inject through the thyroarytenoid membrane, the thyroid cartilage, or orally due to the possibility of increased complications. In order to administer the injections most physicians use a combination of electromyographic guidance and fiber-optic nasolaryngoscopy (Eskander, Fung, McBride, Hogikyan, 2010). Another important detail to note is that the majority of injections are delivered bilaterally to the thyroarytenoid muscles. (Elmiyeh et al, 2010)

Draw Backs of Treating ASD With Botulinum Injections

Variability in:
- Dosage
- Frequency of injection
- Outcome of treatment
- Retreatment: Frequency of injection can result in a very high fiscal burden on the patient and has the possibility to become unmanageable.
- In addition to the cost of the injections, clients may also have to miss work placing an even greater fiscal burden on them. In addition, since Botulinum is a toxin some patients develop an immunity to the toxin which neutralizes the remedial effects of the treatment. (Mendelsohn, Berke, Gerald, 2012)

The Selective Laryngeal Adductor Denervation-reinnervation (SLAD-R) Procedure
There are currently many surgeries purposed for the treatment of ASD. One factor about the SLAD-R that sets it apart from other surgeries (such as a type II thyroplasty) is that it targets the disordered neuromuscular signaling. Mendelsohn, Berke and Gerald (2012) state “The SLAD-R creates its “selective denervation” by opening a window in the thyroid cartilage so that the adductor branch of the recurrent laryngeal nerve (RLN) can be selectively severed, leaving the posterior branch intact” (p. 2323). This allows the unaltered abductor muscles to function normally. Other surgeries call for a similar procedure, but a common problem is RLN regrowth. In order to make sure that doesn’t happen the adductor branch of the RLN is reinnervated. Reinnervation occurs after an estimated 3 to 6 months, and serves to maintain muscle tone and bulk while preventing RLN regrowth. This reinnervation leads to a prolonged relief of ASD symptoms. In the study performed by Mendelsohn, Berke and Gerald (2012) patients saw good voice quality on an average of 7.5 years post surgery.

SLAD-R Procedure Outcomes vs. Botulinum Toxin Injection Outcome
As seen in the table patients who underwent the SLAD-R surgery scored higher on the voice handicap index (VHI-10) in all areas except for category 2 “people have difficulty understanding me in a noisy room.” This data was gathered from patient self-report surveys (Mendelsohn, Berke, Gerald, 2012).

Conclusion
The best treatment for a patient with ASD should be tailored to the individual. Traditional surgeries such as the type II thyroplasty have higher chances of complications due to how invasive they are. The introduction of titanium bridges helped with some of these complications. Botulinum injections are the standard treatment for ASD at this point in time (Eskander, Fung, McBride, Hogikyan, 2010). Even though botulinum injections are the preferred treatment of many physicians, they have a host of draw backs headlined by the variability in treatment from patient to patient and even in the same patient. Newer surgeries like the SLAD-R are invasive, but have lasting, consistent remedial effects in treating ASD (Mendelsohn, Berke, Gerald, 2012).