

Necessity of Drain Placement for Medialization Laryngoplasty

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Introduction

Although glottal incompetence resulting in significant dysphonia is relatively uncommon in the general population, it is seen often in the tertiary otolaryngology practice. Treatment of glottal incompetence has evolved over the years to include laryngeal framework surgery or injection laryngoplasty. Isshiki characterized his type I thyroplasty, or medialization of the vocal fold, as a treatment for lack of full glottal closure.¹ Medialization laryngoplasty is often carried out under local anesthesia and concern over airway compromise has always been present. Because of this, many elected to keep the post-surgical patient overnight in the hospital to monitor for impending airway problems. Several studies have demonstrated the safety and cost-effectiveness of same day thyroidectomy surgeries,^{3,4,5} which could be argued to involve much more extensive dissection than a thyroplasty in addition to having increased risks. It is reasonable to inquire as to whether the thyroplasty procedure should follow the same philosophy and be considered for outpatient status.

This study reviews an institutional experience of several surgeons over a 10 year period with two primary aims. First, to determine if a drain is necessary in type I thyroplasty and second, to determine if same-day management is feasible. Furthermore, we attempt to determine if there is a patient population which is at a particular risk and may warrant additional monitoring for post-operative complications.

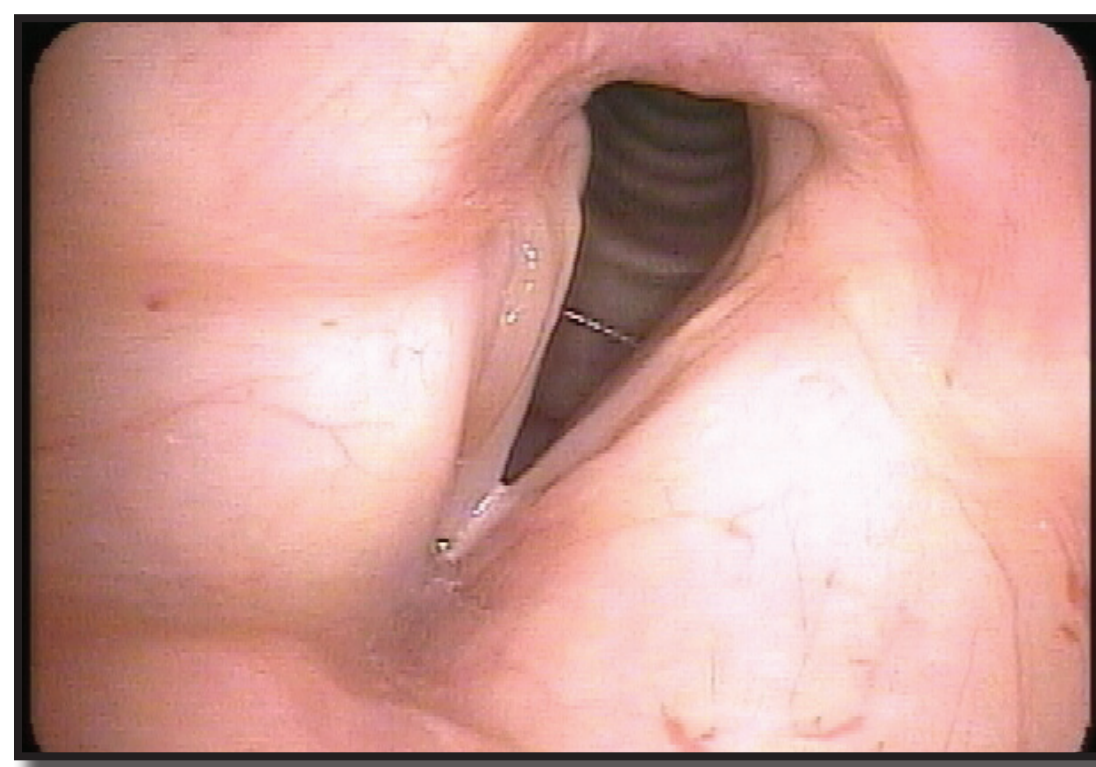
Methods

This IRB approved study consisted of a retrospective chart review of 112 patients requiring medialization laryngoplasty (Type I Thyroplasty) between 1/1/1997 and 8/31/2007 at the University of Kansas, a major academic medical center in the Midwest. Charts of patients receiving a medialization laryngoplasty were selected by CPT code and described by demographics, comorbidities, hospitalization data, and key complications (Tables I & II).

The surgical approach is usually done under local or light sedation. Following completion of the procedure the wound is closed in several layers with a drain placed in the plane deep to the strap muscles.

Table II. Complications

	Frequency
Hematoma Only	2
Upper-Airway Obstruction Only	1
Hematoma + Upper-Airway Obstruction	1
Hematoma + Wound Infection	1
Hematoma + Wound Infection + Abscess	1
Total Complications	6



Videostrobolaryngoscopy image of right medialization laryngoplasty within the first 24 hours after the procedure. Notice the edema involving the right ventricle that is not significant concerning the airway.

Table I. Demographics, Medical History, and Drain Statistics

	Frequency (n=112)	Percent
Gender		
Male	47	42
Female	65	58
Hypertensive	45	60
Diabetes Mellitus	15	13
Pre-Operative Anticoagulant Use	26	23
Bleeding Diathesis	1	<1
Previous Neck Surgery	55	49
Hepatic Dysfunction	9	8
Drain Placement	104	93
	Mean	Median
Age (years)	59.4 (SD=15.2)	62
Output (Total CC)	6.4 (SD=11.7)	1
Output (CC/Day)	6.2 (SD=11.6)	1
Number of Days with Drain	2 (SD=2.3)	1

Results

The total number of patients with complications was 6 (incidence of 5.4%, Table II). The most common complication was hematoma formation occurring in 5 cases. Upper airway obstruction alone occurred only once. One patient with hepatic dysfunction had both a hematoma and upper airway obstruction together, in which the airway obstruction was managed medically after the hematoma was drained. Hematoma formation or airway obstruction was noted and treated within the first 36 hours of post-operative management.

Three patients with hematoma formation had prior neck surgery (2 oncologic procedures with free-flaps, 1 carotid endarterectomy). The patient with upper airway obstruction alone also had prior oncologic surgery with free-flap placement, which likely contributed to the edema post-operatively.

Drains were placed in 104 of 112 patients. Eighty-one had a Jackson-Pratt (JP) drain in place, 14 had a Penrose, 8 had a drain to low, intermittent suction (TLS), and in one patient the drain type was not recorded. Total drain outputs were fairly low with the mean being 6.4 ml (median of 1 ml). The mean number of days that a drain was in place was 2. All patients with prior neck surgery had a drain placed suggesting the drains were either not necessary, or of minimal use in preventing complications. A consideration for not placing a drain at all could be made with the low outputs.

Discussion

In our series, 2 of 111 procedures (2%) developed upper airway obstruction (one associated with a hematoma); both had significant medical histories. Neither required direct airway intervention in the form of intubation or tracheotomy, they were managed medically with inhalational agents. No patient with an unidentifiable risk factor had a significant complication. Based on the low drain output of the 104 patients which had a drain placed, it is questionable whether the drain reduces the risk of complications.

It is the practice of the senior author (JDG) not to perform a type I thyroplasty on anyone who is actively anticoagulated. Our review did find 26 patients who were on either aspirin or Coumadin. Of this group only one patient out of 19 on aspirin developed a hematoma (5.3%). It may be a consideration to treat a person who cannot temporarily be weaned from anticoagulation with an injection laryngoplasty rather than an open procedure, as the smaller wound may pose a smaller hematoma risk.

Our overall complication rate was reasonably low at 6 of 111 procedures (5.4%). Controlling for the history of previous neck surgery, the incidence of complication is less than 2%. Patients with a history of previous neck surgery may require close post-operative evaluation. Finally, there appears to be a subset of thyroplasty patients who may do well without post-operative drain placement or the need for overnight hospital monitoring.

Conclusions

In the era of cost containment, evaluation of long-held practices have revealed many instances where hospitalization could be reduced or even eliminated. Medialization laryngoplasty (type I thyroplasty) continues to be an effective long-term treatment for unilateral vocal fold paralysis or bilateral vocal fold bowing. The incidence of post-operative complications is low, and in our series is mainly found in patients with a history of prior neck surgery. An evaluation of patients who have undergone medialization laryngoplasty with outpatient management would be helpful in lending further credence to this possibility as standard management. Ideally, the complication rate would be equal or lower to what we have reported here. By selecting patients initially of the "low-risk" group (those without prior neck surgery), we would expect complications to be extremely low and outpatient management acceptable.

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