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## Abstract

**Objective/Hypothesis:** To evaluate the usage of flexible fiberoptic laryngoscopy (FFL) in the emergency room (ER) setting, and delineate the indications for its use and potential benefits.

**Study Design:** Retrospective analysis.

**Methods:** Six months of consultations to Otolaryngology-Head and Neck Surgery Service at Columbia University Medical Center were examined. The inclusion criteria for the study were adult consultations from the emergency room involving an upper airway evaluation with FFL. Those consultations that were included in the study provided the reason for consult, laryngoscopy findings, whether repeat examination was required versus intubation, and finally patient disposition, whether observed in the hospital, or discharged from the ER.

**Results:** During 6 consecutive months there were 111 adult consultations generated from the emergency department that involved the use of FFL for upper airway evaluation. The most common chief complaint or indication requiring flexible FFL in the ED was angioedema, followed by foreign body sensation, and allergic reaction. Out of a total of 111 evaluations there were positive findings elicited in 31 cases (27.9%). When positive findings were elicited, repeat scope exams occurred 45% of the time, whereas 13% of cases were intubated based on findings. Patients were admitted for further monitoring in 52% of cases, compared to 6 hours of ED observation in 48% of cases.

**Conclusion:** Flexible fiberoptic laryngoscopy is a frequently used tool in the emergency room to evaluate patients with respiratory distress, foreign bodies, dysphagia, and odynophagia. Positive findings on laryngoscopy can often dictate the next step in management, as well as determine the safest disposition for the patient.

## Introduction

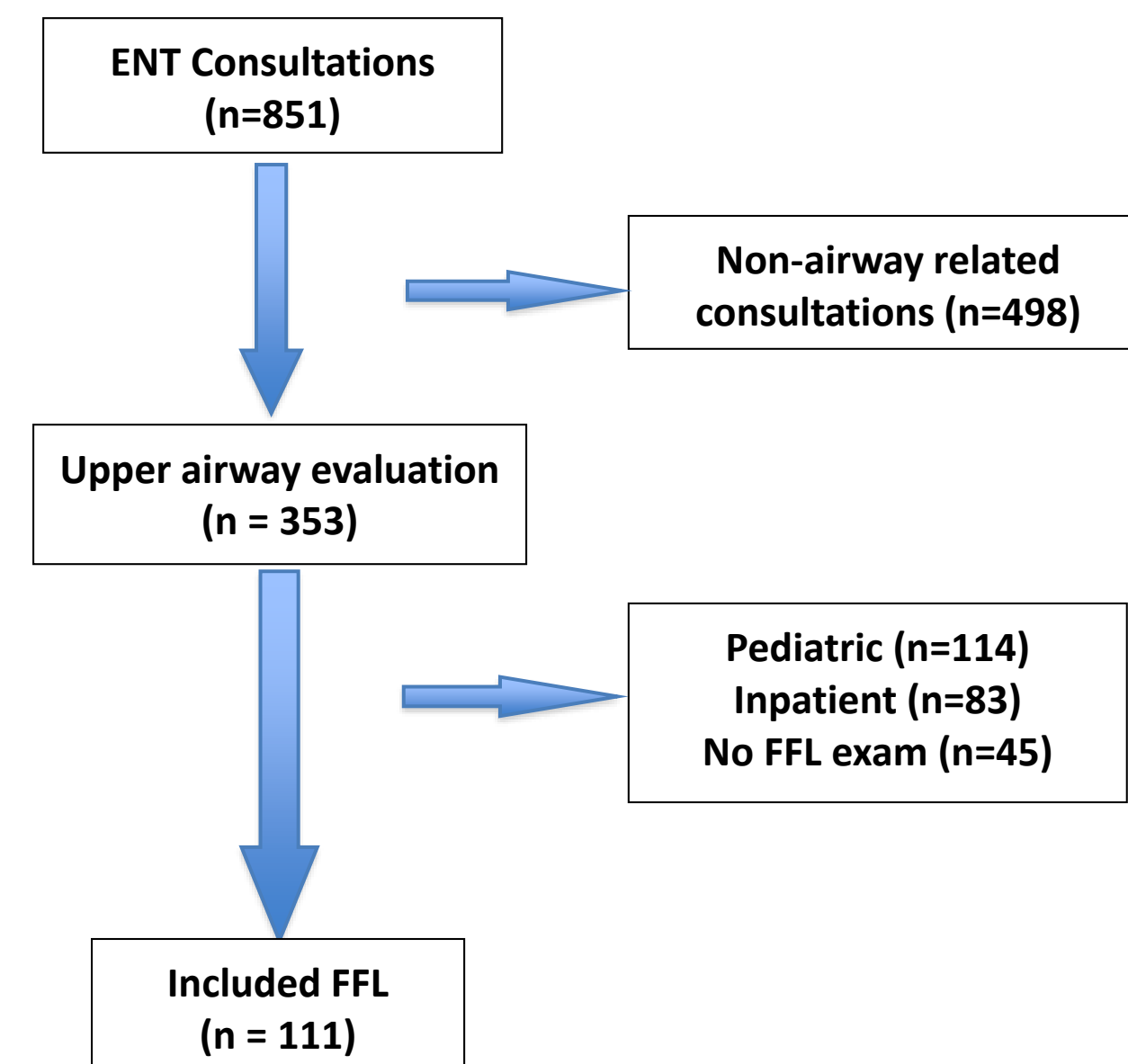
Evaluation of the airway in the emergency room (ER) setting is a critical component to help triage and determine the safest patient disposition. Typically, vital signs and symptomatology play a large role in determining management in an acute setting. Presence of tachypnea, desaturations, and abnormal arterial blood gases are clear, objective measures that can determine if there is airway compromise. Physical exam findings such as hoarseness, stridor, drooling, dysphagia, and facial edema all also contribute to the overall clinical picture. The ER provider must synthesize this information and make decisions for further management.

Flexible fiberoptic laryngoscopy (FFL) is increasingly used by consulting services to the Emergency Department in an acute setting to evaluate the upper airway to provide guidance when history and physical exam are unclear or suggestive of an obstructive process. Its indication for use in an ER setting has been for the most benign complaints such as chronic cough to the more complicated evaluation for upper airway obstruction. While it is established that FFL performed by an otolaryngologist can be a useful tool to delineate the extent and location of involvement of upper airway pathology, the use of this technology has not been extensively studied in the ER setting. It remains unclear how significantly it affects further management at this level. The purpose of this study was to evaluate the common indications for FFL in the adult ER, determine which indications most frequently resulted in positive laryngoscopy finding and outcomes, and how these findings contributed to further management.

## Materials and Methods

A ledger of all consultations kept over a 6-month period was examined. Using the medical records and chief complaints (“vocal cord evaluation”, “angioedema”, “dysphonia”, “hemoptysis”, “neck mass”, “scope exam”) located in the ledger, the charts of these patients were accessed retrospectively. Demographic data, presenting symptoms, vital signs, physical exam findings, FFL exam findings, need for repeat examinations/imaging, and finally patient disposition were obtained. Positive findings on FFL were defined as obstruction of vocal cords by mass effect, edema, or previously unknown anatomical findings such as vocal cord paralysis.

Figure 1. Selection Criteria.



## Results

Figure 2. Indications for FFL

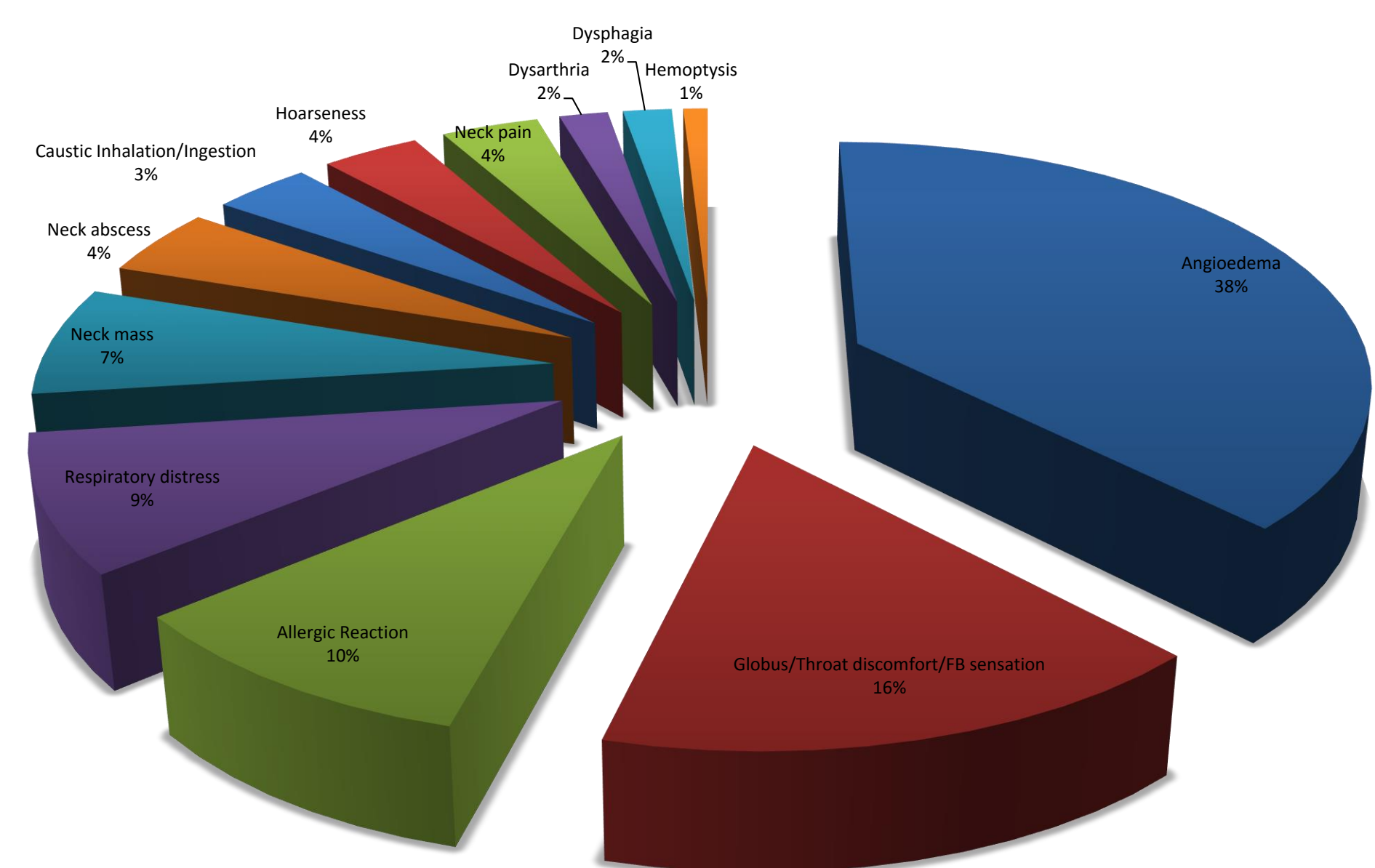


Table 1. Indications and Positive Findings

Indication	Positive Findings	Percentage
Angioedema (face, tongue)	10	23.8%
Globus/Throat discomfort/FB sensation	5	27.8%
Neck mass	4	50%
Respiratory distress	4	40%
Hoarseness	2	50%
Neck pain	2	50%
Dysarthria	2	100%
Caustic Inhalation/Ingestion	1	25%
Hemoptysis	1	100%
Allergic Reaction	0	0%
Dysphagia	0	0%
Neck abscess	0	0%

Table 2. Outcomes of FFL

Negative FFL Findings (N= 80)		Positive FFL Findings (N= 31)	
Repeat FFL	4 (5%)	Repeat FFL	14 (45.2%)
Intubation	0 (0%)	Intubation	4 (12.9%)
ED observation	60 (75%)	ED observation	15 (48.4%)
Admission	20 (25%)	Admission	16 (51.6%)

## Conclusions

Flexible fiberoptic laryngoscopy is an excellent tool and adjunct to the clinical decision making and management of patients with airway symptoms. This analysis shows that in the ER setting, FFL is used most commonly for angioedema, foreign body sensation and allergic reaction among a wide range of other indications. Most importantly, this study demonstrates that positive findings are useful in determining patient disposition, in particular the decision to admit a patient to the hospital.

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