

# Vocal Fold Paralysis: Prevalence, Evaluations and Treatments

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## Abstract

**Objective:** Vocal fold paralysis (VFP) has significant impact on patient quality of life, yet the epidemiology and treatment pathways for VFP patients are poorly documented. In this study, we estimated the prevalence and demographics of patients with unilateral and bilateral VFP and analyzed treatment pathways.

**Methods:** Using Commercial and Medicare MarketScan™ databases of 146.7 million lives (2009 - 2012), the prevalence of VFP (ICD-9 478.3X) was estimated. Patient demographics and comorbidities were evaluated. For treatment pathway analysis, a subset of VFP patients with a first index diagnosis between 2009 and 2011 (no diagnoses in 2008) and a complete medical history 12 months pre and 24 months post-index was identified ("Subset\_Cohort"). Laryngeal treatments for this patient cohort were analyzed over 2 years post-index.

**Results:** Prevalence of VFP was estimated slightly above 100,000 cases per year in the US, ranging from 26.1 to 32.8 cases per 100,000 population from 2009 to 2013 (average age: 59.8, SD: 19.2, 44% male, 12% bilateral VFP). From the Subset\_Cohort: the first VFP diagnosis was made by otolaryngologists in >60% cases. VFP diagnoses were concurrent with laryngeal endoscopy in 68% cases, CT/MRI for neck in 4% of bilateral VFP and 8% of unilateral VFP cases, and speech/hearing evaluations in 17% unilateral and 28% bilateral cases. In unilateral VFP, injections were performed in 16.2% laryngoplasties in 6% and reinnervation in <0.1% of patients.

**Conclusion:** Despite a large percentage of VFP patients initially diagnosed by an otolaryngologist, a minority of patients undergo therapeutic laryngeal procedures.

## Introduction

- Vocal fold paralysis (VFP) is an uncommon disorder with significant impact on patient quality of life.
- VFP is most often associated with a surgical procedure such as thyroid surgery, cervical spinal surgeries and carotid endarterectomies.
- Whereas comprehensive reports have not been published, prior accounts refer to 20-50% patients recovering full mobility.
- This study was designed with two objectives:
  - Estimate the prevalence of the condition in the US, and potential changes thereof in recent years
  - Understand treatments given to patients with VFP in a real-world setting

## Methods and Materials

- Retrospective query using MarketScan Commercial and Medicare databases
- Identification of all patients with a diagnosis of unilateral, bilateral or undetermined VFP (ICD-9: 478.3X) in 2009-2013
  - Projection to evaluate nation-wide prevalence of disease, using MEPS mapping methodology
  - From the entire cohort: identification of a sub-cohort with complete medical history for 1 year pre- and 2 years post-index
  - Evaluation of all larynx-related inpatient and outpatient treatments and diagnoses in the sub-cohort, from time of index to two-years post-index

## Results

- The prevalence of VFP increased between 2009 and 2013 from 26.1 patients to 32.7 patients per 100,000 population. The estimated volume of patients in 2013 was thus ~ 100,000 patients
- The Sub-cohort included 7,439 patients
  - The index VFP was given in > 60% cases by ENTs
  - 20% index VFP diagnoses occurred during an inpatient case
  - Only 17% of the unilateral VFP and 28% of the BVFP patients underwent specialized ENT services at time of index diagnosis (CPT 92506,92507, 92511 and 92520: Evaluation of speech, nasopharyngoscopy and other laryngeal function studies)
- Nearly 50% patients only had one index diagnosis of VFP and no further VFP diagnoses or laryngeal procedures within the 2-year time period
- Over 2 years: 78% patients underwent diagnostic laryngoscopy at least once (CPT 31575-79 or CPT 31520-26).
  - Laryngoscopy with stroboscopy (CPT31579) was performed in 40% of patients with unilateral VFP and 50% patients with bilateral VFP.
  - Repeat rates for diagnostic laryngoscopy was high with more than 50% of all laryngoscopy patients receiving at least 1 additional laryngoscopy.
- Only 20% patients were treated with injections – less than 10% received laryngoplasty.
  - Of those patients receiving injections, repeat rates were high: 30% had at least 2 procedures.

Figure 1: Estimated Prevalence of VFP per 100,000 Population

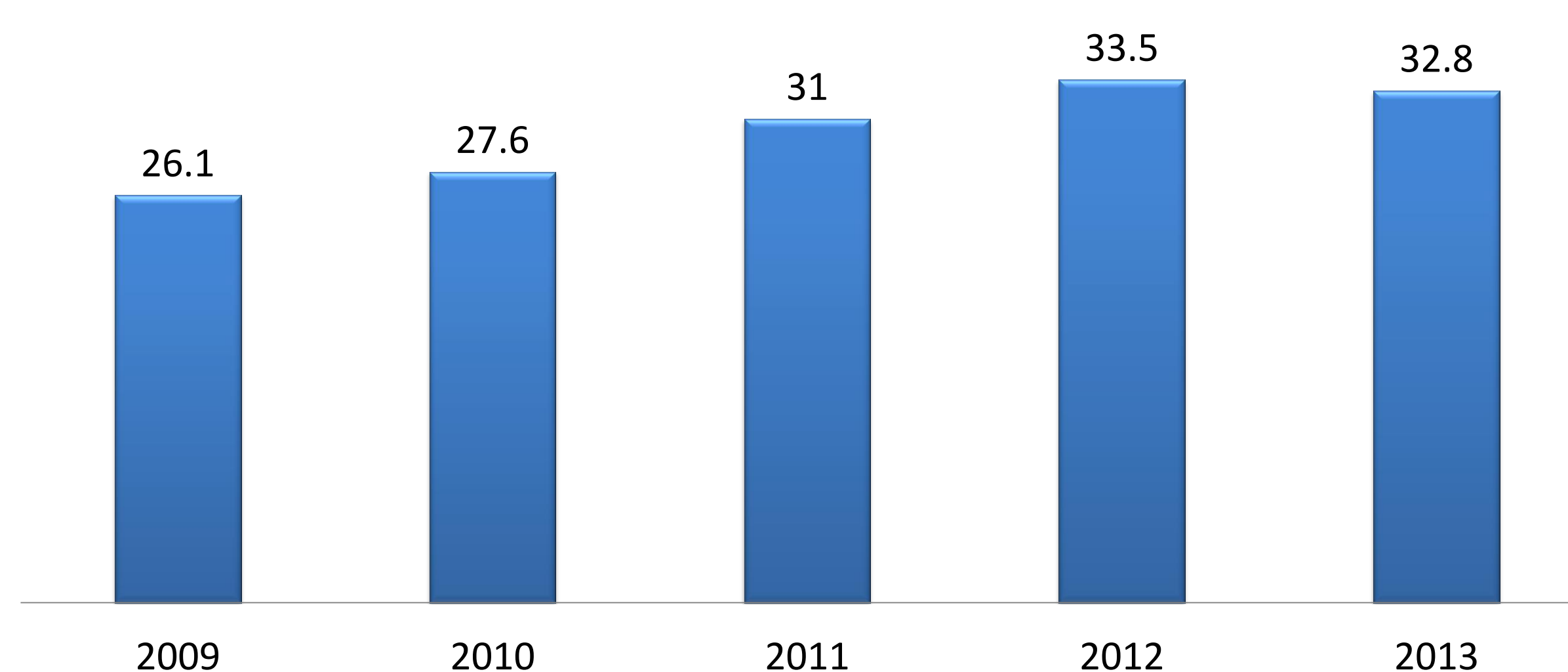


Figure 2: Percentage of Patients with Unilateral, Bilateral or Undefined VFP Diagnoses

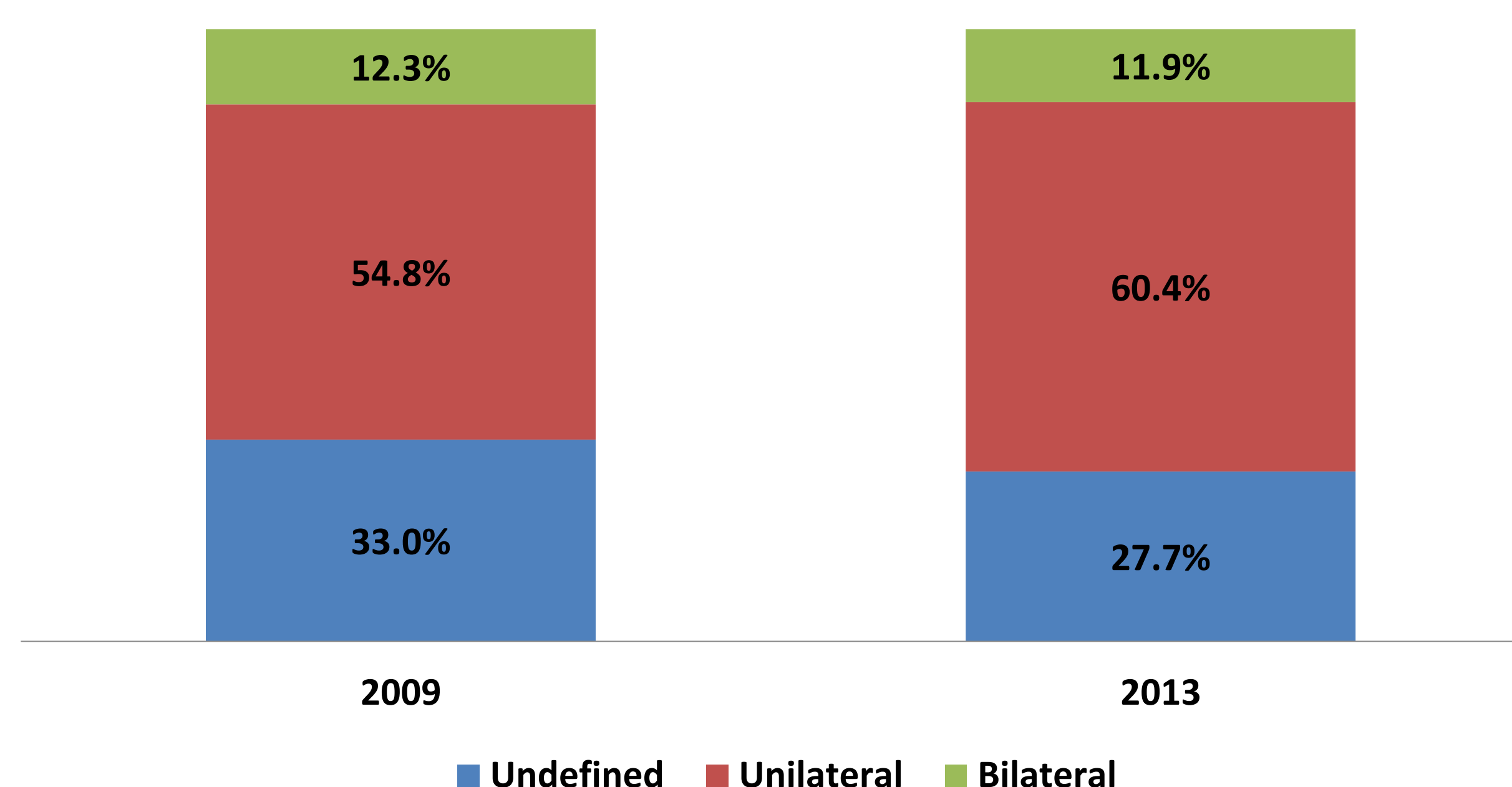
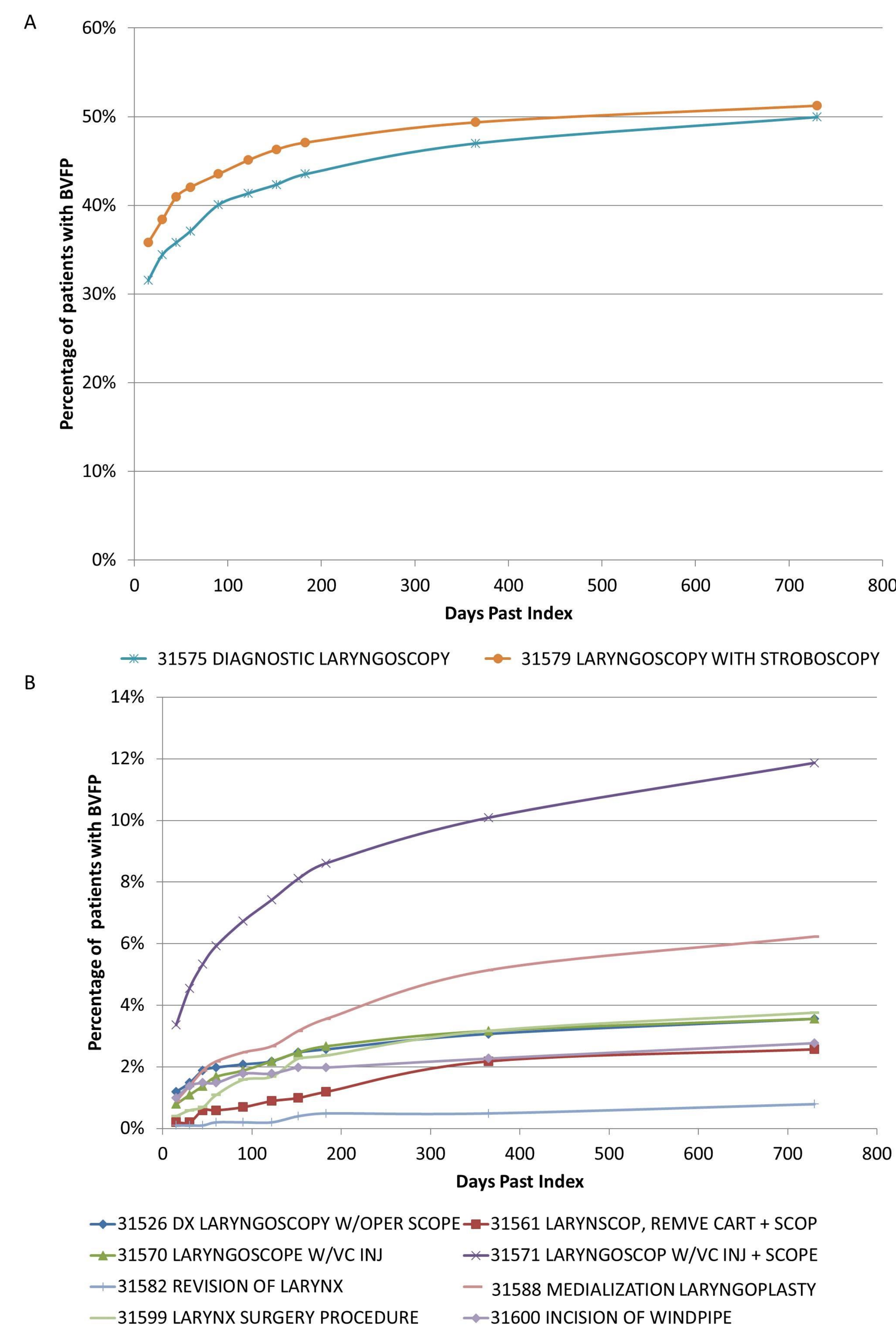


Figure 3: Percentage of Patients with bilateral VFP treated with either diagnostic (A) or therapeutic (B) procedures, over 2 year post-index follow-up period



## Discussion

- VFP is a rare disease with approximately 100,000 patients per year and thus may be seen as an "orphan disease"
- Significant growth (5.8% CAGR) may relate to the aging population, and to older people being more active and seeking treatment
- A large proportion of patients did not undergo treatment, this may be due to:
  - Overuse of the VFP diagnosis, especially when not rendered by ENTs
  - A significant proportion of patients with self-limiting disease
  - Under-treatment of patients requiring care

## Conclusions

- The prevalence of VFP is growing, possibly due to aging population and a more active, older population, more likely to seek treatment
- Only 20% receive therapeutic treatments, possibly due to a large proportion of self-limiting VFP cases and possibly under-treatment of patients with disease.

## Contact

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