Office-Based Procedures for the Diagnosis and Treatment of Laryngeal Pathology

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Summary: Introduction. Since the development of distal chip endoscopes with a working channel, diagnostic and therapeutic possibilities in the outpatient clinic in the management of laryngeal pathology have increased. Which of these office-based procedures are currently available, and their clinical indications and possible advantages, remains unclear.

Material and Methods. Review of literature on office-based procedures in laryngology and head and neck oncology.

Results. Flexible endoscopic biopsy (FEB), vocal cord injection, and laser surgery are well-established office-based procedures that can be performed under topical anesthesia. These procedures demonstrate good patient tolerability and multiple advantages.

Conclusion. Office-based procedures under topical anesthesia are currently an established method in the management of laryngeal pathology. These procedures offer medical and economic advantages compared with operating room-performed procedures. Furthermore, office-based procedures enhance the speed and timing of the diagnostic and therapeutic process.

Key Words: Office-based procedure–Biopsy–Vocal cord injection–Laser surgery–Local anesthesia.

INTRODUCTION

Following the introduction of topical anesthesia in the second half of the 19th century, office-based laryngeal surgery was performed using indirect vision (ie, mirror guided).[1–5] Endoscopic laryngoscopy began its revolution after the first flexible fiberoptic nasolaryngoscope became available in 1975. With a small outer diameter, the endoscope could be passed through the nasal cavity, and direct inspection of the larynx through a lens was possible.[6,7] Since then, fiberoptic imaging has evolved to distal chip laryngoscopes with high-resolution image quality in the beginning of the 21st century, which can be monitored and recorded on a video screen. Furthermore, with the inclusion of a working channel in the endoscope, office-based procedures such as laser surgery and vocal cord injection can be performed in an office-based setting.[8–12] The recent development of visual enhancement by color filtering, visualizing lesions with different wavelengths of light instead of white light, is another example of the ongoing evolution of laryngoscope techniques.[13–19]

This literature review focuses on the current office-based diagnostic and therapeutic procedures available for the management of laryngeal pathology, which can be performed under topical anesthesia. Rosen et al conducted an extensive review in 2009; since then more experience has been gained and new procedures have been investigated.[11] The aim of the current review was to systematically identify the available articles on office-based procedures of the larynx and include them according to proper methodological standards. For each office-based procedure, clinical indications and possible advantages compared with the operative procedure are identified. Our goal is to provide a summary for each procedure, including an extensive procedural description, to use as a guideline when starting with office-based procedures for laryngeal pathology.

MATERIAL AND METHODS

A literature search was performed in the PubMed (MEDLINE), EMBASE, and Cochrane Library databases. Keywords and Mesh terms include "ambulatory surgical procedures," "ambulatory care," "ambulatory surgery," "outpatient," "outpatient department," "outpatient care," "transnasal," and "transoral." These terms were combined with "pharynx" and "larynx." The published studies were included without a date limitation. Figure 1 shows the search strategy in a diagram.

The initial search was conducted in April 2016, which identified 4,790 articles. Duplicate articles were removed, leaving 3,715 articles. Independently two authors (DW and HS) reviewed all titles and abstracts and excluded those that were out of scope for this review. Consensus was reached by discussion. In case consensus could not be reached, a third author (GB) acted as the definitive decision.

Four hundred and seventy-six articles were included, and full-text articles where obtained using the above-stated databases, Google Scholar, and the institutional medical library. Five articles could not be obtained through the medical library and were thus excluded.

After reading all full texts, 72 articles were included for this paper dealing with office-based procedures for the larynx. Sixteen articles were added following a manual search of the references of the included articles, resulting in a total of 88 full texts that contributed to the review.

RESULTS

Flexible endoscopic biopsy (FEB)

FEB of the larynx can be performed using two different routes. The transoral approach can be done under local anesthesia using

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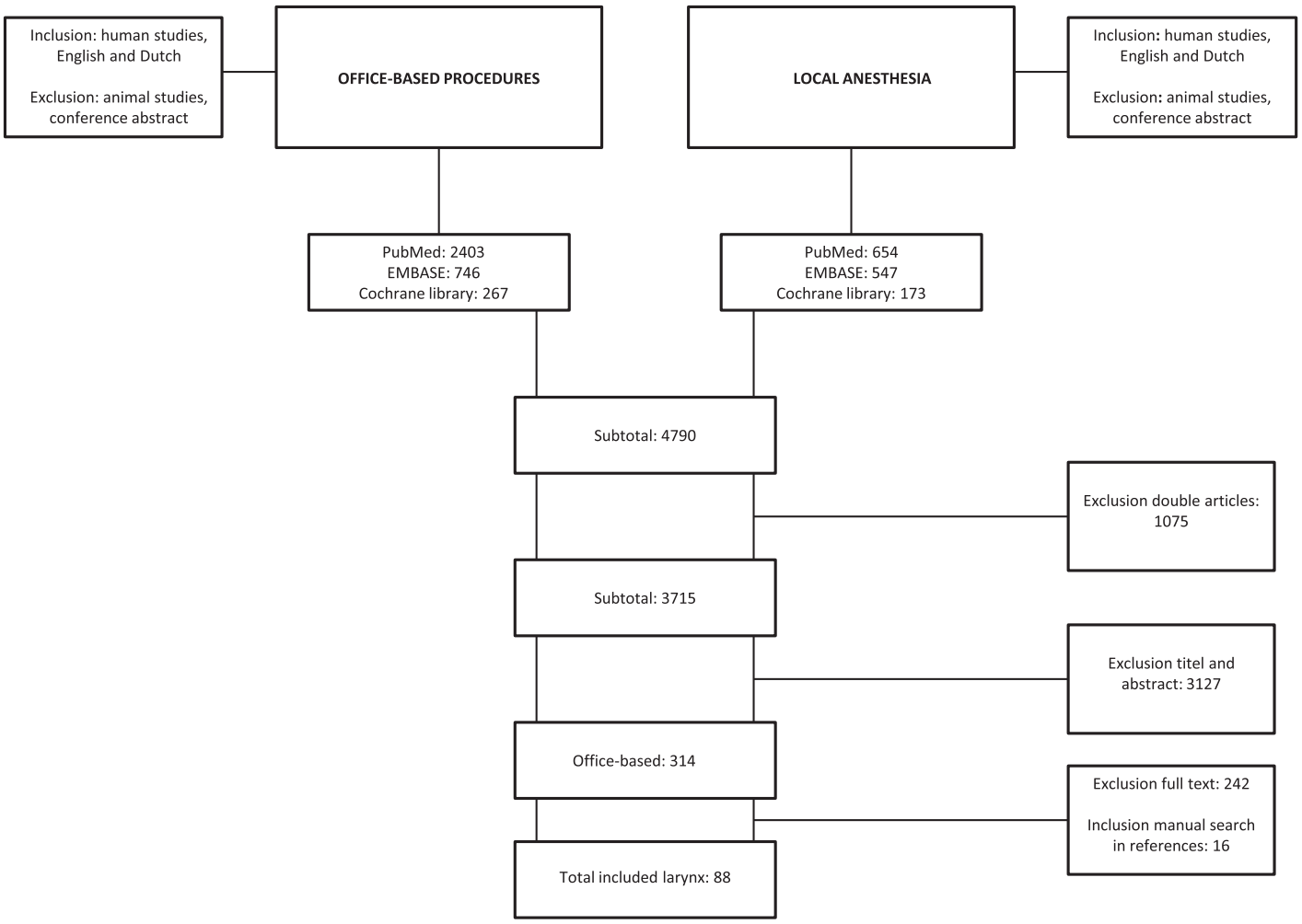

FIGURE 1. Search strategy.

an endoscope and curved laryngeal biopsy forceps and has been reported first in the early 1990s. The patient is asked to protrude the tongue, the endoscope is passed transnasally into the laryngopharynx to visualize the biopsy site, and biopsies can be obtained with the forceps through the mouth.[9,10,20] This procedure can also be used for the removal of laryngeal lesions, such as vocal cord polyps or nodules.[21–23] An approach that may be more convenient to reach the biopsy site is the transnasal approach, which became feasible with the development of distal chip laryngoscopes with a working channel. A 1.8-mm flexible biopsy forceps is passed via the working channel of the flexible endoscope, and biopsy or polypectomy can be performed.[9,10,24,25]

It has been stated that the use of FEB under local anesthesia should be reserved for patients who are cooperative (eg, minimal gag reflex and ability to sit still) or where general anesthesia poses a substantial health risk.[9,10] On the other hand, when anatomy is distorted due to treatment for head and neck carcinomas or the primary tumor itself, direct suspension microlaryngoscopy biopsies under general anesthesia can be difficult or risky to obtain compared with office-based biopsies.[13] Table 1 displays a summary concerning the characteristics of FEB for the larynx.

Lippert et al reported on office-based upper airway biopsies. Twenty-four transoral and 92 transnasal biopsies were performed, and the authors concluded that the success of a biopsy was not significantly related to age, tumor site, tumor stage, or biopsy approach.[26] Ninety-seven of the 116 biopsies could be histologically defined, and only nine had to be rebiopsied in the operating room for a definitive diagnosis. This resulted in a difference in time until the start of the treatment, which was 24.2 ± 13.9 days for office-based biopsy and 48.8 ± 49.4 days for operating room biopsy. Walter et al compared esophagogastroduodenoscopy using a conventional transoral 8.8-mm endoscope (with or without sedation) with transnasal or transoral endoscopy using a 4.9-mm endoscope without sedation.[24] Data from 300 procedures incorporating 1,335 biopsies were blindly evaluated by a pathologist; analysis showed no significant difference in the rate of definitive histological diagnose irrespective of the technique used. Cohen et al investigated office-based transnasal biopsies by performing 102 procedures, of which 96 (94.1%) successfully obtained adequate diagnostic tissue.[27] Of the 62 patients who had benign pathology or carcinoma *in situ*, the authors performed 57 biopsies using direct microlaryngoscopy under general anesthesia. Using the general