

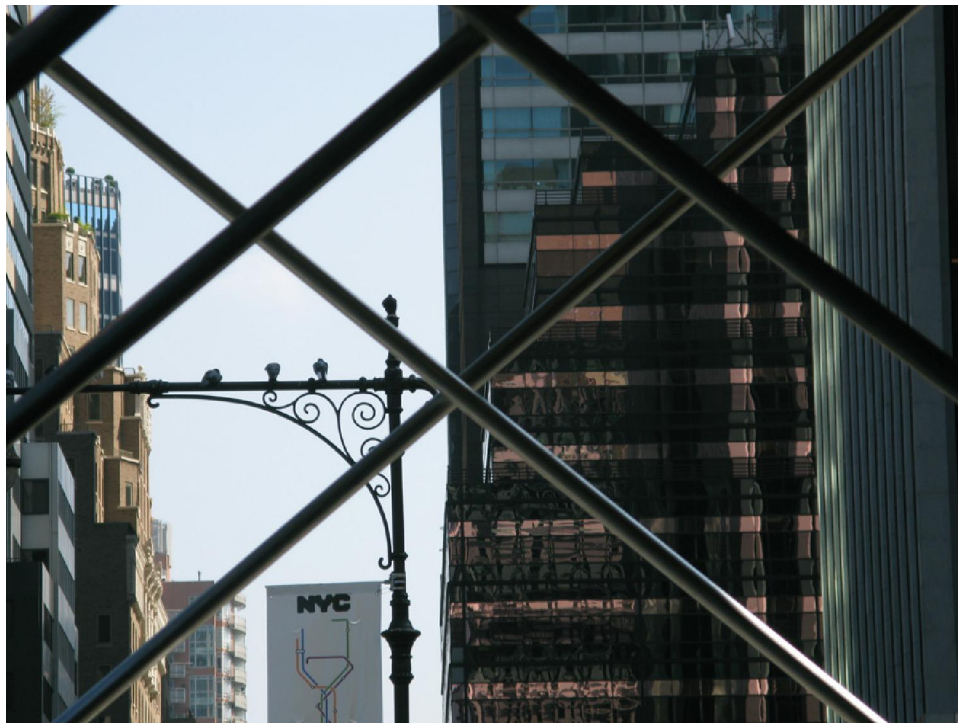
THE VISIBLE VOICE

**A Newsletter for Physicians, Speech-Language Pathologists,
Professional Voice Users, and People with Voice Disorders**

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UNSEDATED OFFICE-BASED LARYNGEAL LASER SURGERY

The spectrum of laryngological office-based procedures has expanded dramatically in the last decade since the advent of the distal-chip camera and new laser technology. These laser procedures are well-tolerated by patients and at the same time minimize morbidity and are cost saving. Topical anesthesia without sedation is used and patients may return to normal activities immediately after. This amazing technology is recommended for treatment of laryngeal papillomas, granulomas, polyps, and some cysts. Recovery time is minimized and the risk of minor complications is less than 1%. In the next generation, such procedures will continue to proliferate. Jamie Koufman MD, Editor jamie@voiceinstituteny.com



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OFFICE-BASED SURGERY IN LARYNGOLOGY

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Introduced in 1999, the distal-chip camera for aerodigestive endoscopy created a new paradigm, and an instrument for transnasal esophagoscopy (TNE) was the first major advance. The TNE endoscope offered brilliant illumination and unsurpassed, high-resolution imaging with a working channel. The 2.0mm channel permitted air-insufflation, suction, and the introduction of small, flexible forceps, and laser fibers. Advances in techniques of anesthesia and laser technology (that allowed laser energy to be delivered through a flexible fiber) quickly followed. Since the external diameter of that endoscope was 5.1mm, most patients could easily tolerate having it passed transnasally. Soon after introduction of the TNE scope, a smaller diameter endoscope (4.1 mm) became available for transnasal flexible laryngoscopy (TFL). In the last decade, the focus has been on the growth and development of “minimally invasive” (less invasive) methods for both diagnosis and treatment, particularly targeting expensive, high-prevalence diseases (**Table 1**).

TABLE 1: SPECTRUM OF LARYNGEAL OFFICE-BASED PROCEDURES

- Transnasal esophagoscopy
- Placement of TEP speaking valves
- Panendoscopy for cancer screening
- Unsedated office-based laryngeal laser surgery
- Therapeutic vocal fold injection (e.g., augmentation, Botox)
- Laryngeal, tracheal, and esophageal dilation
- Diagnostics, e.g., electromyography, pH-testing, biopsy

In many cases, it has been the combination of technologies that has resulted in new applications. For the author, at present, more than half of her laryngeal surgery is unsedated, office-based, laryngeal laser surgery (UOLS) using several different wavelength lasers. The advantages of UOLS are shown in **Table 2** below. In addition to being cost-saving, UOLS is generally preferred by most patients to traditional surgery.

TABLE 2: ADVANTAGES OF UNSEDATED OFFICE-BASED LARYNGEAL LASER SURGERY (UOLS)

- Unsedated: No IV or other medication
- Patient requires no post-operative recovery
- Only topical anesthesia (4% xylocaine spray)
- Biopsies may be obtained for cytology or histology
- Fewer complications (e.g., dental injury, airway)
- Actual operating time is usually minimized
- Many procedures are technically easier
- Global time and cost savings
- Increased patient satisfaction because of:
 - Patient comfort
 - Safety (few complications)
 - Excellent (improved) outcomes
 - Less lost time from work/family
 - Fewer out of pocket expenses

It cannot be overemphasized that the emergence of UOLS as a viable technology was made possible by the confluence of three developments: (1) distal-chip quality imaging, (2) efficient anesthesia techniques for UOLS, and (3) development of several different wavelength lasers and fiber delivery systems.

Clinical Applications and Selection of Wavelength Laser for UOLS

For decades, the carbon-dioxide (CO₂) laser was the workhorse in laryngology. It was used mostly in the operating room with a small spot size for excision of lesions such as papillomas, granulomas, polyps, and carcinomas. In recent years, the CO₂ laser has been used sparingly for benign disease on the vocal fold striking zones due to potential scarring. Nevertheless, as a water-absorbing laser, it remains the gold standard for most lesions not involving the free edge.

UOLS had its real origins with the pulsed-dye laser (PDL). At 585nm, it is primarily absorbed by hemoglobin. UOLS it has been shown to be safe and effective, especially for RRP (recurrent respiratory papillomas). One of the chief advantages of the PDL wavelength is that both sides may be treated at the anterior commissure without significant risk of web formation. In addition, for certain lesions such as polypoid degeneration, it may be the wavelength laser of choice. A hollow-core CO₂ laser fiber was introduced in 2004. Different wavelength lasers have different properties based upon their absorption. The Thulium:YAG laser is actually intermediate between the CO₂ and the PDL. We have found it very useful for the treatment of laryngotracheal amyloid. The author's wavelength selections are shown in **Table 3**.

TABLE 3: AUTHOR'S LASER WAVELENGTH SELECTION FOR UOLS

LESION	PDL	CO ₂	T:YAG
RRP	++++	+++	++
Leukoplakia	++++	--	--
Granuloma	+++	+++	++
Laryngeal cyst	--	++	+++
Reinke's edema	++++	--	--
Amyloidosis	--	+	+++
Anterior web	++	+++	++
Hemorrhagic polyp	++	--	--

TNE and UOLS provide *bone fide* advances that simultaneously decrease morbidity and cost. In spite of the rather obvious advantages over traditional surgery for some, not all, applications, these technologies have not proliferated as rapidly as might have been expected. There appear to be two reasons for this. First, there has been some resistance from providers and payers who may have economic interests in maintaining *status quo* technology, networks and/or referral patterns. And in some cases the issue is lack of training.

Second, the principal barrier to proliferation is inadequate reimbursement. While marginal profitability can justify making a capital investment, sure economic loss is an overwhelming deterrent. In the face of such disincentives, advanced technology like UOLS will stagnate. Hopefully, those issues will be resolved soon as the potential cost savings to society are tremendous, measured in millions, perhaps billions of dollars.

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CASE OF THE MONTH – WHAT IS IT?



- A. Laryngeal fracture
- B. Pott's puffy tumor
- C. Rheumatoid arthritis
- D. Cricoid chondrosarcoma
- E. Metastatic thyroid cancer

Answer next month

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