



Office Based Laryngeal Procedures Under Local Anaesthesia: Setting Up a Safe Service

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Abstract

Procedures on the larynx that once required general anaesthesia and an operating theatre, among them vocal fold injection, biopsy, laser treatment of papilloma and botulinum toxin injection, are now widely performed in the outpatient clinic on awake patients. The change has been driven by distal-chip endoscopes with working channels, fibre-delivered lasers and a growing literature that reports good tolerance and lower cost. That literature concentrates on technique and outcome. It says much less about how a department that has never offered such procedures should organise itself to begin. This article proposes a framework for doing so. It identifies the hazards specific to awake laryngeal work, namely cardiovascular stress, vasovagal collapse, airway compromise, aspiration, local anaesthetic toxicity and laser injury, and matches each to a control. It then describes the components of a service: governance and scope, the room and its equipment, the team, patient selection and consent, a standard anaesthetic routine with a recorded dose, conduct of the procedure with agreed stop rules, recovery and discharge, and audit. The framework is drawn from published practice and general principles of procedural safety. It is a proposal and has not been evaluated as a whole.

Keywords: Office-based laryngology, Local anaesthesia, Vocal fold injection, Laryngeal laser surgery, Patient safety, Service design

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1. Introduction

Operating on the larynx of an awake patient is an old practice. Before general anaesthesia became safe and routine, laryngologists removed lesions under mirror guidance with cocaine as the only anaesthetic, and the indirect approach never entirely disappeared (Bastian and Delsupehe, 1996). Its return to the mainstream came with technology. Flexible endoscopes with a camera chip at the tip and a working channel gave a stable, magnified view that could be shared on a screen. Lasers that could be passed through that channel on a thin fibre, first the pulsed dye laser and then the potassium titanyl phosphate laser, allowed papilloma and dysplasia to be treated without suspension laryngoscopy (Zeitels et al., 2004; Zeitels et al., 2006). Injectable materials for vocal fold augmentation completed the set.

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A substantial review a decade and a half ago already described office-based diagnosis and treatment as an established part of laryngology (Rosen *et al.*, 2009), and later reviews have catalogued the procedures and their results (Shah and Johns, 2013; Wellenstein *et al.*, 2018). What these sources assume is an experienced unit. A department starting from nothing has to make many decisions that the technical papers pass over: which procedures to offer first, in what room, with which staff, on which patients, and with what arrangements for the occasion when something goes wrong. This article proposes an ordered way of making those decisions. It describes a framework and reports no experience of applying it.

2. The Case for the Office

Three arguments are usually made. The first is avoidance of general anaesthesia, which matters most for the frail patients who make up a good share of those with vocal fold paralysis or recurrent papilloma. The second is functional: an awake patient can phonate, so the surgeon injecting a paralysed vocal fold hears the voice change and can judge the amount to place (Sulica *et al.*, 2010). The third is cost and convenience. Comparisons of office and theatre pathways for injection laryngoplasty and for laser treatment of papilloma have found the office route considerably cheaper (Bové *et al.*, 2007; Rees *et al.*, 2007), and patients asked about unsedated laser procedures have mostly said they would choose the same again (Rees *et al.*, 2006). Table 1 lists the procedures commonly moved to the office and the route by which each is done.

Table 1: Laryngeal procedures commonly performed in the office and the principal hazard of each			
Procedure	Usual route	Principal hazard	Source
Injection augmentation	Transoral, or through the neck under endoscopic view	Misplaced or excessive injectate	Sulica <i>et al.</i> , 2010
Botulinum toxin injection	Through the neck, often with electromyography	Breathy voice, aspiration of liquids	Blitzer <i>et al.</i> , 1998
Biopsy	Forceps through the endoscope channel	Bleeding, inadequate sample	Rosen <i>et al.</i> , 2009
Laser treatment of papilloma or dysplasia	Fibre through the endoscope channel	Thermal injury, eye exposure	Koufman <i>et al.</i> , 2007
Steroid or other medication injection	Transoral or through the channel	Coughing, incomplete delivery	Wellenstein <i>et al.</i> , 2018

3. What the Office Does Less Well

The case has limits that a new service should recognise from the outset. The view through a flexible endoscope is two-dimensional and the instruments passed down its channel are small, so the precision of microlaryngoscopy, with binocular magnification and two-handed dissection, is not reproduced. Biopsies taken through the channel are small and may under-represent a lesion. An equivocal or negative result from a lesion that looks suspicious should therefore lead to direct laryngoscopy and not to reassurance. Office laser treatment of papilloma controls the disease but generally has to be repeated at intervals. These are reasons to regard the office and the theatre as complementary, with a clear route from one to the other.

4. Hazards the Service Must Control

The reported complication rate of office laryngeal procedures is low, including in a large series of laser cases using three wavelengths (Koufman *et al.*, 2007). Low is not zero, and the hazards differ from those of the operating theatre. The patient is conscious, unmonitored unless monitoring is arranged, and without a secured airway. Yung and Courey (2010) measured heart rate and blood pressure during office-based flexible endoscopic surgery and found rises large enough, in a notable share of patients, to qualify as severe hypertension or tachycardia, with no symptoms to alert the operator. Awake

instrumentation of the pharynx can also provoke the opposite response, a vasovagal faint.

The airway itself may be compromised by laryngospasm, by bleeding, or by swelling after injection into an already narrow glottis. Topical anaesthesia removes the protective sensation of the larynx for a time, so that food and drink taken too soon may be aspirated. Local anaesthetic is applied to mucosa from which it is absorbed quickly, and several applications by different routes can add up to a large total. Lasers bring risks to the eyes of everyone in the room and are governed by formal standards ([American National Standards Institute, 2018](#)). A safe service is one in which each of these hazards has a named control, and Figure 1 pairs the stages of a procedure with the safeguard proposed for each.

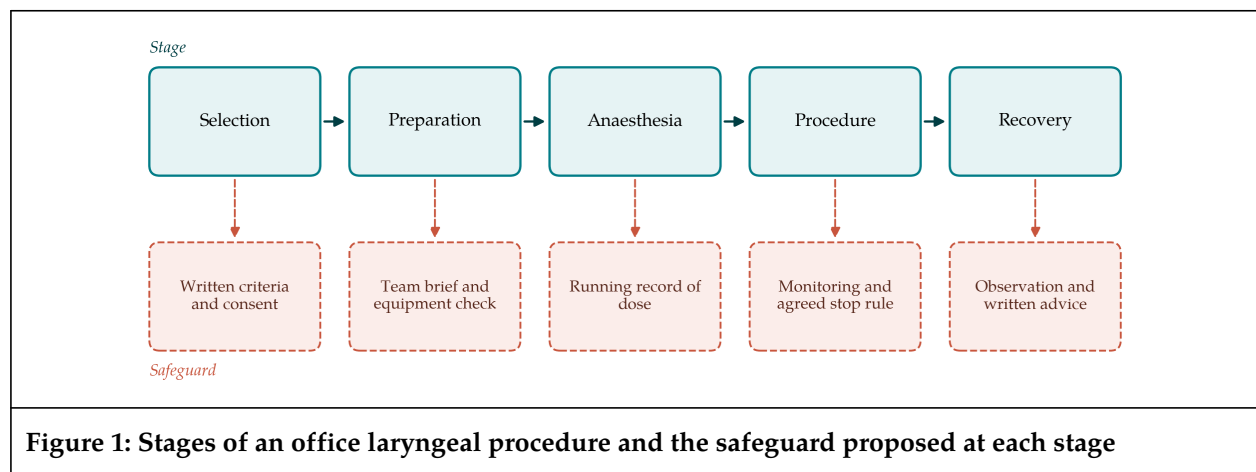


Figure 1: Stages of an office laryngeal procedure and the safeguard proposed at each stage

5. Components of the Service

The framework has eight components. They are described in the order in which a department would normally address them.

5.1. Governance and scope

The service should begin with a written statement of which procedures it will perform, approved through the hospital's process for introducing new procedures. A sensible starting scope is narrow: injection augmentation and channel biopsy, for example, with laser work added once the team is practised. The statement names the clinicians credentialed for each procedure and what training that requires. It also records who was consulted. Anaesthetic and resuscitation colleagues should see the plan in advance, since they are the people who will be called if a patient collapses.

5.2. Room, equipment and staff

The room needs space for a reclining chair that can be laid flat, the endoscopy stack, and free access to the patient from both sides. Oxygen, suction separate from that on the endoscope, a bag-valve-mask, basic airway adjuncts, a pulse oximeter and a blood pressure monitor are kept in the room and checked before each list. The location of the nearest resuscitation trolley and the means of summoning the emergency team are known to everyone present. A card listing the immediate actions for collapse, laryngospasm and suspected local anaesthetic toxicity is displayed on the wall, and the drugs it names are held with the emergency equipment. Where a laser is used, the room meets the requirements of the applicable laser safety standard, including wavelength-specific eyewear, door signage and a designated laser safety officer ([American National Standards Institute, 2018](#)). The minimum team is the operator, an assistant who handles instruments or the endoscope, and a nurse whose only task is to watch and support the patient. Endoscopes are reprocessed according to the hospital's decontamination policy, which may limit the number of cases per session.

5.3. Patient selection and consent

Written criteria decide who is offered an office procedure. Anatomy and temperament both count: a

strong gag reflex, severe anxiety, inability to sit still or a nasal airway too narrow for the endoscope make success unlikely. So does the lesion: bulky or obstructing disease, and lesions needing precise microsurgical excision, belong in theatre. Cardiovascular disease is not a bar but should prompt monitoring throughout, given the haemodynamic findings described above (Yung and Courey, 2010). Published practice on anticoagulant and antiplatelet drugs varies, and the service should agree a policy with its haematology advisers and not leave the matter to each operator. Consent covers the specific risks of the procedure, the chance that it cannot be completed awake, and the alternative of general anaesthesia.

5.4. A standard anaesthetic routine

Variation in anaesthetic technique is a source of both failure and risk, and a single default routine is preferable to individual habit. The usual elements are a topical decongestant and anaesthetic to the nose, anaesthetic to the pharynx, and anaesthetic to the larynx itself, dripped onto the vocal folds through the endoscope channel or a curved cannula while the patient phonates, so that it is spread by the resulting cough. Nebulised anaesthetic and injection through the cricothyroid membrane are alternatives. For percutaneous injections the skin and the track are infiltrated, for example across the thyrohyoid membrane (Amin, 2006). The essential safeguard is arithmetic. The maximum dose for the patient's weight is calculated from the product information before starting, and the nurse keeps a running total of every application. Time must then be allowed for the anaesthetic to work, since haste at this stage is the commonest reason for an abandoned procedure.

5.5. Conduct of the procedure and stop rules

Immediately before starting, the team pauses to confirm the patient, the procedure, the side, the allergies and the equipment, in the manner of the surgical safety checklist whose use reduced complications in a multinational study (Haynes et al., 2009). A version shortened for the clinic is adequate. Baseline pulse, blood pressure and oxygen saturation are recorded, and oximetry continues throughout. Stop rules are agreed in advance and stated aloud: the procedure ends if the patient asks, if bleeding obscures the view, if saturation falls or the pulse or pressure passes limits the service has set, or if a fixed time has elapsed without progress. An operator absorbed in a difficult injection is poorly placed to make that judgement alone, and the nurse must have explicit authority to call a halt.

5.6. Recovery and discharge

After the procedure the patient is observed until the voice, breathing and observations are stable. Nothing is taken by mouth until sensation in the throat has returned, and the first drink is water, taken under supervision. Written advice states what to expect, including transient hoarseness or discomfort, and which symptoms, above all noisy or laboured breathing, require immediate return. A telephone number that will be answered is given. Patients who have had augmentation of a narrow glottis or a substantial laser treatment may warrant longer observation. If a planned procedure has been abandoned, the patient leaves with a definite plan, either a further attempt with a modified technique or a date for theatre, so that failure in the office does not turn into delay in treatment.

5.7. Documentation

Each procedure is recorded in a standard form: indication, consent, anaesthetic agents and total dose, the endoscope and instruments used, laser settings and energy delivered where relevant, the material and volume injected, observations before and after, any adverse event, and the advice given on leaving. Still images or a short video clip taken before and after are stored with it. A template completed at the time takes little longer than a free-text note and allows later audit without a search through case notes.

5.8. Audit and training

From the first case the service records a small set of measures: whether the procedure was completed as planned, conversions to general anaesthesia, adverse events of any severity, the dose of anaesthetic used, and the patient's own rating of tolerability. Reviewed at intervals, these show whether selection criteria are too loose or too strict. New operators and nurses should rehearse the routine, including the response

to a faint and to laryngospasm, before working with patients. Reviews of injection technique give a useful account of the choices of route and material that training must cover ([Mallur and Rosen, 2010](#)).

6. Limitations and What Remains to Be Shown

The framework is a proposal. Its elements are taken from published descriptions of office practice and from general patient safety measures, and each is reasonable on its face, but the package has not been introduced and evaluated in a department, and no claim is made that it lowers complication rates. Serious events in this setting are rare enough that demonstrating a reduction would require pooled data from many units. Several of its particulars are matters on which practice differs and evidence is thin: the place of routine blood pressure monitoring in patients without cardiovascular disease, the handling of anticoagulants, the length of observation, and how many supervised cases constitute adequate training.

Local conditions will also force changes. Regulations on lasers, on who may administer local anaesthetic and on the classification of procedure rooms differ between countries, and reimbursement rules can make an office service financially unattractive even where it is clinically sound. A unit adopting the framework should treat its first year as a pilot and publish what it finds.

7. Conclusion

Office laryngeal procedures under local anaesthesia offer patients a quicker and often safer alternative to the operating theatre, and the techniques are well described. Safety in this setting comes less from individual skill than from organisation: a defined scope, a prepared room, a team with distinct roles, selection criteria, a counted anaesthetic dose, monitoring, stop rules and audit. The framework proposed here gathers those elements into a form a department can adapt before it treats its first patient.

Conflict of interest

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References

- American National Standards Institute (2018). [ANSI Z136.3: American National Standard for Safe Use of Lasers in Health Care](#). Laser Institute of America, Orlando, FL.
- Amin, M.R. (2006). [Thyrohyoid approach for vocal fold augmentation](#). *Annals of Otolaryngology, Rhinology & Laryngology*, 115(9): 699-702.
- Bastian, R.W. and Delsupehe, K.G. (1996). [Indirect larynx and pharynx surgery: A replacement for direct laryngoscopy](#). *The Laryngoscope*, 106(10): 1280-1286.
- Blitzer, A., Brin, M.F. and Stewart, C.F. (1998). [Botulinum toxin management of spasmodic dysphonia \(laryngeal dystonia\): A 12-year experience in more than 900 patients](#). *The Laryngoscope*, 108(10): 1435-1441.
- Bové, M.J., Jabbour, N., Krishna, P., Flaherty, K., Saul, M., Wunar, R. and Rosen, C.A. (2007). [Operating room versus office-based injection laryngoplasty: A comparative analysis of reimbursement](#). *The Laryngoscope*, 117(2): 226-230.
- Haynes, A.B., Weiser, T.G., Berry, W.R., Lipsitz, S.R., Breizat, A.-H.S., Dellinger, E.P., et al. (2009). [A surgical safety checklist to reduce morbidity and mortality in a global population](#). *New England Journal of Medicine*, 360(5): 491-499. <https://doi.org/10.1056/NEJMsa0810119>
- Koufman, J.A., Rees, C.J., Frazier, W.D., Kilpatrick, L.A., Wright, S.C., Halum, S.L. and Postma, G.N. (2007). [Office-based laryngeal laser surgery: A review of 443 cases using three wavelengths](#). *Otolaryngology-Head and Neck Surgery*, 137(1): 146-151.

- Mallur, P.S. and Rosen, C.A. (2010). Vocal fold injection: Review of indications, techniques, and materials for augmentation. *Clinical and Experimental Otorhinolaryngology*, 3(4): 177-182.
- Rees, C.J., Halum, S.L., Wijewickrama, R.C., Koufman, J.A. and Postma, G.N. (2006). Patient tolerance of in-office pulsed dye laser treatments to the upper aerodigestive tract. *Otolaryngology-Head and Neck Surgery*, 134(6): 1023-1027.
- Rees, C.J., Postma, G.N. and Koufman, J.A. (2007). Cost savings of unsedated office-based laser surgery for laryngeal papillomas. *Annals of Otolaryngology, Rhinology & Laryngology*, 116(1): 45-48.
- Rosen, C.A., Amin, M.R., Sulica, L., Simpson, C.B., Merati, A.L., Courey, M.S., Johns, M.M. and Postma, G.N. (2009). Advances in office-based diagnosis and treatment in laryngology. *The Laryngoscope*, 119(Suppl. 2): S185-S212. <https://doi.org/10.1002/lary.20712>
- Shah, M.D. and Johns, M.M. (2013). Office-based laryngeal procedures. *Otolaryngologic Clinics of North America*, 46(1): 75-84.
- Sulica, L., Rosen, C.A., Postma, G.N., Simpson, B., Amin, M., Courey, M. and Merati, A. (2010). Current practice in injection augmentation of the vocal folds: Indications, treatment principles, techniques, and complications. *The Laryngoscope*, 120(2): 319-325.
- Wellenstein, D.J., Schutte, H.W., Takes, R.P., Honings, J., Marres, H.A.M., Burns, J.A. and van den Broek, G.B. (2018). Office-based procedures for the diagnosis and treatment of laryngeal pathology. *Journal of Voice*, 32(4): 502-513.
- Yung, K.C. and Courey, M.S. (2010). The effect of office-based flexible endoscopic surgery on hemodynamic stability. *The Laryngoscope*, 120(11): 2231-2236.
- Zeitels, S.M., Akst, L.M., Burns, J.A., Hillman, R.E., Broadhurst, M.S. and Anderson, R.R. (2006). Office-based 532-nm pulsed KTP laser treatment of glottal papillomatosis and dysplasia. *Annals of Otolaryngology, Rhinology & Laryngology*, 115(9): 679-685.
- Zeitels, S.M., Franco, R.A., Dailey, S.H., Burns, J.A., Hillman, R.E. and Anderson, R.R. (2004). Office-based treatment of glottal dysplasia and papillomatosis with the 585-nm pulsed dye laser and local anesthesia. *Annals of Otolaryngology, Rhinology & Laryngology*, 113(4): 265-276.