Audit

Assessment of voice in thyroidectomy patients – an audit cycle

Undertaken at Brighton and Sussex University Hospitals, Eastern Road, Brighton BN2 5BE

Abstract

Laryngeal nerve damage is a serious complication of thyroidectomy. We present a closed-loop audit of pre-operative fibreoptic vocal cord checks to determine whether implementation of a rapid-access otolaryngology voice assessment improves the rate of pre-operative checks. Data were collected retrospectively from thyroidectomies performed within the Brighton and Sussex University Hospitals Trust over one year. Data were analysed, a rapid-access otolaryngology voice assessment service instigated, data disseminated to both ENT and general surgery departments, and a re-audit performed over the subsequent six-month period. Pre-operative vocal cord check rate increased from 87.6% to 92.3%. Post-operative documentation of voice increased from 68.5% to 96.1%. The voice assessment service improved the trust’s pre-operative assessment of vocal cords by facilitating easy access to flexible nasendoscopy.

Keywords

Thyroidectomy, audit, flexible nasendoscopy, recurrent laryngeal nerve

Introduction

Well recognised complications of thyroid surgery include damage to the laryngeal nerves. Recurrent laryngeal nerve (RLN) damage is a potentially devastating complication and can end a career for the professional voice user. For the non-professional voice user disorders of the voice also have a functional impact, even leading to absences from work. Bilateral recurrent laryngeal nerve palsy, although rare, can be life threatening if present in the acute post-operative phase and may cause severe functional distress in the long-term. There are medico-legal implications for voice change post-thyroidectomy, with recurrent laryngeal nerve palsies a leading cause of complaint in endocrine surgery.

In order to accurately evaluate change in post-operative voice function and quality, it is important to have a documented assessment of the pre-operative voice. The British Association of Endocrine and Thyroid Surgeons (BAETS) currently recommend pre-operative laryngoscopy in thyroidectomy patients who have only voice change, clinically suspected or proven malignant disease. This examination aids the surgeon intraoperatively, as this allows for multimodal assessment of RLN function. This means that if RLN involvement in a thyroid cancer mass is found during operative treatment, the decision about nerve sacrifice is assisted.

Thyroidectomy is performed by both otorhinolaryngologists and general endocrine surgeons, and intraoperative nerve monitoring is often used but with no consensus guiding its use. In our NHS Trust thyroid surgery is performed by both specialties but with only the latter routinely using intraoperative nerve monitoring.

We present a closed-loop audit of pre-operative fibre optic vocal cord checks to determine whether implementation of a rapid-access otolaryngology voice assessment service improves the rate of pre-operative direct vocal cord checks.

Standards

There are no set NICE guidelines with respect to visualisation of the vocal cords pre- and post-thyroidectomy. In light of the BAETS guidelines, and due to the fact that auditory assessment of the voice is so subjective, we aimed to reduce variability to a minimum by setting a clinical standard as the following for all thyroidectomy patients in this trust/hospital:

- 100% pre-operatively vocal cord visualisation (FNE)
- 100% post-operative voice assessment documented
- Appropriate referral of dysphonia

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Methods
Data were collected retrospectively from patient case notes from the Brighton and Sussex University Hospitals Central Information Unit. All patients who had either hemi- or total thyroidectomies performed within the Brighton and Sussex University Hospitals Trust over a one year period formed the cases for period one (P1). Data were collated and analysed in an Excel database, and the results are discussed below. Data was disseminated to both ENT and general surgery departments, and recommendations and changes considered. The nature of dysphonia (permanent or temporary) was not assessed.

A rapid-access otolaryngology voice assessment service was instigated. It was agreed by the department consultants, that the senior house officer grades (FY2, CT1 and 2, ST1 and 2) could review patients pre-operatively to assess the voice, perform a flexible nasoendoscopy and document in the case notes. All senior house officers when starting their ENT post are receive training on performing FNE in the Royal College of Surgeons approved ‘Introduction to ENT’ course.

The service was open to both general surgical and otolaryngology (ENT) thyroid patients. In some cases it was not required, as the patients had voice assessment and flexible nasoendoscopy performed in an original ENT appointment by a registrar or consultant. A re-audit was performed over the subsequent six-month period (P2). The data were collected in the same manner.

Results
81 patient notes were assessed in P1, and 26 over P2. P1 saw 90 operations in total, with one set of notes missing, and eight patients who were operated on twice (81 different patients, 89 operations reviewed). P2 saw 26 sets of case notes available, each patient operated on once and all available.

78 out of 89 patients in P1 (87.6%) had a pre-operative vocal cord check. Post-operative documentation of voice in P1 was 68.5% (61/89). 18 patients had post-operative dysphonia, of which 9 (50%) were referred to either a general ENT or a specialist Voice clinic for review.

The following recommendations were implemented following the first audit cycle:
1. All patients to have documented FNE pre-operatively
2. If patient is to have completion thyroidectomy then repeat pre-operative FNE is required
3. All patients to have voice assessment documented post-operatively
4. SHO led ‘Voice clinic’ available for all patients pre-operatively
5. Re-audit

Pre-operative vocal cord check rate increased from 87.6% (78/89) to 92.3% (24/26). Post-operative documentation of voice increased from 68.5% (61/89) to 96.1% (25/26) (Figure 1). The rate of patients with post-operative dysphonia referred to an ENT/Voice clinic appointment improved to 100% (3/3), as demonstrated in Figure 2.

P1 included five cases of documented post-operative vocal cord dysfunction (5.6%), four of which were RLN palsies (4.5%) and one of which was a SLN palsy (1.1%). P2 included only one patient with a documented RLN palsy (3.8%).

Discussion
The pre- and post-thyroidectomy assessment of the voice is a matter of debate with no clear consensus. The BAETS advocate pre-operative FNE only if there is pre-operative voice impairment however as assessment of the voice on a purely auditory basis is so subjective the authors feel that...
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Direct visualization pre-thyroidectomy is the simplest and easiest way of determining any change in either RLN or SLN function.

The otolaryngology voice assessment service instigated at our Trust improved the pre-operative assessment of vocal cords by facilitating easy access to flexible nasoendoscopy. This was a marked improvement especially for the general surgeons, where access to a means of visualising the vocal cords would have previously been difficult.

Dissemination of the original audit data and education of both departments about these guidelines improved documentation, especially of post-operative assessment of voice. Subsequently, the treatment of post-thyroidectomy dysphonia also improved. This is probably due to the increased emphasis placed on this area of the service over the period of the audit within both the otolaryngology and general surgery departments. Continued evaluation of this service will be performed to ensure its continued use and efficacy.

There are no consensus guidelines on the use of neuromonitoring in thyroid surgery and there is a lack of data to show that it uniformly reduces recurrent laryngeal nerve palsy, but recent studies have advised that use in ‘at risk’ or identified patient groups is a good application.5,6 Currently only the trust general surgeons choose to routinely use neuromonitoring.

Application of this model of rapid access voice assessment clinic for thyroidectomy patients and the associated education benefits may improve the accuracy of post-thyroidectomy dysphonia recognition and treatment.

Conflict of Interest
All authors have no conflict of interest to declare. No extraneous funding was obtained.

References