

Functional vocal results after CO₂ laser endoscopic surgery for glottic tumours

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Dear Sirs

We read with interest the recent article by Motta *et al.*¹ The authors have discussed an important aspect of post-cordectomy results in patients with glottic tumours.

We have analysed the study and would like to make several comments about its design. Firstly, the patient selection is not ideal. Out of a total of 912 patients who underwent endoscopic resection for glottic tumours, 135 (14.8 per cent) were included in the study; these included patients do not appear to be representative of the whole group. These patients were included in this retrospective case series only because they happened to have had voice analysis post-operatively. The question of why only these patients received voice analysis is not addressed. Was voice analysis performed on these patients because they had a poor voice or were receiving speech therapy? This issue introduces potential bias into the study.

There was no need for a control group for the purpose of this study, as normative data should have been available for the electro-acoustic analysis used, being a standardised test. The question of how the control group was selected, and why 40 subjects were chosen, is not addressed.

The series of 135 patients underwent very varied initial staging, and underwent a variety of excision procedures, ranging from unilateral cordectomy to extended bilateral cordectomy. There is no mention of the number of procedures individual patients underwent, or whether they had received radiotherapy previously.

In this study, voice analysis was performed five months after surgery, which in our experience is not the ideal time for such analysis. The authors do not discuss why this post-operative time period was chosen. The authors' results might have been different had voice analysis been delayed until 12–18 months post-operatively, to allow for an adequate, compensatory neoglottis to develop.

For study purposes, the patients were classified according to the stroboscopic appearance of the neoglottis; again, this is subjective and introduces the potential for bias, especially if performed by only one person. The classification of neoglottis site, on which all the results of this study were based, is by no means a standard classification. The study results would have been more clinically relevant if voice analysis had been performed as per standardised tumour staging, so that patients could be advised pre-operatively, in the clinic, regarding their expected functional outcome.

In addition, calculation of the correlation between different voice analysis parameters appears to us to be irrelevant. The only analysis relevant to functional outcome was the electro-acoustic analysis. The study results would have been more relevant had the authors also used other, additional voice assessment tools. Those patients with glottic tumours would not have had a normal voice at presentation. From the patient's perspective, it is more relevant if their voice and/or quality of life improved after the surgical excision? Also, we

believe it was unwarranted to compare these patients with patients with normal voices, and to conclude that the former group had worse voices.

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Reference

- 1 Motta S, Cesari U, Mesolella M, Motta G. Functional vocal results after CO₂ laser endoscopic surgery for glottic tumours. *J Laryngol Otol* 2008;**122**:948–51

Authors' reply

Dear Sirs

Thank you for the opportunity to clarify some aspects of our study and to reply to the objections of authoritative readers of your journal.

The aim of our study was to verify achievable functional results in a sample of patients undergoing different types of cordectomy for laryngeal cancer. Considering the long period over which the endoscopic cordectomy candidates were operated upon (1981–2002), we preferred to refer only to those cases with the most complete post-intervention functional findings. The study patients showed definitively stabilised phonatory activity after a post-operative period which seemed to the authors to be not only adequate (at five months) but also to allow recruitment of a representative series including cases of all the endoscopic resection types performed, without any voluntary and/or unreported methodological bias.

The study patients were therefore limited to 135 male subjects who had not undergone any logopaedic treatment and who therefore must be considered as having developed spontaneous, compensatory, functional phonation. The electro-acoustic data obtained were compared with those of controls (a group of 40, euphonic subjects in the same age range, who were considered adequately representative for the purposes of the investigation's statistical analysis). Because of the heterogeneity of voice analysis equipment employed in research laboratories worldwide, the existence of a valid, internationally recognised, 'standardised', normal dataset for each type of instrumentation and software is strongly disputed. Regarding this proposal, it is also relevant to emphasise that (1) the above objection applies even more so to the particularly sophisticated systems of vocal analysis now in use, such as sound spectrography or the digital Multi-Dimension Voice Program (MVDV) system, and (2) there is no standardisation of vocal parameters, and it is often recommended to add both a perceptual evaluation by a phoniatrician together with a subjective evaluation by the patient. We therefore

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reported the methodological aspects of our electro-acoustic examination, referring the causes that induced us to exclude other electro-acoustic parameters from the analysis.

The study patients underwent a single surgical procedure and did not effect any radiotherapeutic treatment before or after surgical intervention.

Videolaryngostroboscopic examination is certainly not immune to bias regarding subjective evaluations, as is the case with any technique of laryngoscopic investigation. However, it represents the most complete morphodynamic examination, and for this reason was referred to during analysis of quantitative, functional voice data. Since the type of functional compensation observed in our study could not coincide with the type of surgical intervention or with the initial extent of the tumour, it is in our opinion more correct to refer to post-operative laryngostroboscopic findings when analysing results.

Finally, it seems scientifically valid to us to compare the electro-acoustic findings of euphonic subjects (using normal voice production) with those of post-cordectomy patients

employing different kinds of voice production (representing spontaneous, functional compensation following various types of cordectomy). Moreover, from a clinical point of view, we do not believe it irrelevant that the surgeon and the phoniatician should inform patients that, also after different months from the intervention, their vocal performances won't be comparable to those of normal subject, also in case of relatively reduced laryngeal resection. Naturally, further studies would be useful to establish whether logopaedic rehabilitation is able to strengthen patients' spontaneous, functional vocal compensation or to convert dysfunctional compensation into more functional types.

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