

Letters to the Editor

The reliability of acoustic rhinometry

Dear Sir,

I was interested to read in the June 1995 issue of the Journal a paper describing a method of improving the reliability of acoustic rhinometry by Fisher and Boreham. The list of features they suggest require careful note and are all of extreme importance if this instrument is to become an accepted and respected research tool. A few additional points could be added however.

It is extremely easy for operator bias to corrupt data collected and ideally a strict operating procedure should be in place. It is possible to reduce operator bias significantly if a reference volume in the region of interest is first chosen. Cross sectional area data from this region is only accepted if the Coefficient of Variation of three consecutive estimates of this volume is less than 20%. The mean value from these three estimates is taken as the final estimate (Tomkinson, 1995).

Significant error will also result if the subject is allowed to breath during measurement and readings should always be taken during a pause in respiration, without exception (Tomkinson and Eccles, in press). Similar error will be introduced if the subject swallows during measurement (Tomkinson, 1995).

Finally, the ambient temperature should be carefully controlled this is essential if data is collected from the same nasal cavity on different occasions. When using a 7.5 cm nose piece, features within the nasal cavity will appear to shift along the x axis approximately 1 mm for every 2.5 C difference in temperature (Tomkinson and Eccles, in press).

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References

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Author's reply

Dear Sir,

The points raised by Mr Tomkinson are of considerable interest to researchers and clinicians in the field. A great deal of evidence has emerged which dampens the original enthusiasm about the superior

reproducibility of acoustic rhinometry, a small selection of which are referenced (Buenting *et al.*, 1994; Pedersen and Hilberg, 1994; Tomkinson and Eccles, 1994; Fisher *et al.*, 1995a; Fisher *et al.*, 1995b).

The number of factors that must be controlled in order to minimize test-retest variability is steadily growing. This fact, combined with the need to repeat runs of traces in each nostril at the same sitting (usually before and after decongestion - very laborious and time consuming), detracts from the perceived speed of acoustic rhinometry.

This does not cause *too* much dismay to workers who have a dedicated rhinology laboratory, and for whom precision takes priority over time efficiency. However, it makes acoustic rhinometry a much less attractive tool for the clinician in the routine clinic. If the results are taken at face value, without a rigorous technique, there is likely to be considerable misinterpretation of the data obtained.

Sadly, the lessons from rhinomanometry are having to be re-learned.

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KTP/532 laser tonsillectomy – a potential day-case procedure

Dear Sir,

I would like to respond to one of the articles published in the June 1995 edition of the *Journal of Laryngology and Otology*. The article concerned was entitled 'KTP/532 laser tonsillectomy - a potential

day-case procedure?' and concluded that KTP/532 laser tonsillectomy compared unfavourably with dissection tonsillectomy in the hands of the authors.

Laserscope, as the manufacturer of the KTP/532 laser wish to point out some of the technical reasons why such poor results may have occurred:

Three surgical tissue effects are possible with the KTP/532 laser – cutting, vaporization and coagulation. These effects are chosen by changing any of three variables:

(1) Power settings used

The laser power settings used for the evaluation described were quoted as 6 to 12 watts. From other surgeons routinely performing laser tonsillectomy with the KTP/532 wavelength, it is known that a power setting of 10–12 watts is required for optimum cutting/vaporization.

Given that the other variables remain constant, lower powers tend to coagulate tissue rather than cut or vaporize.

(2) Diameter of laser beam at tissue

No mention of the diameter of the optical fibre core, used in the evaluation was made but it is assumed to be a standard 0.6 mm fibre. Using the quoted power settings it would have been necessary to use a 0.3 mm fibre to achieve the power density used by other surgeons. The authors correctly describe the effects produced by the diverging laser beam as it exits the delivery fibre. Holding the fibre close to tissue reduces the diameter of the beam (increasing the power density at tissue) and creating vaporizing/cutting tissue effects. Conversely, holding the laser fibre away from tissue will coagulate.

(3) Time

The longer the laser is fired at tissue the greater the amount of tissue below the surface that will be affected. It is noted that the authors range of time

taken to remove one tonsil varied from just under two minutes to nearly nine minutes. Again this differs significantly from that achieved in the Omagh series where the average time for one tonsil removal was one minute.

Conclusion and suggested cause of complications

It is suggested, therefore, that with the combination of low power settings and increased time for tissue removal, that a greater amount of tissue in the tonsil bed would have been coagulated than would otherwise be expected. This coagulated bed may be associated with the post-operative bleeding described as this necrotic tissue later begins to slough.

I realize that this study was set up in such a way as to eliminate as much as possible the learning curve effect. However, the technique utilizing the low power settings described would not have allowed the Senior Registrars concerned to progress very far with the laser.

It is also recommended that KTP laser tonsillectomy is carried out from the lower pole in order to more easily be on the dissection plane when using the laser. This is a technique taught by Mr Kaluskar of Omagh on his courses. However no mention of this was made in the article which I believe reinforces the need for surgeons wishing to carry out laser techniques to attend a relevant course with experienced tutors.

Finally, I believe an interesting exercise would be to measure the total laser energy delivered to each tonsil (the laser displays Joules delivered) and to correlate this with any complications.

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