**Comments**

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*M.T. Brigger, San Diego, Calif.:* The wide variety of techniques and variable preferences across the globe despite the sheer volume of tonsillectomies performed gives great insight into the simple fact that there are many ways to successfully perform a tonsillectomy but no single way that is significantly better than the others. While some techniques may exhibit higher levels of pain and complications on a population level, ultimately a great deal of the overall outcome on the individual level is dependent on the skill, training and comfort of the operating surgeon. While population level data is critically important, it must be used as a guide for developing and assessing individual practice.

*E. Hultcrantz, E. Ericsson, Linköping:* This is a good overview about postoperative bleedings, but we do not think the question in the title is answered or even discussed. Neither do we think that the conclusion in the abstract that certain techniques should be abandoned is sufficiently grounded in the main text. Perhaps a change in the abstract? The last part about tonsillotomy is a bit short and should have used data from registries in the comparison and not only randomized studies. Randomized studies can never be large enough to demonstrate significant differences in postoperative bleeding which, luckily, is relatively rare with most techniques. Registries like those in the Swedish or the Austrian study clearly demonstrate that tonsillotomy has a much lower risk for bleeding than tonsillectomy.

*D. Lowe, Middlesbrough:* I agree that monopolar electrocautery is a technique which could and should be abandoned given the increased risk of other complications, e.g. burns, over use of bipolar diathermy. This was advocated in several National Prospective Tonsillectomy Audit (NPTA) publications.

The NPTA collected some data on around 40,000 patients undergoing tonsillectomy with a full and detailed data set on approaching 34,000 patients. While not a randomized controlled trial, prospective data collection, rigorous methodology and immense power enabled us to make meaningful deductions which cannot be rivalled with randomized controlled trials. Multivariate analysis was included in the majority of NPTA publications.

I note the comments on bipolar scissors and feel that these are of varying quality and are a particularly user-dependent technique which risk imparting high/indiscriminate levels of diathermy on the patient. While I have ‘enjoyed’ their use in the past, I feel that fine
forceps happily allow more exacting and controlled surgery with less collateral thermal injury to the tonsil bed.

The NPTA long advocated cold steel as a possible gold standard but this was based around low observed haemorrhage rates in this group. Further analyses including that on power settings support judicious use of diathermy at low settings having a comparable safety profile to cold steel with less intra-operative and early postoperative bleeding. This may be particularly desirable in choosing a gold standard technique in a young or low-weight child.

NPTA data on timing of haemorrhage largely corroborate Bennet’s small meta-analysis although a small number of intermediate haemorrhages were observed on day 2. The NPTA was able to record the incidence of late secondary bleeds up to 28 days after surgery. Interestingly, all bleeds which occurred beyond 2 weeks of surgery were seen in the hot technique groups with cold-steel haemorrhage occurring earlier on average.

Tonsillotomy is not widely performed in the UK.

J.P. Windfuhr, Mönchengladbach: It is confusing that one of the most common surgical procedures, i.e. tonsillectomy, is by far not standardized but nevertheless terms like ‘traditional’ or ‘conventional’ tonsillectomy are used. At least the NPTA revealed that electrosurgical means are widely used which is definitely not the fact in Austria [1] or Germany [2]. Newer techniques were unable to change this nationwide phenomenon. It remains unclear why the surgical microscope with its undeniable advantages in visualization, illumination and at least as a teaching tool has not been included as a standard instrument for tonsillectomy procedures. Moreover, desirable information about the dose of energy transmitted to the soft tissues to achieve hemostasis is almost always lacking. This fact is extremely unfortunate, since Cardozo [3] clearly demonstrated a dose-response relationship between diathermy energy used and morbidity. His findings seem to support the idea that most studies are not comparable due to the varying grade of thermal injury resulting from a different use of electrosurgical means, either for dissection and/or hemostasis. This statement is supported by the study of Tschopp [4] who revealed a relationship between Grisel’s syndrome and the amount of energy applied to achieve hemostasis after adenoidectomy. Although occurring very rarely, death may result from excessive hemorrhage and deserves to be included in the informed consent as a rare, unpredictable but potential complication of tonsillectomy. It should be emphasized that most tragedies result from delayed postoperative hemorrhage [2] which questions the intraoperative benefit associated with electrosurgical means. Figure 1 would support the idea to perform tonsillectomy only in the early morning session, since a high rate of early bleeding complications will occur within the first 4–6 postoperative hours at a time, when the full medical staff is readily available.

S. Sarny, Graz: The surgical techniques used for tonsillectomy are discussed in detail. The authors highlight advantages and disadvantages of the frequently used cold-steel dissection as well as bipolar techniques and put emphasis on less commonly used techniques such as monopolar electrocautery, Coblation®, laser, harmonic scalpel and the ‘vessel-sealing system’. In addition, the rates of posttonsillectomy haemorrhage among various studies of large size are listed and discussed more closely. The lack of a standardized definition and a precise classification of postoperative bleeding episodes are mentioned. A consensus in the current literature seems to be about the patient’s risk factors for an increased haemorrhage rate, like age, gender and indication for surgery, whereas surgical techniques contributing to an elevated haemorrhage rate are discussed controversially. In a prospective, multicentre cohort study we found that bipolar techniques are associated with a higher risk of postoperative haemorrhage. During the study period, a severe bleeding episode occurred more often than a minor bleeding episode when bipolar electrocautery had been used. To conclude, further investigations on surgical techniques for tonsil surgery should be undertaken in large cohort studies with standardized methods and definitions in order to continue development.
References


