Transoral resection of laryngeal and hypopharyngeal cancer is an established surgical procedure

Jochen A. Werner

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The reason for this editorial is an oral papers session on the therapy of laryngeal and hypopharyngeal cancer that took place in the context of the 5th World Congress of IFHNOS & Annual Meeting of the AHNS from July 26 to 30, 2014, at Marriott Marquis, New York City, USA.

Looking back to the surgical therapy of laryngeal cancer, the open transcervical approach with subsequent resection has been considered as surgical therapy of choice for many decades. The introduction of microlaryngoscopy opened an alternative way and the transoral approach to the larynx was described. In this context it must not be forgotten to mention Prof. Dr. Oskar Kleinsasser who started his career in Cologne, Germany, and continued his activity as Chairman of the Department of Otolaryngology, Head and Neck Surgery, in Marburg, Germany.

Kleinsasser was the one who started first with the application of cold-cutting method and then also with the monopolar electric needle to resect smaller carcinomas of the vocal cords. As he was not only a laryngologist but had also a sound training in the field of pathology, he examined all excisional biopsies himself. It is not possible to control the own surgical therapy in a more responsible way. About at that time of the technical development and the beginning perfection of a finally electro-surgical resection, also the transoral CO₂ laser surgery was developed and introduced by the laryngologists Steward Strong and Geza Jako who worked in Boston, USA.

Kleinsasser had the possibility to introduce laser technology in Europe and to further improve it. Certainly also

because of his point of view as pathologist, he refused to accept laser surgery not only in the 70s and 80s of the last century, but also for the rest of his professional activity. Carbonisation and coagulation zones at the cutting edges that were a considerable side effect of the first laser systems were unacceptable histologic reactions for Kleinsasser, especially regarding the control of the cutting edges that was in his focus.

Beside different other laryngologists, it was finally Wolfgang Steiner, first Erlangen, Germany, then Chairman of the Department of Otolaryngology, Head and Neck Surgery, of Göttingen, Germany, who promoted the transoral CO₂ laser microsurgical resection of laryngeal and even hypopharyngeal carcinomas in a considerable way and who developed those systems to a large degree of perfection.

For Kleinsasser it was almost a question of faith to apply the monopolar surgery instead of laser surgery for the treatment of smaller laryngeal carcinomas. This discussion that he finally did no longer pursue because the technical possibilities of laser surgery had meanwhile achieved such a degree of secure resectability and also histological assessment, also due to optimized micro-manipulators, very low size of the laser beam, and also reduced density of laser energy. Steiner gave numerous international lectures, initially he was confronted to massive hostility, but nonetheless he remained faithful to his principles. He invited many highly reputed laryngologists to come to Göttingen, slowly the method was also applied for more advanced carcinomas, in other countries, and also in the USA.

Partly simultaneously to Steiner, partly initiated by him, the transoral laser surgery of laryngeal and pharyngeal cancer continued to develop. R. Kim Davis, Salt Lake City, USA, Eugene W. Myers, Micheal L. Hinni, Bruce H. Haughey, only to mention some surgeons of the USA

J. A. Werner (✉)
Department of Otolaryngology, Head and Neck Surgery,
University Hospital of Marburg, Baldingerstr., 35043 Marburg,
Germany
e-mail: wernerj@med.uni-marburg.de

experienced in laser surgery, contributed enormously to the development of laser surgery even if there are still many critics of this technique. Many important laryngologists who apply laser surgery are not mentioned here as e.g., Heinrich Rudert, Kiel, and Walter Thumfart, Cologne, not to emphasize other aspects than the main topic of this editorial which is the worldwide acceptance of transoral laser surgery as a safe and reproducible procedure for tumor resection.

In recent time and also nowadays, another technology was developed, the transoral robotic surgery (TORS), primarily for the treatment of oropharyngeal carcinomas, but beside meanwhile even of laryngeal and hypopharyngeal cancer. This led to a kind of re-writing of history of the meanwhile already well-established concept of transoral surgery of carcinomas of the upper aerodigestive tract.

Surgeons started to pursue TORS who previously had no interest at all or no experience in transoral laser surgery. Some did not only work with the robot, some started criticizing laser technology more and more and announced already early its speedy end. All this can be summarized in the issue if there will be another kind of fight around a question of faith or if objectivity will win to overcome possible deficits of the laser surgical technology by the application of TORS and at the same time to discuss critically when this cost-intensive TORS is definitely required for which indications.

In this stage, and this became obvious during the mentioned oral paper session in New York City, other systems develop, e.g., video-laryngoscopic surgery performed by Dr. Shiotani Saitama, Japan, who presented technically sound resections of laryngeal and hypopharyngeal carcinomas with monopolar needles and/or CO₂ laser at significantly lower costs than it would be possible with TORS technology. And this comes full circle with transoral microscopically controlled cold-cutting resection via monopolar resection via CO₂ laser resection, robotic endoscopically controlled resection up to endoscopically controlled monopolar resection by means of flexible instruments.

This multitude of methods shows on the one hand that there is no one and only transoral resection procedure, there are meanwhile different expectations that have to be fulfilled by a technique such as easy learnability, reproducibility, surgical reliability, best possible overview, assessment of the cutting edges, and of course the cost-benefit ratio in these times of increasing attention to health-related economy. There is no sole claim for exclusivity; each of the mentioned procedures offers special options that in certain situations may be more advantageous in comparison to other methods.

No matter which technique will be applied for transoral cancer resection, it should be avoided to make this aspect a

matter of faith. Among all applied transoral resection procedures, today laser surgery is undoubtedly the most widely developed and applied technique for the transoral surgical treatment of laryngeal and hypopharyngeal carcinomas. Its effectiveness was proved repeatedly by many surgeons of the world. One of the achievements of laser surgery was organ preservation; the number of laryngectomies could be considerably reduced, which is not only due to radiochemotherapy protocols but also to an optimal transoral and transcervical partial resection with partly excellent functional treatment results.

TORS will probably be able to allow some additional indications where laser surgery comes to its limits. Also in this context it must be considered that in the future even more robotic devices will be at disposition and not only a single one. This will lead to an extended indication spectrum for TORS.

Nonetheless, there will be constellations for all transoral procedures and therapies (e.g., progenia, Bechterew disease etc.) that do not allow this therapeutic approach. Already this fact makes it clear that sound knowledge of transcervical surgery, i.e. the open surgery of laryngeal and hypopharyngeal carcinomas, must be conserved. And despite all affection for transoral resection procedures, there are of course still clear indications for transcervical laryngeal surgery. Also in this context it is not a question of faith, it is crucial to resect the carcinoma R0 and to achieve the best possible functional result for the patient.

It will not be possible to fulfill the mentioned requirements for all transoral resection techniques in every department or even country. Financial resources often limit the availability especially of TORS technology. Now it is the responsibility of the surgeons to perform prospective evaluations to compare the values of different transoral resection procedures and also to include external methods in this comparison.

However, it is obvious that the transoral surgery of laryngeal and hypopharyngeal carcinomas is the established surgical procedure after meanwhile about 50 years of experience. This is at least true for countries where most of the laryngeal and hypopharyngeal carcinomas are transorally resected. However, there is the outstanding surgical expertise for external approaches of numerous surgeons that can be found for example in France, Italy, or Spain. Unfortunately this is the beginning of a problem of the future, which is the conservation and also further development of open surgery in countries where the most widespread treatment procedure is transoral surgery. Specialized surgery should be established in specialized centers, possibly even considering the aspect that training and education should be planned and realized on an international scale.