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A new flexible endoscope for transoral robot assisted surgery (TORS) in head and neck lesions

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Introduction: Head and neck surgery has incorporated transoral robot assisted surgery (TORS) as a new approach in the management of pharyngeal and supraglottic lesions. In contrast to well-known systems, originally designed for large cavity surgery the new Flex[®] robotic system was developed in order to enhance the spectrum of TORS and to overcome existing limitations. It is an operator controlled computer assisted flexible endoscope that enables the physician to easily access and visualize structures within the pharynx and larynx providing also 2 accessory channels for various compatible flexible instruments.

Material & Methods: The Flex[®] robotic system was evaluated in 40 patients treated for benign as well as malignant lesions in the oropharynx, hypopharynx, and larynx. The system was evaluated for adjustability, maneuverability, visualization, and resectability of the tumor.

Results: We were able to expose, visualize and access the palatine tonsil area, the base of tongue area, the epiglottis, the posterior pharyngeal wall, and the false vocal cords in all patients. In addition, a variety of surgical procedures could successfully be completed. There were no serious adverse events.

Conclusion: The Flex[®] robotic system was specifically developed for TORS: The combination of a robot assisted flexible endoscope with flexible instruments allowed for excellent maneuverability and tactile feedback. All relevant anatomic structures of the pharynx and larynx could be well exposed, visualized and accessed. Lesions especially in different to reach regions could be successfully resected, thus making it a safe and effective tool in transoral robotic surgery.

Biography

Stephan Lang is a Professor of Otolaryngology at the University of Duisburg-Essen and Chair of the Department of Otorhinolaryngology and Head and Neck Surgery at the University Hospital in Essen, Germany. His field of expertise is in tumor immunology and advanced tumor surgery as well as middle ear and skull base surgery. He is investigating the role of transoral robot assisted surgery (TORS) for head and neck lesions using different systems. His research interests are focused on the analysis of tumor-host interaction, tumor escape mechanisms and the development of therapeutic strategies designed to overcome tumor mediated immunosuppression. Currently he is analyzing the role of mesenchymal stromal cells, regulatory T cells and granulocytes in cancer progression. Additionally, he is working on an adoptive T cell transfer based on HPV-specific T cells. He has published more than 160 peer-reviewed papers in scientific journals.

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