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3D Slicer in the reconstruction and evaluation of airway stenoses

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Airway stenoses are a great challenge both for the laryngologists and thoracic surgeons. The study of the laryngeal and the subglottic-tracheal stenoses is of key importance in the reconstruction of the breathing and the quality of life without tracheostomy.

The authors demonstrate the use of reconstructions made of high-resolution computer tomography with 3D Slicer in surgical planning.

Two cases of severe tracheal stenosis were operated after preoperative planning of the CT scans. One of the cases was a combusted post intubated multiple stenosis of the trachea. The airway was reconstructed in two steps. The other case was a newborn with a severe congenital bronchial abnormality.

A new glottis widening technique is also demonstrated using 3D Slicer. In this part the authors present the evaluation of the efficacy of the new method compared with a cadaver morphometric study.