

Stenosis of the larynx and trachea accounts for a small but adverse spectrum of diagnoses in patients treated in ENT and Head and Neck Surgical departments. In treating chronic stenosis and strictures, an unequivocal, generally -accepted approach has not been established. The predominant method of treatment is surgical. Other methods applied include endoscopic (laservaporization, aryteoidectomy) and extermal (expansive, resection) procedures. In the pediatric population, the desired method is one which has a minimally harmful impact to the growing child. For these reasons, indications to extensive surgical treatments are limited. Dilatation of stenosis and stricture, and temporary maintaining of lumen patency using stents individually measured "to size" seem to afford greater advantages for use in the pediatric population. In cooperation with the Institute of Macromolecular Chemistry (Academy of Sciences, Czech Republic), we have worked on the development of stents suitable for clinical use that exhibit a combination of useful properties (rigidity, absorbability, biocompatibility, microbial inactivity). The stents were developed by polymerisation of 2-hydroxyethylmethacrylate onto a template made from polyethyleneterephthalate type silk (Dacron). The Poly-HEMA material is registered by the national Drug Association, and has for a long time been used in many specialities (i.e. neurosurgery, ophthalmology). It displays excellent biocompatibility, as well as other advantageous physical properties (regulated intumescence, absorbability). The stents were tested to evaluate their physical and biological properties. Tests of physical properties included traction and pressure trials. Biological evaluation involved microbiological testing: comparing the growth of common airway pathogens onto the tested material with growth onto standard culture mediums.