Our experience with biodegradable stents in the respiratory tract in children.

Jurovčík M., Belko P., Dytrich P., Katra R., Doušová T., Svobodová T., Skřivan J.

**Background**

Treatment of airway stenosis in children is often challenging. The use of stents in these indications is usually limited in childhood. We have to strive to minimize tissue damage in insufficient space and take into account the further development and growth of the affected area. When using permanent stents, this can not usually be met. An alternative is the use of biodegradable stents, where the second phase - removal of the stent is missing. Biodegradable stents have been used in addition to the lower respiratory tract in patients with choanal atresia, where we often observe recurrent stenosis.

**Methods**

Custom made stents EllaCS from polydioxanone (PDS) were used. This material is commonly used in the resorbable sutures. The stents were manually loaded in special application tool and inserted endoscopically. Indications were severe tracheobronchomalacia and choanal atresia. The smallest patient was 3 months old, the oldest 10 years old.

**Results**

In total, we placed eleven biodegradable stents in eight patients, three patients in the lower respiratory tract with and in five patients in the choana. The smallest diameter was 5 mm, the largest 7 mm, the length range between 15-30 mm. The insertion of the stent in all cases was uncomplicated. Only in the case of the smallest 5 mm stent it was difficult to remove the boot system. Improved airway patency was immediate in all patients. Patients were periodically endoscopically examined. Degradation changes were observed from 5-6 weeks. In the oldest patient with the stent placed in the trachea we observed a partial fragmentation of the stent between 10-12 weeks followed by expectoration. In two patients with choanal atresia the stent was compressed with a stiff circular scar after the fifth week. In most cases, we observed the formation of minor granulations without clinical significance. In three cases, it was necessary to repeat stent insertion.

**Conclusions**

The use of biodegradable stents is an effective way to resolve airway stenoses in children. According to our experience, their use can be extended to the area of stenotic choanae. In our group, we did not notice significant complications associated with stent degradation. However, it is necessary to keep in mind the potentially risky period when the stent begins to disintegrate and to check the patient endoscopically. Balloon dilation with impression of stent into the airway wall at the time of insertion is suitable.

Supported by the Project for conceptual development of research organization 00064203

---

1. Department of ENT, 2nd Faculty of Medicine, Charles University in Prague and Motol University Hospital
2. Department of Pediatrics, 2nd Faculty of Medicine, Charles University in Prague and Motol University Hospital

Michal Jurovčík M.D.
V úvalu 83, 155 06
Prague 5, Czech Republic

E-mail: michal.jurovcik@fnmotol.cz
Phone: +420224432601, 602938397
Web: www.fnmotol.cz