

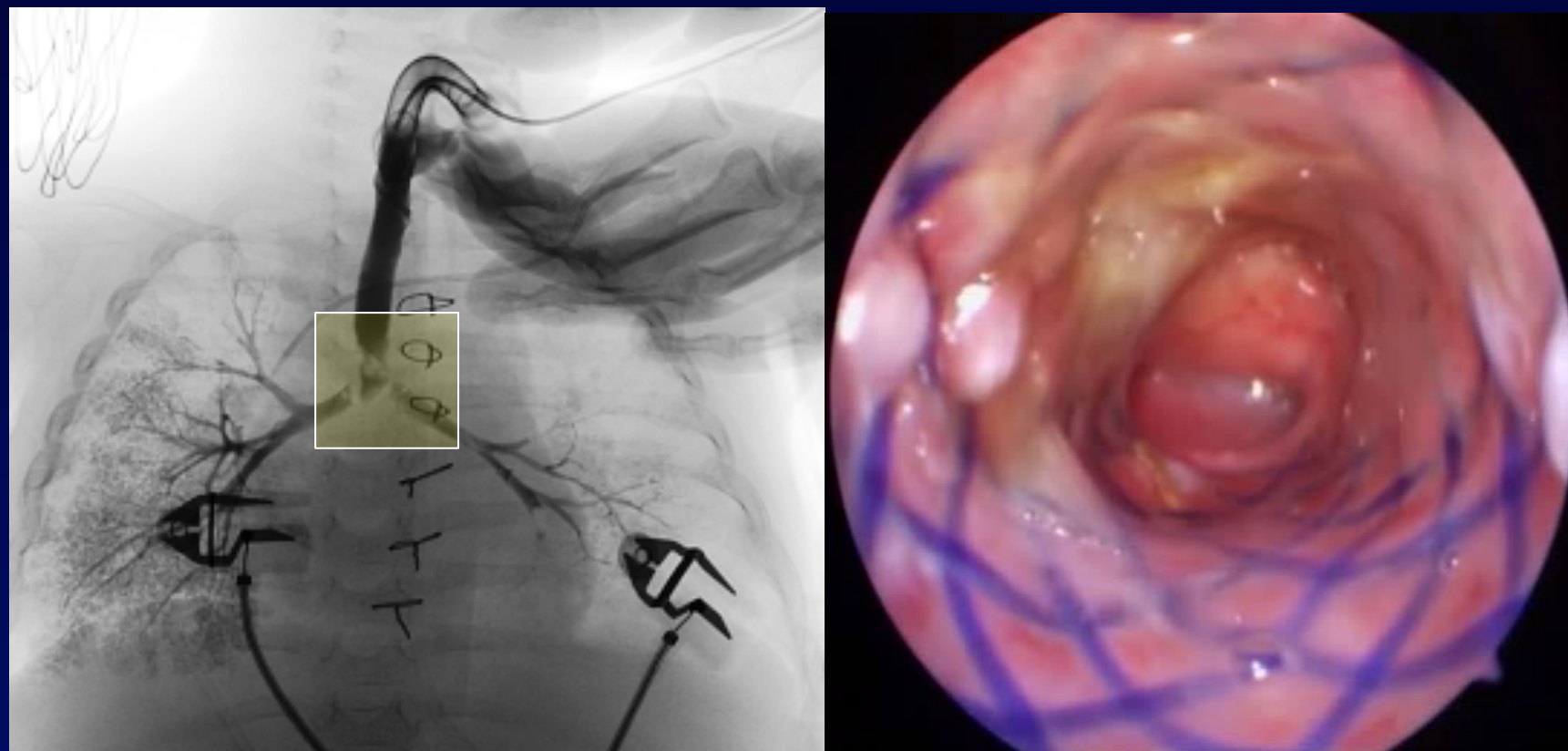


Biodegradable SX-ELLA tracheal stent as a new minimally invasive solution for severe tracheomalacia in newborns

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OBJECTIVE: The solution of severe tracheomalacia in early childhood means a great challenge even nowadays. The dyspnea often requires an immediate surgical investigation. Unfortunately, tracheal segmentresection and replacement of the tracheal wall, which methods are widely used in adults, are really hard to be performed at this age because of the patients' small size. The babies' tissues are so thin and mild, so the application of classical airway stents has a high risk of intrathoracal injury. After the encouraging animal studies the new, self-expanding biodegradable stents has been recently introduced as treatment of benign airway stenosis.



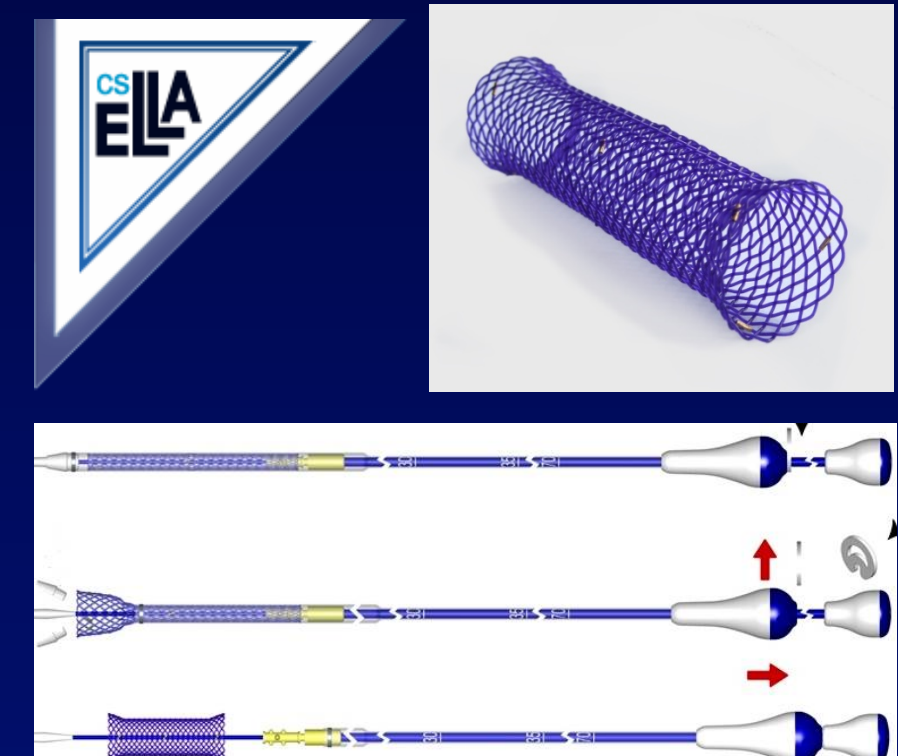
CONCLUSIONS: Polydioxanone stents offer an alternative to metallic or silastic stents for collapse or external compression of the trachea in children. They may avoid the need for permanent stenting and allow subsequent growth of the airway. If necessary, repeated stent insertion might be performed. But stent's degradation, which might appear as a 'foreign body' in the trachea has to be kept in mind,

BIODEGRADABLE STENT: To avoid the mechanical complications associated with nonabsorbable stents, absorbable stents have been developed. Polydioxanone is a monofilament, absorbable semicrystalline polymer belonging to the polyester group, that **would dissolve completely after a predetermined period** of time or by an enzymatic triggering mechanism. Biodegradable stents have been developed primarily for esophageal, intestinal, urethral, biliary, and vascular stenoses. First animal studies dealing with its application in the upper airway showed, that it was well tolerated by tracheal mucosa, maintained biomechanical strength for 6 weeks, dissolved completely by 15 weeks.

METHOD: SX-Ella Biodegradable polydioxanone stent (Ella-CS, Hradec Kralove, Czech Republic, www.ellacs.eu (see above)) was applied in two patients after long term intubation because of tracheomalacia (1 year, 7 days). Figures show our results in case of an acquired laryngomalacia of a 11-month-old baby.

CASE (11-month old-boy)

After long-term intubation tracheal lumen could be maintained by extra long, bifurcation-lasting canule. Tracheo-bronchography and CT showed severe collapse in the bifurcation area. With repeated stent insertions acceptable wide airway could be achieved, then tracheal segmentresection was performed.



LITERATURE:

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2. Novotny L et al: Novel biodegradable polydioxanone stents in a rabbit airway model. J Thorac Cardiovasc Surg. 143(2012):437-44.
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