



## Ongoing development of a new device for fetal endoscopic tracheal occlusion

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### Objective

Fetal endoscopic tracheal occlusion (FETO) improves survival of fetuses with severe congenital diaphragmatic hernia (CDH). However, several serious issues relate to in utero removal of the balloon: frequent emergency setting, need for advanced expertise, iatrogenic preterm delivery, and fetal mortality. Our aim is to develop a new device for FETO, which allows an easy, non-invasive, and remotely activated reversal of the fetal tracheal occlusion.

### Methods

We brainstormed in collaboration with engineers and a technology transfer company. Intellectual property, regulatory environment, and market context were addressed. Given these constraints, our strategy was therefore to develop the simplest possible technology.

### Results

We designed a balloon addressing the specifications that were previously defined. It requires limited developments from the existing balloon currently used for FETO. A system of magnetic valve allows the deflation of the balloon when exposed to an external magnetic field. A proof of concept has been achieved using a prototype scale 1: 1.

### Conclusion

This new device addresses the issues of balloon removal in case of CDH managed by FETO. Further tests regarding operation, biocompatibility, and safety of the device are needed.