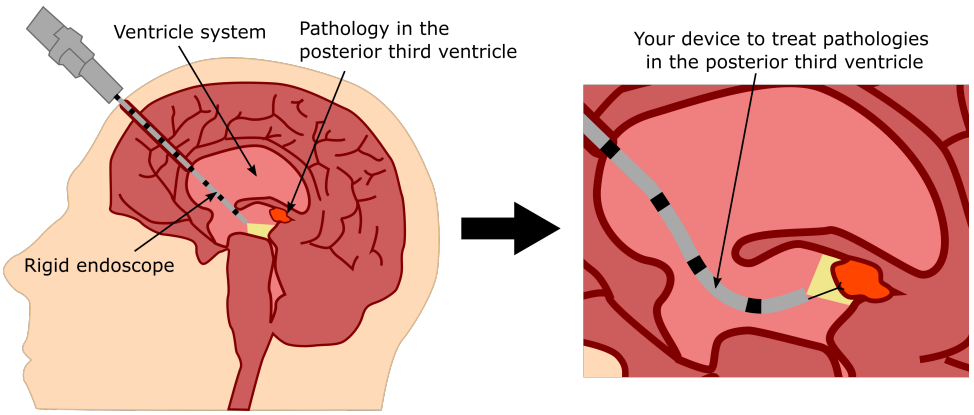
University of Basel
Department of Biomedical Engineering

BIROMED-Lab
Medical Robotics and Mechatronics

Master Thesis:
Development of an endoscopic device to treat pathologies in the posterior third ventricle

Context: Nowadays, pathologies in the brain ventricles are often treated with endoscopes. Instead of creating a large incision, the endoscopic method only requires a small opening in the skull, through which the endoscope is inserted. Current endoscopes usually have a long and rigid shaft with several working channels for optics, irrigation, and surgical instruments. Due to the rigidity of these endoscopes, the surgeons are limited in maneuverability, i.e., not all locations inside the ventricles are easily accessible. For example, pathologies in the posterior third ventricle can hardly be treated with the current state-of-the-art neuroendoscopes, which creates the need for further research and development in this direction.



Task description: The goal of this thesis is to develop a first functioning prototype to diagnose and/or treat pathologies in the posterior third ventricle. Proposed work packages:

- Literature research: state-of-the-art in devices for ventriculoscopy, and requirements for the endoscopic treatment of pathologies in the posterior third ventricle.
- Concept development and evaluation
- Prototype design, manufacturing, and assembly
- Evaluation of the prototype with respect to its requirements

Your profile: Background in mechatronics, mechanical engineering, electrical engineering, biomedical engineering, applied physics, or in a closely related discipline.

Start: Jan 2022
Duration: 6 months

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