Puncturing system for a safer tracheostomy

A tracheostomy can be performed open surgically (OST) or endoscopically (percutaneous dilatational tracheostomy, PDT). For a PDT, the correct choice of the location and orientation at which the skin of the patient is punctured is essential to avoid severe complications such as injuries to the thyroid gland, the larynx, the trachea or surrounding blood vessels. Researchers from TU Munich have developed a system for reliably identifying the puncture site even in patients with a challenging anatomy.



IP RIGHTS
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Innovative system for facilitating a PDT in patients with a challenging anatomy

The invention describes a monitoring and puncturing system configured to enable the physician to reliably and precisely identify the entry point and trajectory of the puncturing instrument even in patients with a challenging anatomy such as obese tissue, goiter, a short neck and displacement of the trachea.



01 Enables the physician to reliably identify the correct site and trajectory of the puncturing instrument

02 Especially suited for patients with a challenging anatomy (e.g obese tissue, goiter, short neck)

03 Minimizes the risk of severe or even fatal complications

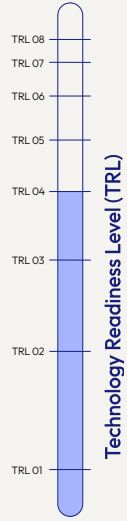
04 A PDT significantly decreases costs, time and manpower requirements

CHALLENGE

The major advantage of PDT over the open surgical tracheostomy (OST) is that it can be performed at the patient's bedside, while an OST must be performed in an operating room. Determining the entry point and the trajectory of the puncturing device for a PDT can be complicated by the patient's anatomy, which is why the treating physician often chooses the more time consuming, expensive and invasive OST in these cases.

INNOVATION

The innovative system allows for reliably and precisely identifying the correct puncture site for a PDT. A variable magnetic field is generated by a field generator. Magnetic sensors are attached both to the puncturing device and to an endoscopic instrument, which is positioned in the region of the cranial end of the patient's trachea during the procedure. The relative positions of the magnetic sensors - and thus the relative positions of the puncturing device and of the endoscopic instrument - can be reliably determined and visualized to the physician



01 Basic principles observed · **02** Technology concept formulated · **03** Experimental proof of concept · **04** Technology validated in lab · **05** Technology validated in relevant environment · **06** Technology demonstrated in relevant environment · **07** System prototype demonstrated in operational environment · **08** System complete and qualified

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