

Developing Bio-sensors for Spine Surgery

Surgeons now have help to make sure spinal nerves remain healthy during surgical procedures. Two graduate students at the Computer Integrated Surgical Systems and Technology (CISST) Engineering Research Center, located at Johns Hopkins University, have developed sensors to make sure nerves aren't understretched or overstretched while surgeons re-align vertebrae in the spine.

Working with collaborating clinician Charles Edwards of the Maryland Spine Center, graduate students Robert Webster and Babak Matinfar have constructed a device to record the force and position while surgeons displace nerves during surgery. The surgeon can then feel how "taut" the nerve is, and make judgments accordingly.

A prototype was constructed out of kevlar thread attached to a blunt hook under the nerve, and tested on animals at the Minimally Invasive Surgical Training Center (MISTC). Additional experiments are planned to further assess electrical and mechanical tension on nerves while tension is applied. The researchers anticipate that the sensors will minimize recovery time and reduce the risk of infection during surgical spinal procedures.



Surgeons use a device to monitor nerve health during surgery to make sure the nerve is not over- or undercompressed.

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