Device to Facilitate Controlled Rotation of the Cervical Spine

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Technology description

Imaging of the neck, or cervical spine, via magnetic resonance imaging (MRI) or computed tomography (CT) can give insight into cerebral spinal fluid flow patterns, nerve compression, spinal instability and intervertebral disk damage. Diagnosis of these and other conditions often requires that images of the patient’ s spine be taken while the spine is rotated about its axis or while the spine undergoes flexion/extension; however, current cervical rotation devices are difficult to rotate, time-consuming, cumbersome and/or difficult to construct using medical-imaging-compliant materials, such as plastic. UW-Madison researchers have developed an improved cervical spine positioning device for use in medical imaging. This device consists of concentric rings mounted between side supports. Bearing surfaces between the inner and outer rings facilitate isocentric rotation, while the two pivot swivel joints on either side of the rings enable flexion/extension motion. The device utilizes friction-induced stopping mechanisms to allow the user to accurately position the patient’ s neck and easily reproduce positioning for multiple scans.

Application area

Rotating or stabilizing a patient’ s head during medical imaging

Advantages

Provides a single means of controlling the rotation and flexion/extension of a patient’ s cervical spine
Allows quantitative measurements of rotation or flexion/extension
Useful to orthopedic surgeons
Enables neuro-surgeons to do multi-position scans of comatose patients
Allows for fluid motion
Rotation about one axis may be independent of rotation about the other axis
Fixture may be locked in the desired position
Provides precise and repeatable positioning in an infinite number of orientations - not based on incremental notch adjustments
Sturdy

Compliant with medical imaging technologies such as MRI or CT
May be installed on a variety of imaging machines

Institution

Wisconsin Alumni Research Foundation

Inventors

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