The "thousand-hands Kannon" universal headframe

Technical note

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The authors describe a new headframe system, by which a variety of instruments, such as brain retractors, suction tubes, mirrors, forks, armrests, and cotton-sheet trays, can be simultaneously supported. This frame enables neurosurgeons to perform operations with greater ease and fewer problems.

KEY WORDS • self-retaining retractor • headframe • instrumentation

A n idea flashed into my mind during a certain difficult operation: I wished I had had several more hands and eyes just like "Avalokitesvara (Kannon) who has a thousand hands and eyes" — a Bodhisattva of Great Mercy in Buddhist mythology, who saves all beings from their sufferings, misfortunes, disasters, and troubles (Fig. 1).

If one had several hands and eyes, complicated neurosurgery could be performed with fewer problems and much greater ease. Ideally, one would be able to retract and retain the brain in several places simultaneously, evacuate blood and cerebrospinal fluid, displace lesions, coagulate and cut blood vessels and lesions, dissect and excise lesions, use mirrors, retain armrests used in long operations, hold bipolar forceps and suction tubes, and place trays for cotton sheets in any desired location.

This idea inspired the development of a universal headframe, named "thousand-hands Kannon" or simply the rabbit-ear headframe.

Description of Headframe System

The "thousand-hands Kannon" universal headframe system consists of a rabbit ear-shaped bar attached to the base and two free-angle coupling heads which are secured to the operating table with two of the preexisting arms of the Yaşargil Leyla system (Fig. 2). This headframe system was developed to allow further use of self-retaining retractors and other instruments with the coupling heads used in the Yaşargil Leyla system, thereby eliminating additional modification and cost. The rabbit ear-shaped bar can be used both as a handrest and as securing points for devices such as retractors, suction tubes, mirrors, mini-handrests, forks, etc.
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FIG. 2. The “thousand-hands Kannon” universal headframe system consisting of a rabbit ear-shaped bar and two free-angle coupling heads which are secured to the operating table with a pair of Yasargil Leyla arms by means of ball-and-socket joints.

mini-cotton trays, instrument holders, and probes for intraoperative monitoring. This frame is fixed to the operating table with a pair of arms attached to ball-and-socket joints. These joints enable the headframe to be moved easily to any desired position at any stage of the operation. The frame system can be used independently with any desired headholder.

Discussion

The headframe system described here has six major advantages over other available systems: 1) A variety of instruments can be supported simultaneously at any desired angle or position. 2) The frame is secured to the operating table with two Yasargil Leyla arms, one on each side of the table, making it more stable than other available systems and decreasing the likelihood of damage to the brain due to unwanted movement of the instruments. 3) The frame can be used with any kind of headholder, and is completely independent of the headholder. 4) The frame can be positioned to any angle or height, and is located in front of the surgeon so it can also act as a stable handrest. 5) The frame can support so many instruments simultaneously that the use of hand-held instruments becomes less necessary. As a result, the operative field is less cluttered and surgeons can perform the operation without obstructed vision. 6) During long operations, the incidence of brain damage caused by hand-held instruments can be reduced because the brain can be retracted indefinitely at a constant suitable pressure.

This frame can readily be adapted to any operating table, as it has the same diameter as the Yasargil Leyla arm. The Leyla flexible retractor systems with free-angle coupling heads can be utilized, thereby eliminating additional modification.

References


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