A NEUROSURGICAL CHAIR*

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Difficulties encountered during operations upon the head or upper spine are frequently caused by: (1) awkward positioning of the patient; (2) increased venous pressure; and (3) embarrassed respirations. In many neurosurgical procedures these factors can be minimized by placing the patient in a sitting or semireclining position in a suitable operating chair. In 1935 we described a neurosurgical chair and the advantages of the sitting position particularly for operations upon the cerebellum and cervical spine. Disadvantages of this position are the occasional occurrence of postural hypotension and the rare development of air embolus.

The basic requirements of a neurosurgical chair are as follows:

(1) It should maintain the body in a position that will minimize the tendency to postural hypotension and air embolism.

(2) Should hypotension develop, it must be possible to place the head lower than the feet.

(3) The chair should hold the patient’s body in position without the use of restraining straps.

(4) Its shape should be such that it is impossible for the patient to slump or to struggle out of position during the course of the operation.

(5) It should have a readily adjustable headrest which will hold the head firmly, will permit the surgeon easy access to any portion of the head and upper spine, and at the same time afford the anesthetist free access to the air passages.

(6) It should be comfortable for the conscious patient.

The chair described below fulfills these requirements. The prototype of this chair originated 15 years ago and it has gradually evolved to its present form as the result of operating experience. Instead of the usual right-angled seat, this chair has a seat that is sharply flexed on the back rest, while the leg rest is extended. For the sake of stability, these angles are fixed. This shape prevents forward slumping and at the same time combats the tendency to venous pooling which contributes to postural hypotension and air embolism. To prevent sideways slumping, the back rest, seat, and leg rest are trough-shaped, which shape increases the area of contact with the patient’s body and eliminates the need for padding. This in turn affords increased stability of the patient’s body. Should the patient struggle at any time during operation, the force of gravity returns him to his original posture as soon as muscular contractions cease. During the 15 years that this type of chair has been used, with no padding other than a cotton blanket, no patient has had any pressure areas develop on the skin.

The important and basic feature of an operating chair is that it affords adequate

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support to the skeleton. This structure is the same size in a fat as in a thin person. Chair manufacturers tend to build chairs wide and flat in order to accommodate all sizes of people, which means that they afford inadequate support. The wedging effect, which the contours of this chair furnish, permits the force of gravity to immobilize the skeletal framework without impeding respiration or circulation. With perhaps the addition of a folded blanket under the buttock or calves, a chair of this shape, though narrow, will accommodate a fat person as comfortably as a thin one and a tall person as readily as a short one. The contours of the chair

![Image](image_url)

**Fig. 1.** Patient in position for approach to the gasserian ganglion.

enable the conscious patient to relax completely, because he feels secure and no muscular effort is required to maintain the position. This, together with the fact that the tendency to syncope is controlled, makes the chair satisfactory for use during operations on the conscious patient. The comfort of the position is attested to by the fact that during its manufacture, when the noon whistle blew, there ensued a contest among the workmen to determine who would sit in the wooden model during the lunch hour.

The chair can, of course, be raised or lowered by a foot pump, and also rotated about its vertical axis. By means of a crank, it can be tilted back like a rocking chair so that the feet are higher than the head. A slot in the back permits a lumbar puncture to be performed during operation, if indicated. Movable arm rests are provided. A small seat attaches to the back to accommodate a child.