BILATERAL CINGULO-TRACTOTOMY

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Men ought to know that from brain and from brain only arise our pleasures, joys, laughter, and jests as well as our sorrows, pains, griefs, and tears. Through it in particular we think, see, hear and distinguish the ugly from the beautiful, the bad from the good. All that we suffer comes from the brain. That is why I hold that the brain is the most powerful organ of the body.

Hippocrates

The purpose of the present study has been twofold: first, to develop a comparatively safe, simple, selective and effective operation that will eliminate or diminish as much as possible a patient's psychosis and/or pain, at the same time leaving intact most if not all of his personality, and second, to apply this operation to psychotic patients, especially early and untreated schizophrenics, as the first and not the last resort. In developing this method there have been taken into consideration the neurosurgical virtues of "open" technic (actual visualization, selective section and complete haemostasis) and the nonsurgical merits of the "blind" procedure (conservatism, speed and simplicity). In short, bilateral cingulo-tractotomy is Poppen's bimedial lobotomy made more selective and less destructive.

The material to be presented is unique in that it is Eastern. Eastern mentality and outlook differ in many respects from the Western. Jung's "collective unconsciousness" helps to explain some of the Easterners' views. On the whole they are more primitive, dependent and fatalistic.

For the successes Allah is praised.
For the failures doctor is blamed.

ANATOMICO-PHYSIOLOGICAL CONSIDERATIONS

After the epoch-making operation of Moniz and Lima,11 Papez12 advanced the hypothesis that the hippocampus and the structures closely connected with it, such as the cingulate gyrus, orbital surface of the frontal lobes, and temporal cortex, and the association fibre tracts act as a neuronal substrate for emotions. Since then neuroanatomists and neurosurgeons have concentrated on this area.

Le Gros Clark1–3 showed how the prefrontal lobes are connected with the thalamus and the hypothalamus by so many fibres passing in both directions that this entire system may be considered as functioning as an integrated whole. . . . The activities of the nervous complex consisting of prefrontal lobes, thalamus and hypothalamus are correlated with some of the higher intellectual activities, the personality, emotional affects and forms of be-
haviour of social significance. Fulton and his co-workers\(^6\)–\(^8\) divided the forepart of the brain into two major divisions: (1) The “visceral brain,” which includes midline structures, and corresponds roughly to Papez’s neuronal substrate for emotions; and (2) the so-called “neocortex,” which occupies the lateral surface of the cerebral hemispheres and is most prominently developed in man. The visceral brain, which operates through the hypothalamus, is concerned with the integration of emotional responses, whereas the neocortex of the lateral surface is concerned with the integration of learning and the more highly intellectual functions. This “visceral brain” is the present-day target in psychosurgical operations.

There is an area of forebrain (Brodmann’s Area 32) that does not belong to the visceral brain, but it is unavoidably destroyed by lobotomy. This mysterious area is subjected to intensive suppressor influences. Meyer and McLardy\(^9\) have referred to it as a nodal point of considerable physiological activity between cortex and subcortical basal ganglia. That it has some concern with cortical activities underlying rather complex psychological processes is suggested by the few observations that have so far been made on the clinical effects of interference with some parts of the hippocampal circuit.

The writer is of the opinion that the destruction of Area 32 is contributory to a successful result. Cingulo-tractotomy passes through Brodmann’s Areas 8 or 9, deliberately destroys Area 32 and partly destroys Areas 24 and 11. It also interrupts most of the projections of the visceral brain (Fig. 1).