ORBITOFRONTAL LOBOTOMY
WITH REFERENCE TO EFFECTS ON 55 PSYCHOTIC PATIENTS*

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The undesirable effects of the standard frontal lobotomy operation are well known. They include changes of personality in respect of loss of social consciousness, ambition, imagination, and foresight, and a fairly low percentage of postoperative complications, including hemorrhage, infection, epilepsy and urinary incontinence.

Such therapy for certain abnormal mental states was introduced by Moniz[16] in Lisbon in 1935, by Freeman and Watts[9] in America in 1936, and modified by Lylerly,[14] McKiSSock,[15] and Poppen.[19] In attempts to improve these procedures, others have been substituted and include:


Our investigations concern selective frontal lobotomy of the orbitofrontal area in 55 chronically institutionalized mental patients, beginning on October 9, 1947. Orbitofrontal lobotomy was decided upon instead of the standard procedure for the following reasons: (1) to attempt to reduce the degree of blunting of the personality, and complications that follow the standard frontal lobotomy, (2) encouragement from the unconfirmed reports of Hofstatter and associates[12] in 1945, and (3) anatomic and physiologic evidence of concentration of frontothalamic projections in the orbitofrontal areas.

ANATOMICAL CONSIDERATIONS

One of the 3 primary divisions of the portion of the frontal lobes lying rostral to the precentral motor cortex (frontal, orbital, anterior cingulate), or subcortical connections of these divisions (dorsomedial and anterior

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nuclei of the thalamus and certain hypothalamic nuclei) are the areas of present-day psychosurgery. The major fronto-subcortical pathways affected by these procedures are diagrammed in Fig. 1.

Le Gros Clark\(^2\) considers the dorsomedial nucleus of the thalamus as the primary relay station between the frontal lobes and the hypothalamus. It occupies the center of the thalamus and shows a point-to-point organization in its projection to circumscribed areas of the frontal cortex (Walker\(^27\)). Thus, the main part of the nucleus (pars parvicellularis) projects as follows: (1) central part to frontal areas 9 and 10, (2) medial part to frontal areas 11 and 47, (3) dorsolateral part to frontal area 45 and (4) ventrolateral part to frontal area 8. The magnocellular part of the dorsomedial nucleus pro-

![Diagram of brain showing major fronto-subcortical pathways](image)

Fig. 1. Major fronto-subcortical pathways (Brodmann's cortical areas, orbital surface modified by Walker, redrawn from Le Gros Clark).

D.M. = Dorsomedial nucleus
A. = Anterior nucleus
MAM.B. = Mammillary body
V. = Bundle of Vieq d'Azyr
P. = Periventricular system,

hypothalamus to D.M.

jects to orbital gyri (areas 13 and 14), and also receives connections from different parts of the hypothalamus (Le Gros Clark and Boggon\(^3\)).

The anterior nucleus of the thalamus serves as a way-station between the hypothalamus and forebrain, receives projections from the mammillary bodies and hippocampal area, and projects to the anterior cingulate region (Area 24). Area 24, in turn, projects to the caudate nucleus and is an important frontal suppressor area (Fulton\(^1\)).

Direct frontohypothalamic connections have been demonstrated by Ward and McCulloch\(^28\) by strychninizing the orbital surface, and also by histologic methods (Le Gros Clark and Meyer,\(^4\) von Bonin and Green,\(^26\) Beck, Meyer and Le Beau\(^1\)).