

Frontal Lobotomy in Early Schizophrenia Long Follow-up in 415 Cases

By WALTER FREEMAN

This is a report on 415 private patients who have been followed from four up to more than thirty years or until death. The operations were carried out before the end of twelve months of psychiatric hospitalization, not necessarily continuous. Many of the patients were operated upon more than once, especially in the earlier years before the importance of the orbitomedial quadrants of the brain was recognized.

I have continued in contact with the patients or their relatives, doctors or hospitals in about 95 per cent of cases. This has been accomplished by means of annual Christmas greetings, as well as by numerous trips around the United States, Canada and Mexico visiting patients in their homes or by telephone, keeping abreast with changes of name through marriage and more particularly with changes of address. On these visits I have often added names of relatives and physicians to whom I could write in case my greetings were returned by the post office as undeliverable. The follow-up has been a rewarding experience. There is no more grateful patient or family than one in which psychosurgery has apparently arrested the downward course of schizophrenia. There are instances of dissatisfaction, of course, and in some cases I have been met with refusal of all information, or even denial that an operation had ever been performed, but these are rare.

For comparison with the 415 early schizophrenics, I also have data on patients who were operated upon after longer periods of hospitalization. These number about 300, all private patients, who received the same after-care that the early ones experienced. There is a definite falling off of results of effective living in patients who have become

desocialized by prolonged hospitalization, aside from the progressive deterioration that accompanies the malady itself. Nevertheless there are occasional instances in which patients who have spent up to twenty years in hospitals have been restored to gainful employment or adequate performance of household duties.

THE OPERATIONS

Watts and I started our program of prefrontal lobotomy in September 1936, a few months after the appearance of Egas Moniz' monograph (6). We soon recognized that the original 'core' method of Moniz was inadequate, yet when we placed the lesions more deeply into the frontal lobes there were complications and some fatalities. We devised new instruments for severing connections in the frontal lobes, and also injected a contrast material into the incisions to show where the surgeon had made his cuts. We endeavoured to find the best plane of section that would give the patient relief from his emotional turmoil while at the same time leaving him with enough frontal connections to restore him to useful activity. In patients who came to autopsy after operation we studied the brains in order to determine both the location of the incisions and the retrograde degeneration in the thalamic nuclei. These studies showed the limits behind which we dared not trespass, and also the futility of operating too far forward. We stated that an inadequate operation was useless, while too extensive operation was ruinous. Superior quadrant incisions were ineffective. We reported these studies in two monographs published in 1942 and 1950 (4).

In spite of the precision achieved in the placement of the surgical lesions in the three grades of lobotomy, minimal, standard and

radical, I became dissatisfied with the clinical end-results, and in 1946, after operations on the cadaver, applied the transorbital method described by Fiamberti (2). This simplified approach to the basal portions of the frontal lobes permitted the patient to leave the hospital within a day or two, with no wounds to dress and a minimum of complications both surgical and social. Performed during the stage of coma after electroconvulsive shock it proved to be the ideal operation for use in crowded state mental hospitals with a shortage of everything except patients. However, that will be part of another study.

This method proved unacceptable to my surgical colleagues for the most part, though they were impressed by the accuracy and symmetry of the lesions. Watts and I parted company, and I proceeded on my own. After some two years of work with Fiamberti's method I added (3) the deep frontal cut, by elevating the handles of the instruments with the orbital roof as a fulcrum, and thus severed portions of the frontal radiation into the orbitomedial regions. This development proved slightly more dangerous in terms of fractures of the orbit leading into the paranasal sinuses, and on rare occasions into the optic foramen. Observations on a fairly large number of patients in whom the repeated operations were performed revealed the value of these incisions into the basal regions. At the same time the anatomical problem was complicated, since in patients dying long after transorbital lobotomy I was unable to find any retrograde degeneration in the medial dorsal nucleus of the thalamus, or any other place at a distance from the incisions. The hypothesis suggested by Watts and me that relief from emotional distress was due to retrograde degeneration in the thalamus, such as was observed regularly in the major operation, had to be revised. The most tenable theory would seem to be that the fibres severed in transorbital lobotomy are collaterals of the thalamofrontal projection. It would further seem that these collaterals are highly unstable and thus unimportant in mental health, but that during the course of a functional mental disorder they become stabilized in their synaptic connections and thus

serve to perpetuate the stereotyped thinking disorder and emotional reactions that underlie the psychosis. Thus *the original hypothesis of Egas Moniz appears more probable than ever*. In any event, the psychological tests given to patients after transorbital lobotomy did not reveal any impairment in intellectual capacity. Even the refined tests for self-scrutiny developed by Mary Frances Robinson (7) showed the patients well endowed with insight.

RESULTS

Pending more elaborate computerized study of all the 3,500 lobotomized patients, private and state hospital, pre-frontal and transorbital, that I have been personally concerned with, I limit this report to a group of 415 private patients with a schizophrenic reaction treated by frontal lobotomy and followed for an average of 14.3 years.

There were 8 operative deaths and 43 later ones. Two patients operated upon the same day in 1936 by the original Moniz method committed suicide 4 and 22 years later respectively. The only known suicide after that occurred in 1956, two years after failure of a second transorbital lobotomy. This may even have been unintentional, since the patient repeatedly sold her blood to pay for her barbiturate addiction. There may have been others among the 15 patients who were lost to follow-up after less than four years, but suicide of schizophrenics after frontal lobotomy appears to be rare.

Among the patients who survived operation, social adjustment varies from continuous hospitalization for more than 30 years to superior achievement. Examples:

1. A physician who had been discharged from two internships because of aggressive paranoid behaviour completed an internship, served as liaison officer among several military hospitals in Germany for three years, married and fathered two children. He established a ten man medical clinic and flies his own plane.

2. A psychiatrist with a drive toward homicide or suicide returned to his post in a state hospital four months after operation, was promoted to chief of service, gave lectures on mental hygiene in the community, established

an after-care clinic, and after a few years went into private practice.

3. An office worker served as a missionary in Singapore for two years and returned to a responsible position in her church. Unfortunately, she later developed diabetes and went blind before her death.

4. A musician played second violin for several years in a metropolitan symphony orchestra until disabled for this activity by bursitis, and for the past 11 years has held a clerical position.

5. A college graduate working as a clerk 20 years ago is now chief construction engineer in a major industrial corporation, married and a father.

The following Tables show the level of social achievement of the 415 patients. They are constructed on the basis of patient-years at each of three levels. This figure is derived from the level which each patient showed on each anniversary of the first lobotomy. Individual patients may change their level of adjustment from one year to the next for a number of reasons, as previously indicated.

'Employed' indicates not only gainful work but also part-time work outside the home, such as Goodwill or Salvation Army, helping in the family business or continuing education. 'Keeping house' includes living in an apartment where the patient does a modest amount of housework or in a home where the actual work is performed under her direction by domestic employees. 'Home' indicates a state of idle dependency and includes residence in a nursing

TABLE I
Level of social achievement in 415 schizophrenic patients undergoing frontal lobotomy before the end of twelve months of psychiatric hospitalization. Expressed in terms of patient-years.

	Pre-frontal lobotomy		Transorbital lobotomy	
	N-97 Patient-years	%	N-318 Patient-years	%
Employed or keeping house ..	906	45	2363	65
Home ..	569	28	826	22
Hospital ..	552	27	471	13
Total ..	2027	100	3660	100

home, county home, foster home, or similar protected environment. 'Hospital' refers mostly to state or private psychiatric hospitals, and in a few cases to prison, corrective institution or training school.

Results in the 415 early schizophrenics are expressed in terms of the number of years that are spent in these three grades of social adjustment: employed or keeping house, home, hospital. These levels of achievement are divided according to the type of lobotomy to which they were subjected, prefrontal or transorbital. The major operations to which the patients were subjected in the earlier periods of this work were carried out seeking the optimal plane of section, and hence are less favourable than the later experience

TABLE II

Level of social achievement in 707 schizophrenic patients undergoing frontal Lobotomy (both prefrontal and transorbital) after various periods of psychiatric hospitalization. Percentage of time after operation at each level of adjustment

	Duration of preoperative hospitalization					
	Less than 1 year	1-2 years	2-4 years	4-7 years	7-10 years	Over 10 years
	N-415 %	N-75 %	N-116 %	N-54 %	N-29 %	N-18 %
Employed or keeping house	57.4	31.4	35.1	23.8	22.8	17.0
Home	24.5	42.5	34.9	34.7	39.5	48.2
Hospital	18.2	25.1	30.0	41.5	37.7	31.8

with the transorbital approach. Table I expresses the time spent by these patients at the various levels of social achievement. There is a well-marked difference between the long-range results of the two types of operation, in favour of the transorbital.

Table II is presented for comparison, showing percentage-wise fairly steady falling off of social achievement at the level of employment or housekeeping, as well as a steadier rise in hospitalization.

The relatively steady state of patients able to be home even after long periods of hospitalization is due primarily to the ability and desire of the families to provide the patients with the necessities and some of the amenities of home life; but also to the preponderance of major prefrontal lobotomy in the patients who had been hospitalized for many years. While these patients were not productive, at least they no longer required hospitalization. A notable example was that of a teacher who developed paranoid schizophrenia at the age of 38, was hospitalized for 20 years, and underwent prefrontal lobotomy after her unmarried brother retired from the Army. After that, for nearly 20 years, she lived quietly at home until her death from diabetes in 1965.

Some patients are living in hotels, boarding homes and convalescent homes. The increase in foster homes and half-way houses has allowed many others to live apart from possibly disturbing families. Furthermore, in recent years the tranquilizing drugs are a great aid

in controlling the annoying or even dangerous outbursts that formerly made hospitalization imperative. It would seem that lobotomy, rather than being a final heroic remedy, marks the turning point in effective therapy. At the same time it seems evident from the figures given in the Tables that frontal lobotomy is more successful in early cases of schizophrenia. In the chronic cases it has limited value. In a dangerous disease such as schizophrenia it may prove safer to operate than to wait.

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