

PSYCHOSURGERY



COURSE: CLINICAL ASSESSMENT AND INTERVENTION

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PSYCHOSURGERY

Definition

Psychosurgery is defined (by APA's Task Force) as, a surgical intervention, to sever fibres connecting one part of brain with another, or to remove, destroy or stimulate brain tissue, with the intent of modifying behaviour, thought or mood disturbances, for which there is no underlying organic pathology (i.e. the disturbance is 'functional').

Brief History

Although surgery on skull (such as trephining) was done for mental illnesses even in 'primitive' times, psychosurgery was introduced as *leucotomy* by Egas Moniz and Almenda Lima in 1936. Egaz Moniz later even received a Noble prize. Freeman and Watts later introduced *prefrontal lobotomy* in 1937, while in India, Govindaswami and Rao performed the first leucotomies in 1944.

Psychosurgery came in for a severe public criticism in the 1950s when its use decreased substantially. In the last few decades, several better methods of treatment have been developed which are safer and more specific. In addition, careful guidelines for the use of psychosurgery have also been laid down.

Anatomical Basis

It is believed that limbic system is closely linked with normal and abnormal emotional reactions. The limbic system consists mainly of cingulum (cingulate gyrus and cingulate bundle), hippocampus, parahippocampal gyri, fornix, amygdala, parts of thalamus, parts of hypothalamus and posterior part of orbital frontal cortex. The limbic system is closely connected with the frontal and temporal lobes, midbrain and other parts of brain, by many connecting fibres. The aim of psychosurgery is to produce surgical lesions in carefully selected parts of limbic system and/or its connecting fibres. One major part of limbic system, believed to be important in emotional experiences, is *Papez circuit*. This important circuit, which lies within the limbic anterior thalamus, mammillary bodies, fornix and Septum.

Indications

The current indications for psychosurgery include the following:

1. Chronic, severe, incapacitating depression, which has not responded to all available treatments.
2. Chronic, severe, incapacitating obsessive-compulsive disorder (OCD), which has not responded to all available treatments.
3. Chronic, severe, incapacitating anxiety disorder, which has not responded to all available treatments.
4. Schizophrenia with severe depressive component, which has not responded to all available treatments.
5. Severe, pathological and uncontrolled aggressive behaviour associated with a psychiatric or neurological illness (e.g. temporal lobe epilepsy).

It is believed that the maximum improvement occurs in distress, tension, anxiety and agitation rather than in other symptoms. An intact, well maintained premorbid personality is a good prognostic.

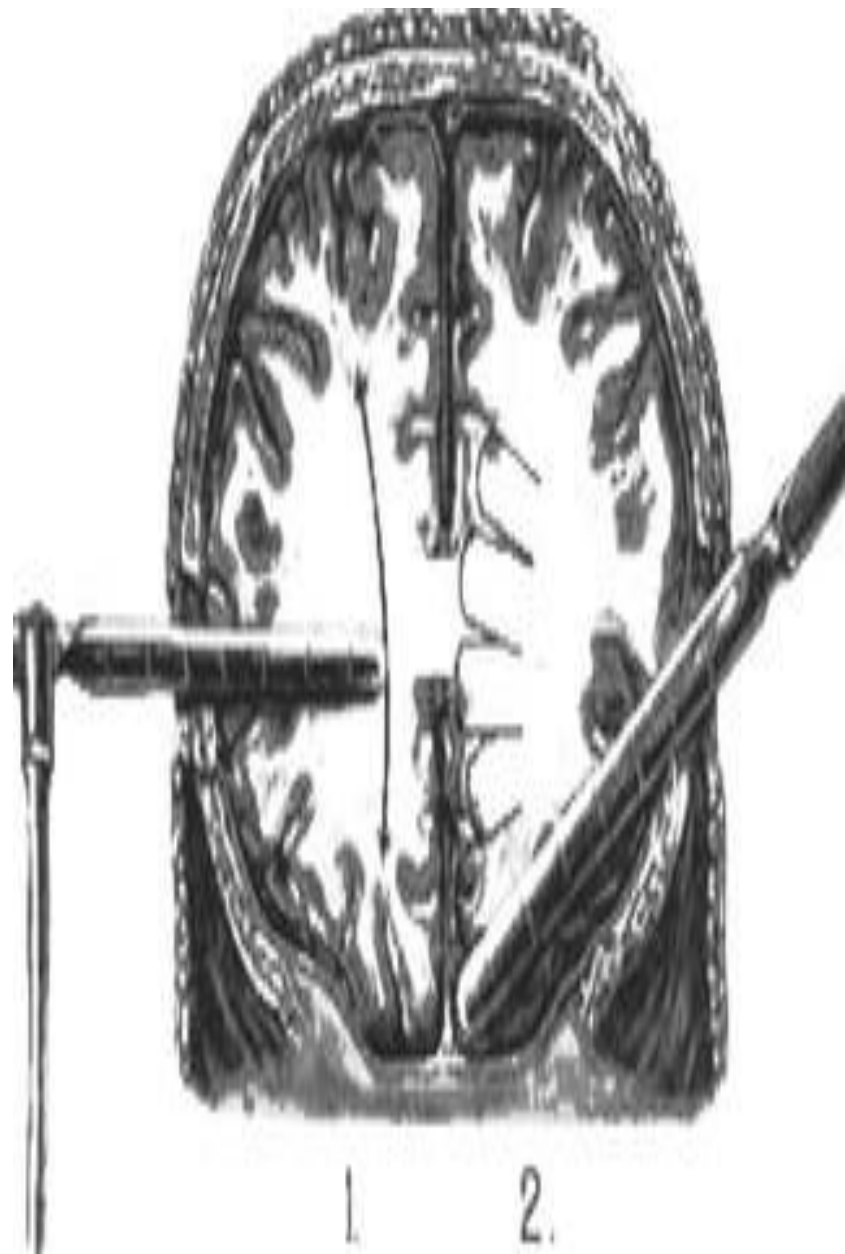
Techniques

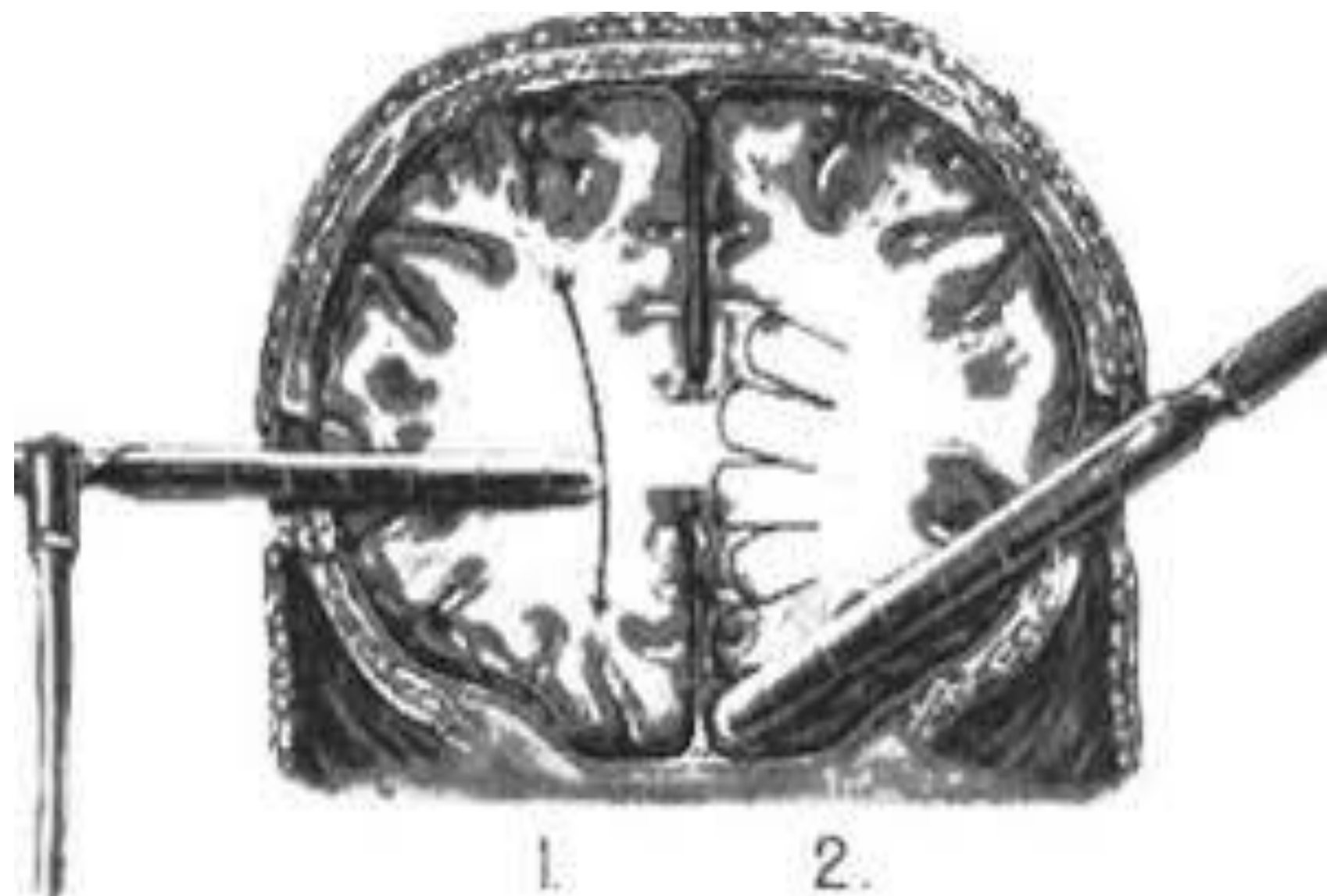
Before any procedure, an *informed consent* must be obtained by the neurosurgeon and the treating team.

Currently, all techniques use *stereotactic methods* so that the lesion made is precise and side effects produced are few. The available procedures include bimedial leucotomy, orbital undercutting, rostral leucotomy, prefrontal leucotomy, anterior or posterior cingulotomy and stereotactic tractotomy. The lesion is produced by electrocoagulation, freezing, thermocoagulation, ultrasonic method, Yttrium-90 seeds, or laser.

The currently employed procedures include:

1. **Stereotactic Subcaudate Tractotomy**: A large subcaudate lesion is produced. It is recommended for severe depression, severe anxiety, severe obsessive-compulsive disorder and schizoaffective disorder.
2. **Stereotactic Limbic Leucotomy**: A small subcaudate lesion is made, in addition to a lesion in cingulate bundle. It is used for treatment of intractable obsessive-compulsive disorder and schizophrenia.
3. **Amygdalotomy**: This is used for severe, pathological, uncontrolled and intractable aggression associated with neuropsychiatric disorders.





Side Effects

With the use of stereotactic procedures, side effects are very rare. These include a less than 1% risk of seizures, a very uncommon risk of personality change (which used to be frequent with earlier procedures) and a 1:1,000 to 1:10,000 mortality risk.

Comments

It must be remembered that at present, psychosurgery is an extremely uncommon procedure in the routine psychiatric practice in India and most of the world. Most psychiatrists would have never referred any patient for the procedure.

THANK YOU