Psychosurgery

Psychosurgery is a medical technique that can be used to treat the symptoms of psychological disorders. The technique is the most invasive of all the biological therapies and is also the least used because its effects are irreversible. For many centuries a crude psychosurgical technique called *trepanning* was used to try and help patients suffering from mental illnesses such as schizophrenia. Trepanning involved making a hole in a person’s skull in order to release the evil spirits that were considered to be causing the mental illness. Naturally this practice was very dangerous and often caused the death of the people undergoing the procedure.

In the 1930s a Portuguese neurologist called Moniz developed the use of the psychosurgical technique known as the *prefrontal leucotomy* which was designed to treat people suffering from schizophrenia. This involved drilling holes in the skull and inserting an extendable wire into the brain. By rotating the wire in key places, the brain fibres that connected frontal and posterior areas of the brain could be severed. An alternative to this procedure was developed by Freeman and Watts in the 1940s and this was known as the *transorbital or prefrontal lobotomy*. In a lobotomy a sharp instrument is inserted into the eye socket and again severs connections between frontal and posterior brain areas.

Leucotomies and lobotomies were designed to calm down agitated patients suffering from schizophrenia. In this respect, the surgery was successful because patients did indeed become calmer. However, they were so calm that their behaviour was often apathetic and listless. In addition, the surgery caused deficits in intellectual functioning and planning behaviour. Nevertheless, despite these extreme side-effects, this type of psychosurgery was widely used between the 1930s and 1950s. Indeed, its use was expanded to help treat patients suffering from depression and patients suffering from personality disorders. By the 1950s, however, the procedure started to be used less and less and this occurred for various reasons. One reason was that concern started to grow about its unethical nature especially as there could be serious side-effects such as brain seizures and even death. Another reason for its demise was the development of specialised drugs to treat psychological illnesses.

Despite the concerns raised about leucotomies and lobotomies, alternative psychosurgical techniques still have a role to play in treating psychological illnesses. Since the 1950s advances have been made both in surgery and in localisation of brain function hence modern procedures are considered to be safer. One modern procedure is *stereotactic neurosurgery* whereby computer-generated images are produced prior to a brain operation. This enables surgeons to operate on small brain areas in precise locations. A small hole is drilled in the skull and the relevant brain tissue is destroyed by an electrode with a small electrical current. An alternative form of neurosurgery is *radiosurgery*. Here, a stereotactic image of the area to be operated upon is generated and weak radiation is directed from various angles into the key area. At the point of
contact the weak rays combine to destroy the brain tissue whilst leaving surrounding tissue intact.

It is important to remember that psychosurgery is used in modern medicine as a last resort in treating psychological illness. In addition, legislation in England and Wales states that it can only be used if a patient gives their consent and if it will be of benefit to the patient. One type of psychosurgery called a cingulotomy can be used as a last resort treatment for patients suffering from severe obsessive-compulsive disorders (OCDs). The surgery involves the removal of the cingulate gyrus, a structure in the lower part of the brain. However, this procedure has a limited success rate. For example, a study by Dougherty et al. (2002) showed that the surgery was beneficial for less than half of patients with OCDs.