

What are the brain surgery and medical device options for OCD?

These treatments include surgeries that destroy very small amounts of brain tissue and deep brain stimulation (also called DBS.)

Who might benefit from these treatments?

These interventions are only for individuals who do not respond well to behavior therapy or medicines for OCD.

What kinds of brain surgery are there?

- **Anterior cingulotomy** – This is a brain surgery that involves drilling through the skull and using a heated probe to burn an area within a part of the brain called the anterior cingulate cortex. About 50% of those who did not respond to behavior therapy or medicines for OCD got some benefit from the procedure.
- **Anterior capsulotomy** - This procedure is very similar to the surgery listed above. However, in this surgery, doctors operate on a different part of the brain, called the anterior limb of the internal capsule. About 50-60% of those who did not respond to behavior therapy or medicines for OCD got some benefit from the procedure.
- **Gamma Knife** - This procedure does not require opening the skull. In gamma knife procedures, multiple gamma rays pass through the skull. On its own, a single gamma ray poses no danger to brain tissue. However, when gamma rays intersect, the energy level is high enough to destroy the targeted brain tissue. The most recent version of this procedure is called gamma ventral capsulotomy. This is because the procedure is limited to the ventral (bottom) half of a brain area called the anterior capsule. About 60% of those who did not respond to behavior therapy or medicines for OCD got some benefit from the procedure.

What is deep brain stimulation (DBS)?

- DBS has been used since the mid 1980s to treat the symptoms of movement disorders such as Parkinson's disease.
- DBS involves placing electrodes in targeted areas of the brain. Once the electrodes are in place, they are connected by wires under the skin to pulse generators under the skin (usually just below the collarbone).
- The pulse generator, sometimes called an “implantable neurostimulator,” contains a battery for power and a microchip to control the stimulation. A doctor uses a hand-held wand and small computer to control the pulse generator through the skin.
- These pulse generators are similar to pacemakers. The biggest difference is that in DBS the electrodes are in the brain instead of in the heart.



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Does DBS work?

- In the late 1990's, based on positive research results in anterior capsulotomies, DBS researchers first implanted electrodes in the anterior capsule of treatment-resistant OCD patients. The early results were promising. Three of the first four patients experienced benefit. Since then, larger trials have been done and the target area of the brain has moved slightly to an overlapping part of the brain called the ventral capsule/ventral striatum (VC/VS).
- A worldwide study found that out of 26 patients with treatment-resistant OCD, 61.5% responded positively to DBS. This response rate is similar to the other surgeries described above. However, comparisons must be tentative since the number of patients treated with DBS is still relatively small.

What are the benefits of DBS compared to other surgeries?

- DBS requires opening the skull, but it does not require destroying any brain tissue.
- In the other surgeries listed above, there is a fixed amount of brain tissue that is destroyed. DBS allows for different amounts of electrical charge, giving the doctors a wider range of treatment.

Has DBS been approved for use in OCD?

- The FDA recently approved DBS for treatment-resistant OCD under a Humanitarian Device Exemption (HDE). The HDE approval assumes a relatively small number of patients will receive the treatment.
- The placement of the electrodes and the decision about how much stimulation is given is crucial. Because DBS for treatment-resistant OCD is a very specialized procedure, it is recommended that treatment be given at institutions that have previous DBS experience.

Who is eligible for DBS?

Patients eligible for DBS will have had very little or no response to all currently available medicines and behavioral treatments for OCD.

How long does DBS need to continue?

At this point it appears that DBS needs to continue indefinitely for continued benefit. It is crucial that a psychiatrist with expertise in DBS be directly involved in a patient's care over the months and years following surgery.

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