Anthem

Clinical UM Guideline

Subject: Stereotactic Radiofrequency Pallidotomy
Guideline #: CG-SURG-108
Status: Reviewed

Publish Date: 04/10/2024
Last Review Date: 02/15/2024

Description

This document addresses the use of stereotactic radiofrequency pallidotomy for the treatment of Parkinson's disease and other conditions. Stereotactic radiofrequency pallidotomy is a surgical procedure that uses stereotactic (3-D) imaging procedures to identify the target globus pallidus followed by surgical placement of radiofrequency emitting needles to create thermal lesions proposed to relieve the symptoms of Parkinson's disease and other conditions.

Note: Please see the following for related topics:

- SURG.00026 Deep Brain, Cortical, and Cerebellar Stimulation

Clinical Indications

Medically Necessary:

Unilateral stereotactic radiofrequency pallidotomy with microelectrode mapping is considered **medically necessary** for individuals who meet **all** of the following criteria:

A. Diagnosis of idiopathic Parkinson's disease (secondary causes of parkinsonism [for example, drug-induced, vascular] or atypical parkinsonian disorders [for example, multiple system atrophy] have been ruled out as a cause for symptoms); **and**
B. Presence of severe levodopa-induced dyskinesia or disease characterized by severe bradykinesia, dystonia, or akinesia/rigidity, or by marked 'on-off' fluctuations; **and**
C. No history of encephalitis or neuroleptic treatment; **and**
D. No evidence of dementia or focal brain abnormality on magnetic resonance imaging (MRI); **and**
E. Absence of medical conditions that might increase risk of hemorrhage (for example, poorly controlled hypertension); **and**
F. No medical, neurological, or orthopedic disorder that might compromise assessment (for example, cerebrovascular disease, metabolic disorders, spinal stenosis).

Not Medically Necessary:

Unilateral stereotactic radiofrequency pallidotomy with microelectrode mapping is considered **not medically necessary** when the criteria above are not met.

Bilateral stereotactic radiofrequency pallidotomy is considered **not medically necessary** for all indications.

The use of unilateral stereotactic radiofrequency pallidotomy is considered **not medically necessary** for all indications not addressed above.

Coding

The following codes for treatments and procedures applicable to this guideline are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

When services may be Medically Necessary when criteria are met:

CPT	
61720	Creation of lesion by stereotactic method, including burr hole(s) and localizing and recording techniques, single or multiple stages; globus pallidus or thalamus [stereotactic pallidotomy]
ICD-10 Procedure	
	For the following codes when specified as stereotactic radiofrequency pallidotomy:
00580ZZ	Destruction of basal ganglia, open approach
00583ZZ	Destruction of basal ganglia, percutaneous approach
00584ZZ	Destruction of basal ganglia, percutaneous endoscopic approach
ICD-10 Diagnosis	
G20.A1-G20.C	Parkinson's disease (primary and idiopathic)

When services are Not Medically Necessary:
For the procedure and diagnosis codes listed above when criteria are not met or for all other diagnoses not listed; or when the code describes a procedure or situation designated in the Clinical Indications section as not medically necessary.

Discussion/General Information

Description of Parkinson's Disease

Parkinson's disease (PD) is a progressive, incurable disease caused by the slow continuous loss of nerve cells in a part of the brain that controls muscle movement. Common symptoms of the disease include tremors or involuntary movement in the jaw and extremities, slowed movement, muscle stiffness, gradual loss of voluntary movement, gradual loss of automatic movement, postural instability and depression. It is estimated that over a half million people in the U.S. are affected, and approximately 50,000 new cases are diagnosed annually. PD is primarily an age-related disease, with average age of onset being about 60 years of age, but

development of PD in people as young as 20 has been reported. The exact cause of PD is not known, but there is some evidence that there may be an inheritable component to the disease.

There is no known cure for PD. Primary management of the disease is through pharmacological therapy with one or several drugs to relieve the symptoms of the disease. No drug has been shown to effectively slow the progression of the disease. As PD progresses pharmacotherapy becomes less and less effective in managing the symptoms of the disease. When an individual's symptoms are inadequately controlled for a period of 3 months, the individual's disease may be considered medically unresponsive and surgical therapy may be considered.

Description of Stereotactic Radiofrequency Pallidotomy

Stereotactic radiofrequency pallidotomy involves placing thermal lesions in the globus pallidus, a part of the brain that is responsible for the symptoms of PD. For this procedure the individual's head is placed into a stereotactic frame, which is anchored to the individual's skull through the skin with four pins. This frame ensures accurate location of the target internal brain structures with magnetic resonance imaging (MRI) and special computerized mapping techniques. These computer programs also assist in planning the surgical approach. During the surgery, a small hole is made in the individual's skull through which the surgeon uses a special electrode to precisely map the location of the globus pallidus. When mapping is complete, the electrode is removed and replaced with a needle that produces the radiofrequency thermal lesions.

Scientific evidence

Results of small, randomized trials and cohort studies have reported that unilateral stereotactic radiofrequency pallidotomy with microelectrode mapping as a method of managing symptoms of advanced PD refractory to pharmacological management results in an improvement in net health outcomes (deBie, 1999, 2001; Green, 2002; Masterman, 1998; Vitek, 2003). In these studies, unilateral stereotactic radiofrequency pallidotomy provided significant improvements in dyskinesia, bradykinesia, and other symptoms of PD. The procedure is contraindicated in individuals with several comorbidities, including specific central nervous system disorders and coagulopathies, which may compromise the proper assessment of the individual or the success of the surgical procedure.

A 1999 technology assessment issued by the American Academy of Neurology (AAN) offered the following recommendation (Hallett, 1999): "Unilateral pallidotomy is indicated for advanced PD with motor fluctuations and drug-induced involuntary movements (dyskinesias) along with significant bradykinesia and rigidity, with or without tremor."

Although there was initial interest in bilateral stereotactic radiofrequency pallidotomy, this procedure has been abandoned due to severe motor and psychiatric complications (Merello, 2001). The AAN assessment also noted that bilateral pallidotomy is associated with a higher incidence of neurologic adverse effects, particularly speech complications.

Deep brain stimulation using implanted electrodes is another treatment of advanced PD. This treatment may be preferred by physicians and individuals due to its reversible nature and the ability to provide bilateral stimulation. One small randomized trial comparing unilateral pallidotomy with bilateral deep brain stimulation suggests that the latter treatment is more effective in reducing symptoms compared to pallidotomy (Esselink, 2004). For these reasons, the use of unilateral pallidotomy has declined over the past several years in favor of deep brain stimulation. The declining role of pallidotomy is reflected in 2006 practice parameters issued by the American Academy of Neurology regarding the treatment of Parkinson's disease (Pahwa, 2006). These guidelines do not address pallidotomy.

Definitions

Akinesia: Difficulty *beginning* or *maintaining* a body motion.

Bradykinesia: An abnormal slowness of movement, sluggishness of physical and mental responses.

Dementia: A mental disorder characterized by a general loss of intellectual abilities, involving impairment of memory, judgment, and abstract thinking, as well as changes in personality.

Dyskinesia: Impairment of voluntary movement, resulting in fragmentary or incomplete movements.

Dystonia: A neurological movement disorder characterized by involuntary muscle contractions, which force certain parts of the body into abnormal, sometimes painful, movements or postures.

Encephalitis: Inflammation of the brain that may be due to a wide variety of causes.

Levodopa: A drug commonly used to treat the symptoms of Parkinson's disease.

References

Peer Reviewed Publications:

1. deBie RM, de Haan RJ, Nijssen PC, et al. Unilateral pallidotomy in Parkinson's disease: a randomised, single-blind, multicentre trial. Lancet. 1999; 354(9191):1665-1669.
2. deBie RM, Schuurman PR, Bosch DA, et al. Outcome of unilateral pallidotomy in advanced Parkinson's disease: cohort study of 32 patients. J Neurol Neurosurg Psychiatry. 2001; 71(3):375-382.
3. Esselink RA, de Bie RM, de Haan RJ, et al. Long-term superiority of subthalamic nucleus stimulation over pallidotomy in Parkinson disease. Neurology. 2009; 73(2):151-153.
4. Esselink RA, de Bie RM, de Haan RJ, et al. Unilateral pallidotomy versus bilateral subthalamic nucleus stimulation in PD: a randomized trial. Neurology. 2004; 62(2):201-207.
5. Green J, McDonald WM, Vitek JL, et al. Neuropsychological and psychiatric sequelae of pallidotomy for PD: clinical trial findings. Neurology. 2002; 58(6):858-865.
6. Hallett M, Litvan I. Task Force on Surgery for Parkinson's Disease. Evaluation of surgery for Parkinson's disease: a report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. Neurology. 1999; 53(9):1910-1921.
7. Masterman D, DeSalles A, Baloh RW, et al. Motor, cognitive, and behavioral performance following unilateral ventroposterior pallidotomy for Parkinson disease. Arch Neurol. 1998; 55(9):1201-1208.
8. Merello M, Starkstein S, Nouzeilles MI, et al. Bilateral pallidotomy for treatment of Parkinson's disease induced corticobulbar syndrome and psychic akinesia avoidable by globus pallidus lesion combined with contralateral stimulation. J Neurol Neurosurg Psychiatry. 2001; 71(5):611-614.
9. Vitek JL, Bakay RA, Freeman A, et al. Randomized trial of pallidotomy versus medical therapy for Parkinson's disease. Ann Neurol. 2003; 53(5):558-569.

Websites for Additional Information

1. National Library of Medicine: Medical Encyclopedia. Parkinson disease. Available at:https://medlineplus.gov/ency/article/000755.htm. Accessed on November 20, 2023.

Index

Pallidotomy

The use of specific product names is illustrative only. It is not intended to be a recommendation of one product over another, and is not intended to represent a complete listing of all products available.

History

Status	Date	Action
Reviewed	02/15/2024	Medical Policy & Technology Assessment Committee (MPTAC) review. Revised Websites for Additional Information section.
	09/27/2023	Updated Coding section with 10/01/2023 ICD-10-CM changes; added G20.A1-G20.C replacing G20.
Revised	02/16/2023	MPTAC review. Revised MN statement to address secondary and other causes of parkinsonism. Added new MN criteria related to contraindications previously in the NMN statement. Updated Websites for Additional Information section. Updated Coding section; removed ICD-10-CM codes G21.0-G21.9, G24.01, T42.8X5S.
Reviewed	02/17/2022	MPTAC review. Updated Websites section.
Reviewed	02/11/2021	MPTAC review. Updated Discussion/General Information and Websites sections. Reformatted Coding section.
New	02/20/2020	MPTAC review. Initial document development. Moved content of SURG.00016 Stereotactic Radiofrequency Pallidotomy to new clinical utilization management guideline document with the same title.
