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### Stereotactic pallidotomy in Parkinson's disease

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# Chapter 8

Discussion:  
the place of stereotactic  
pallidotomy in the treatment  
of advanced Parkinson's  
disease



The main question of the thesis is: do patients with advanced Parkinson's disease benefit from stereotactic pallidotomy?

Concerning unilateral pallidotomy, the answer is yes. It can improve parkinsonism and patients' disability in the off phase, dyskinesias in the on phase, and patients' perceived quality of life. Unilateral pallidotomy should be confined to non-demented patients in at least the moderately advanced stages of Parkinson's disease, who have unsolvable complications with drug therapy and 'on' states in which they are mobile.

More research is needed to answer the question for bilateral pallidotomy. Bilateral pallidotomy reduces parkinsonism and dyskinesias, but its effectiveness is limited by the high complication rate. Ten out of 13 patients in our retrospective study (chapter 6) and 14 out of 20 patients yielded by the literature search (chapter 7A) experienced adverse effects. The most frequent adverse effects were impairments of speech and cognition.

A remaining question is the place of pallidotomy in advanced Parkinson's disease in view of the results of recent studies that investigated the effects of deep brain stimulation (DBS). Three randomised trials involving DBS in Parkinson's disease have been done. The first trial is a comparison between thalamotomy and DBS of the thalamus. The procedures were equally effective for drug resistant tremor, but DBS of the thalamus had fewer adverse effects and resulted in a greater improvement in function.<sup>1</sup> In the second trial the efficacy and safety of unilateral pallidotomy (n=7) and unilateral DBS of the globus pallidus (n=6) were compared.<sup>2</sup> The effects of both procedures were similar, however, the researchers themselves brought up the small number of patients and the short period of follow-up (3 months). The third trial is a comparison of bilateral DBS of the globus pallidus (n=4) and bilateral DBS of the subthalamic nucleus (n=5), in which both groups demonstrated a comparable response.<sup>3</sup> The authors mentioned that "a larger comparative study is needed to establish conclusively whether there is an important difference in efficacy between globus pallidus and subthalamic nucleus stimulation and to determine whether some symptoms respond better to stimulation of one target or another."

Even though a randomised controlled trial to corroborate the efficacy of bilateral DBS of the subthalamic nucleus has not been performed, the procedure is now widely applied.<sup>4,5</sup> Groups with the greatest experience in DBS have almost or completely abandoned the globus pallidus as a surgical target in favour of the subthalamic nucleus.<sup>6</sup> The main arguments in favour of subthalamic nucleus surgery have been — from uncontrolled studies — the striking effect on 'off' phase parkinsonism and the reduction of dopaminergic drug dosage.<sup>7,8</sup> It seems that other factors, like patient selection, adverse effects, the burden of a stimulation device, and the various surgical techniques to determine target

location, are left aside, although it is obvious that they influence the results of surgery. This highlights an important problem in the application of new surgical therapies: in contrast to the intensive assessment required before a new drug is established as sufficiently safe and efficacious for widespread use, no such standards exist for surgery.<sup>4</sup>

The only method to learn the place of various surgical interventions in the treatment of advanced Parkinson's disease is to compare them directly. Therefore, we want to emphasize the importance of critical assessment of the available data and the need for randomised, controlled clinical trials with change in functional abilities as outcome.

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