

Improved Utility of Neuroablation Over Deep Brain Stimulation in the Treatment of Obsessive Compulsive Disorder May Not Be Durable

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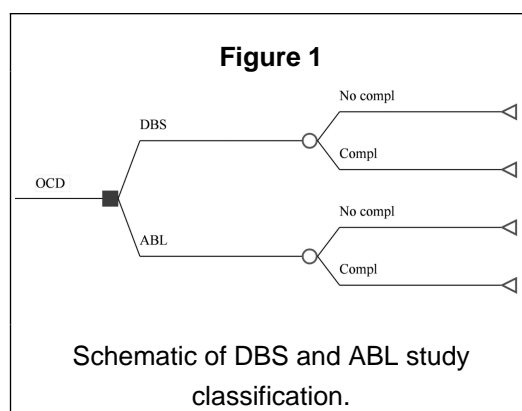


Introduction

While many patients suffering from obsessive compulsive disorder (OCD) respond to pharmacological therapies, the treatment of medically refractory OCD remains a major challenge for the field. Thus, there has been a concerted effort toward the development of surgical interventions for medically refractory OCD including deep brain stimulation (DBS) and neuroablation (ABL), including radiofrequency ablation and stereotactic radiosurgery. The purpose of this study was to provide robust comparison of DBS and ABL in both effectiveness and safety.

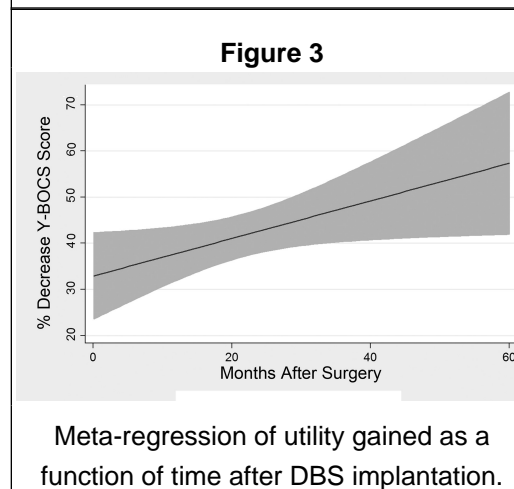
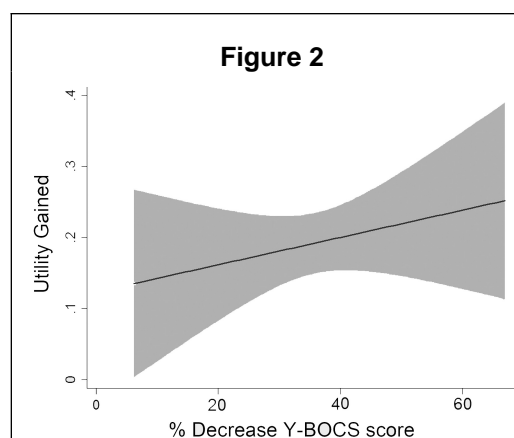
Methods

We created a decision analytical model to estimate and compare outcomes of DBS and ABL. The model projects the change in quality of life after surgery. We sought to evaluate the relative efficacy of DBS and ABL as measured by percent decrease in Yale-Brown Obsessive Compulsive Scale (Y-BOCS), calculated units of utility, and rate of complications across 51 studies, totaling 580 cases (245 DBS, 335 ABL) (Figure 1).



Results

Complications occurred in 61.9 (\pm 4.2)% of DBS cases, 43.6 (\pm 4.2)% of ABL cases ($p < 0.001$). Utility in a DBS subject with postoperative complications is 71.7 (\pm 4.3)% of one without complications versus 72.6 (\pm 4.0)% for ABL ($p=0.073$) (Figure 2). Pooled effectiveness for reducing Y-BOCS scores are 42.2 (\pm 15.3)% for DBS, 49.4 (\pm 24.1)% for ABL ($p = 0.231$). Meta-regression of percent improvement in Y-BOCS scores over time showed DBS appeared to improve with length of follow-up ($p = 0.029$). At 5 years, pooled improvement in Y-BOCS score exceeds 57% (Figure 3). In contrast, there was no significant change over the length of follow-up following ABL ($p = 0.980$). For both DBS and ABL, choice of target had no effect on percent reduction in Y-BOCS score.



Conclusions

This is the first systematic meta-analysis comparing efficacy, complications, and outcomes of DBS versus ABL for OCD. This analysis has revealed that ABL has clinically milder reported complications than DBS. In addition, the complication rate is lower than DBS. Thus, while ABL has greater utility than DBS in the immediate postoperative period, DBS has progressive improvement in effectiveness and utility with time. As result, there remains significant clinical role for both ABL and DBS in cases of medically-refractory OCD. However, the selection of technique must consider the potential long-term benefit against operative candidacy at the time of surgery.

References

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