

## Introduction

Deep brain stimulation (DBS) is an established therapeutic modality for movement disorders, however, complications related to the surgical technique and the implanted hardware do occur and must be minimized to optimize outcomes. Delayed erosion of the scalp overlying protruding DBS hardware is one such adverse event that universally requires surgical treatment and often necessitates explantation of the DBS system. In this study, we evaluated the incidence of delayed scalp erosion in a large single center series of DBS patients, and we propose a surgical strategy for avoiding this complication. We have modified our surgical technique to eliminate protrusion of DBS hardware, effectively preventing delayed erosions. This technique consists of drilling a recess around the burr hole to countersink the DBS cap, and drilling a groove in the parietal calvarium to countersink the connector.

## Methods

We performed a retrospective review of 1053 consecutive DBS lead implantations and 867 lead extension cable placements at a single center (UF) by a single surgeon (KDF) from 2002 to 2014. Patients were separated into countersunk and non-countersunk groups based on the surgical technique applied at the time of implantation. We routinely began countersinking the frontal cap in 2011 and the connector in 2013. Each patient had a follow-up time of at least 12 months.

## Results

No frontal scalp erosions developed at sites where the cap had been countersunk versus 11 erosions (1.4%) in the non-countersunk group. No parietal scalp erosions developed at site where the connector had been countersunk versus 12 erosions (1.5%) in the non-countersunk group.

## Conclusions

There was a statistically significant reduction in erosion of the frontal DBS cap with countersinking technique and a strong trend toward significant reduction in wound erosion of the lead extension connector. We propose that the countersinking technique should become standard of care due to decrease in wound erosions.

## Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the importance of DBS wound erosions, 2) Explain the value of countersinking in the reduction of DBS wound erosions