

# Anterior corpus callosotomy

LITT ablation of the [corpus callosum](#) is a safe, feasible, and minimally invasive treatment option for patients with [refractory epilepsy](#), and it may be an attractive alternative for patients unwilling or unable to undergo open surgery <sup>1)</sup>.

Division of the anterior two thirds of the [corpus callosum](#) (CC) minimizes the risk of [callosal disconnection syndrome](#).

May be advantageous over complete callosotomy (controversial).

Total section ([anterior commissure](#) to [posterior commissure](#)).

Extended callosal section should be considered a good palliative surgical option for suitable candidates. The increase in attention level was as useful as seizure control in improving quality of life of these patients <sup>2)</sup>.

## Case series

Twenty-nine pediatric patients with [drop attacks](#) were studied (19 males and 10 females; mean age: 9.9 years). As presurgical factors, the age at surgery, age at [seizure](#) onset, age at drop attack onset, sex, [hemiparesis](#), severe [mental retardation](#), electroencephalograph abnormalities, magnetic resonance imaging abnormalities, and [18F positron emission tomography](#) abnormalities were analyzed. All patients had multiple seizure types, including drop attacks, atypical absence seizures, complex partial seizures, tonic seizures, and generalized tonic-clonic seizures. All patients were developmentally impaired and had electroencephalograph results showing marked secondary bilateral synchrony. All patients received an extended, one-stage callosal section, leaving only the [splenium](#) intact. The mean follow-up time was 5.2 years. Seizure outcome (cessation of seizures or ≥ 90% seizure reduction) was achieved in 79.3% of patients with drop attacks. The families assessed the overall daily function as improved in 62.1% of the patients, unchanged in 24.1%, and worse in 13.8%. Family satisfaction with callosotomy was achieved in 82.8% of the patients. The majority of the patients had some degree of a transient acute postoperative disconnection syndrome that disappeared within 3 weeks. Postoperatively, patients showed a consistent increase in attention levels. Yang et al. conclude that extended callosal sectioning that leaves the splenium intact should be considered a good palliative surgical option for pediatric patients with drop attacks and that diminishment of epileptic discharge synchrony is a good prognostic sign following callosotomy. They found that the postoperative increase in attention levels was as useful as seizure control in improving the quality of life of these patients <sup>3)</sup>.

## Case reports

Corpus callosotomy is a viable treatment for patients with refractory generalized or multifocal epilepsy, particularly those who have drop attacks. Laser interstitial thermal therapy (LITT) is a minimally invasive surgical option for various intracranial lesions. In this report, we present a 2-trajectory thermal ablation using the NeuroBlate® system (Monteris Medical, MN, USA) for an anterior two-thirds callosotomy in a patient with refractory epilepsy and frequent drop attacks. Adequate

ablation of the corpus callosum was confirmed by MRI during the procedure. At the 1-month follow-up, the frequency had decreased from multiple seizures per day to only 3 over the course of 1 month. In addition, he had not suffered any drop attacks or tonic-clonic movements since the procedure. Five months after surgery, seizures had decreased to 1 per month with no drop attacks or loss of consciousness, consistent with an Engel class II outcome. In conclusion, LITT ablation of the corpus callosum is a safe, feasible, and minimally invasive treatment option for patients with refractory epilepsy, and it may be an attractive alternative for patients unwilling or unable to undergo open surgery <sup>4)</sup>.

<sup>1)</sup> , <sup>4)</sup>

Ball T, Sharma M, White AC, Neimat JS. Anterior Corpus Callosotomy Using Laser Interstitial Thermal Therapy for Refractory Epilepsy. *Stereotact Funct Neurosurg*. 2019 Jan 16:1-6. doi: 10.1159/000495414. [Epub ahead of print] PubMed PMID: 30650430.

<sup>2)</sup>

Cukiert A, Burattini JA, Mariani PP, Câmara RB, Seda L, Baldauf CM, Argentoni M, Baise-Zung C, Forster CR, Mello VA. Extended, one-stage callosal section for treatment of refractory secondarily generalized epilepsy in patients with Lennox-Gastaut and Lennox-like syndromes. *Epilepsia*. 2006 Feb;47(2):371-4. PubMed PMID: 16499762.

<sup>3)</sup>

Yang PF, Lin Q, Mei Z, Chen ZQ, Zhang HJ, Pei JS, Tian J, Jia YZ, Zhong ZH. Outcome after anterior callosal section that spares the splenium in pediatric patients with drop attacks. *Epilepsy Behav*. 2014 Jul;36:47-52. doi: 10.1016/j.yebeh.2014.04.019. Epub 2014 May 21. PubMed PMID: 24857808.

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