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Endoscopic disconnection of hypothalamic hamartomas: safety and feasibility of robot-assisted, thulium laser-based procedures

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Objective: Hypothalamic hamartomas (HH) may induce drug resistant epilepsy (DRE) requiring surgical treatment. Conventionally, treatment is aimed at removing the lesion, but a disconnection procedure showed to be safer and at least as effective. The thulium laser (Revolix®) has been recently introduced in urologic endoscopy because of its ability to deliver a smooth cut with good control on the extent of tissue damage. We sought to analyze the safety and efficacy of the thulium 2 µm laser in the disconnective surgery for HH applied through navigated, robot-assisted endoscopy.

Methods: Twenty patients with HH and DRE were treated in 12 months. Conventional disconnection by monopolar coagulation (endoscopic electrode) was performed in 13 patients; Thulium laser disconnection was performed in further 7 patients. The endoscope was inserted in the ventricle contralateral to the side of attachment of the HH to the wall of the 3rd ventricle. Results in terms of safety, efficacy, and handiness of the instrument were analyzed.

Results: All 20 patients achieved a satisfactory (I-III) post-operative Engel score. At 3 months, the Engel score was grade I-II in 5/13 (38.5%) who underwent monopolar coagulation and 7/7 patients (100%) in the group who underwent laser disconnection (p= 0.01). Seven of 13 patients (53.8%) who underwent monopolar coagulation and 2/7 (28,6%) who received laser disconnection had immediate postoperative complications. At the 3-month follow up, only 2 patients (15.4%) treated by coagulations still harbored mild surgery-related recent memory deficits.

Conclusion: The disconnective procedure is a safe and effective treatment strategy to treat drug resistant epilepsy in HH. With the limitations of initial experience and a short-term follow-up, it appears that the thulium 2µm laser has the technical features to replace the standard coagulation in this procedure.