Efficacy and Safety of Endoscopic Transventricular Lamina Terminalis Fenestration for Hydrocephalus

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Learning Objectives

By the conclusion of this session, participants should be able to identify the utility of the endoscopic lamina terminalis fenestration, to know the indications, to decribed the operative technique and to know the limitations and possible complications.

Introduction

Endoscopic third ventriculostomy (ETV) has become the procedure of choice in the treatment of obstructive hydrocephalus. In certain cases standard ETV might not be technically possible or may engender significant risk. We present an **alternative through the lamina terminalis (LT) by a transventricular, transforaminal approach with flexible neuroendoscopy**. Indications, technique, neuroendoscopic findings and outcome are discussed.

Methods

Between 1994 and 2010, all patients who underwent endoscopic LT fenestration as an alternative to ETV were analyzed and prospectively followed up. **The decision of performing a LT fenestration was made intraoperatively.**

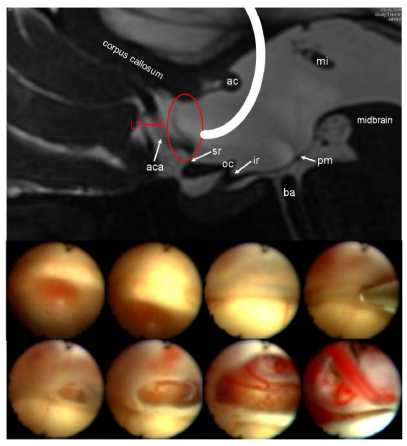
Conclusions

Endoscopic transventricular transforaminal LT fenestration with flexile neuroendoscope is feasible with a low incidence of complications, it is a good alternative to the standard ETV. Adequate intraoperative assessment of ETV success is necessary to identify patients that will benefit.

Results

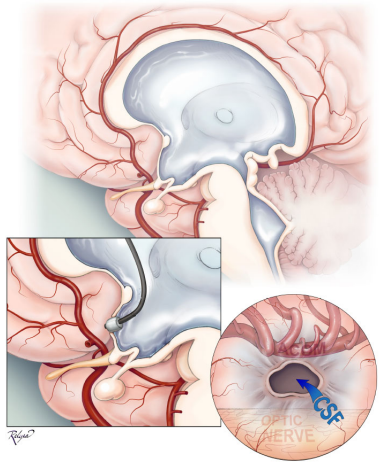
Twenty-five patients underwent endoscopic LT fenestration, ranging in age from 7 months to 76 years (mean: 28.1 years). Patients had obstructive hydrocephalus secondary to: neurocysticercosis in 11 patients, neoplasms in 6, congenital aqueductal stenosis in 3, and other in 5. Thirteen (52%) patients had had at least one VP shunt that malfunctioned, six (24%) had undergone a previous endoscopic procedure. **Intraoperative findings that lead to a LT fenestration were: ETV not feasible to perform, basal subarachnoid space not sufficient, adhesions in the third ventricle.** No perioperative complications occurred. The mean follow-up period was 63.76 months. Overall, 19(76%) patients had resolutions of symptoms, no evidence of ventriculomegaly, and did not require another procedure. Six (24%) required a VP shunt.

Figure 1



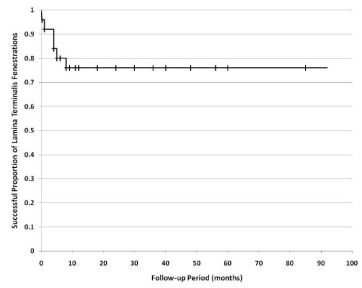
MRI depicting the midline third ventricle anatomy. Intraoperative endoscopic images showing step-by-step the lamina terminalis fenestration procedure. Once in the third ventricle the infundibular recess and the optic chiasm are identified. The flexible endoscope is bent forward until the suprachiasmatic recess and the lamina terminalis are seen. The initial fenestration is done with a blont instrument slightly above the suprachiasmatic recess. The fenestration is progressively enlarged with fogarty balloon or grasping forceps with a blunt dissecting technique. The anterior communicating artery complex and perforators are seen.

Figure 2



Artist's illustration showing the flexible neuroendoscope performing the lamina terminalis fenestration.

Figure 3



Kaplan-Meier graph successful curve showing the overall successful rate of lamina terminalis fenestration.