Trajectory planning with the use of Image guidance System for Endoscopic third ventriculostomy and its effect in reducing complications

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Introduction: Endoscopic third ventriculostomy (ETV) is commonly being performed by neurosurgeons around the world for the management for hydrocephalus in adults and paediatric age group. Nevertheless, ETV has been associated with multiple complications, the most significant being iatrogenic injury to the fornix. In our study we aim to establish the fact that use of Image guidance while planning our trajectory can reduce the incidence of complications including forniceal injury as it significantly alters the usual approach for ETV i.e. the coronal burr hole.

Materials and Methods: This is a prospective observational study conducted in Liaquat National Hospital. A total of 43 patients were included in the study which underwent ETV for hydrocephalus. Patients with history of head trauma age more than 70 and with ETV being conducted without Image guidance were excluded from the study. Complications secondary to ETV were divided into three major groups including Arterial Hemorrhage, Venous hemorrhage and injury to neural structures including fornix and occulomotor nerve. Fornix contusions are graded structurally and data was compared with studies showing complications of ETV without usage of Image guidance.

Results: Among the 43 patients who underwent ETV with image guidance, only two patients (4.65%) had iatrogenic fornix contusions. Neither of them developed memory impairment. None of the patients (0%) encountered other major iatrogenic complications including injury to the mammilary bodies, basilar artery or occulomotor nerve.

Conclusion: Use of Image guidance can reduce the trajectory related complications including hemorrhage and iatrogenic injury to the fornix. In our study we observed that the altered trajectory was beneficial in avoiding major neurological structures while introducing endoscope through the cortex into the ventricular system.

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