Fourth ventriculostomy

Atresia of the foramina of Magendie and Luschka is a rare cause of obstructive hydrocephalus. Although this condition has been classically treated by CSF shunting, recent treatments have also included endoscopic third ventriculostomy. In the present study, the authors present the case of a patient with hydrocephalus in whom an alternative method was used following a CSF shunt malfunction. A young female patient in whom a shunt was placed during the patient's 1st year of life was faring well until she was 8 years old. She was admitted to the emergency department 5 times with signs of CSF shunt malfunction. Each time, the CT scan showed a slight dilation of the lateral and third ventricles and a large increase in the size of the fourth ventricle. In comparison, ventricles were smaller in a previous imaging study obtained when the patient was asymptomatic. Magnetic resonance imaging showed the same slight dilation of all the ventricles and a significant increase in the fourth ventricle. There was no aqueductal stenosis. An important enlargement of both lateral recesses of the fourth ventricle suggested the possibility of an atresia of the foramina. The foramen of Monro and the width of the third ventricle would not allow the passage of an endoscope. The decision was made to open those foramina endoscopically through the fourth ventricle. After induction of general anesthesia, with the patient in the prone position, a bur hole was made in the left paramedian and suboccipital region. The endoscope was introduced underneath the cerebellar hemisphere. The authors were then able to distinguish the floor of the fourth ventricle and other anatomical landmarks. Navigation through the lateral recesses allowed them to see the fine membranes closing the foramina. These membranes were opened with a monopolar cautery as a blunt instrument. The orifice was then enlarged with a 3 Fr Fogarty catheter. The authors also opened a bulging thin membrane located at the foramen of Magendie. During the postoperative period, the authors observed a marked improvement in the state of the patient's alertness as well as a disappearance of her headaches and cessation of vomiting. In addition, the patient's gait ataxia improved slowly. Six-month postoperative MR imaging demonstrated an unequivocal reduction in the size of the fourth ventricle. The patient was still doing well 36 months after the surgery. Endoscopic fourth ventriculostomy, the opening of the 3 foramina of the fourth ventricle, may be an alternative treatment in cases in which these structures are congenitally closed [1)].

1)
Giannetti AV, Malheiros JA, da Silva MC. Fourth ventriculostomy: an alternative treatment for hydrocephalus due to atresia of the Magendie and Luschka foramina. J Neurosurg Pediatr. 2011 Feb;7(2):152-6. doi: 10.3171/2010.11.PEDS1080. PubMed PMID: 21284460.