The Kocher-Monro trajectory to the cerebral ventricular system represents one of the most common surgical procedures in the field of neurosurgery. Several studies have analyzed the specific white matter disruption produced during this intervention, which has no reported adverse neurological outcomes. In a study by Pascual-Diaz et al., a graph-theoretical approach was applied to quantify the structural alterations in whole-brain level connectivity. To this end, 132 subjects were randomly selected from the Human Connectome Project dataset and used to create 3 independent 44 subjects groups. Two of the groups underwent a simulated left/right Kocher-Monro trajectory and the third was kept as a control group. For the right Kocher-Monro approach, the nodal analysis revealed decreased strength in the anterior cingulate gyrus of the transected hemisphere. The network-based statistic analysis revealed a set of right-lateralized subnetworks with decreased connectivity strength that is consistent with a subset of the Default Mode Network, Salience Network, and Cingulo-Opercular Network. These findings could allow for a better understanding of structural alterations caused by Kocher-Monro approaches that could reveal previously undetected clinical alterations and inform the process of designing safer and less invasive cerebral ventricular approaches [1].

1)

Pascual-Diaz S, Pineda J, Serra L, Varriano F, Prats-Galino A. Default Mode Network structural alterations in Kocher-Monro trajectory white matter transection: A 3 and 7 tesla simulation modeling approach. PLoS One. 2019 Nov 7;14(11):e0224598. doi: 10.1371/journal.pone.0224598. eCollection 2019. PubMed PMID: 31697747.