

The Role of In-Vivo Optical Spectroscopy in Assessment of Cerebral Perfusion in Superior Cavo-Pulmonary Shunt (Glenn)

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BACKGROUND:

Bidirectional Glenn shunt is a well-established procedure performed as a part of the single ventricle palliation pathway. It may also provide definitive palliation in certain other patients. However, stroke and neurocognitive dysfunction are common after surgery with rates of approximately 3e6% and 30e50%, respectively. This study aimed to report and compare early post-operative neurological outcome after on-pump and off pump using temporary cavo atrial shunt in bidirectional Glenn shunt operation using a neurological monitor.

METHODS:

This prospective comparative non randomized controlled trial included 30 patients undergone Glenn shunt. The study was done at Kasr Alainy Hospitals (Abul Reesh Specialized Paediatric Japanese Hospital) Cairo University, Egypt in the period between October 2017 and October 2019.

Patients were divided into two matching and equally numbered groups: Group A contained 15 patients using cardiopulmonary bypass (CPB); while group B contained 15 patients without using CPB. Cerebral oximetry was done using INVOS.

RESULTS:

As regards operative time it was shorter in group B ($p \leq 0.003$), post-operative fits in group A 2 patients (13%), in group B 3 patients (20%), the difference was statistically insignificant ($p > 0.05$). There was a significant correlation between the area under the curve (AUC) and neurological outcome ($p \leq 0.01$).

CONCLUSIONS:

We suggest that pediatric INVOS system may help to reduce the high rate of brain injuries.