Macrocephaly

Macrocephaly is a rare presentation of untreated hydrocephalus.

This finding has been associated with the presence of subdural fluid collections that are sometimes construed as suggestive of abusive head trauma.

A study confirms the association of Benign enlargement of the subarachnoid spaces (BESS) with incidental subdural collections and suggests that greater depth of the subarachnoid space is associated with increased prevalence of such collections. These observations support the theory that infants with BESS have a predisposition to subdural collections on an anatomical basis. Incidental subdural collections in the setting of BESS are not necessarily indicative of abusive head trauma [1].

Etiology

Macrocephaly Etiology

Diagnosis

Benign enlargement of the subarachnoid spaces (BESS) is a common finding on imaging studies indicated by macrocephaly in infancy

Treatment

In cases where medical management has failed, macrocephaly can be managed with reduction cranioplasty. Traditionally, reduction cranioplasty is highly dependent on intraoperative tailoring of bone segments to obtain the best possible result and involves high risks of associated severe blood loss and mortality.

In a clinical report, Dorafshar et al describe a patient with hydrocephalus macrocephaly treated with reduction cranioplasty with the innovative use of computer-aided design and manufacturing to reduce intraoperative risks and improve efficiency.

They used computer-aided design to plan osteotomy sites and the final positioning of bone segments, and also utilized computer-aided manufacturing to produce cutting guides, positioning guides, and models to increase precision and improve the final positioning of the cranium. Computer-aided design and manufacturing technology has enabled a shift of the planning burden of complicated craniofacial reconstructions from the intraoperative to the preoperative phase. With a completed plan and premade guides and models, it is possible to minimize the risks, improve efficiency, and obtain a precise, aesthetic result [2].

1)
Tucker J, Choudhary AK, Piatt J. Macrocephaly in infancy: benign enlargement of the subarachnoid spaces and subdural collections. J Neurosurg Pediatr. 2016 Mar 4:1-5. [Epub ahead of print] PubMed PMID: 26942270.

2)
Dorafshar A, Fisher M, Borsuk D, Fishman E, Ahn E. A novel application of computer-aided design and manufacturing for reduction cranioplasty. J Craniofac Surg. 2014 Jan;25(1):172-6. doi: 10.1097/SCS.0000000000000385. PubMed PMID: 24406573.