Ethmoidal artery

see Anterior ethmoidal artery and Posterior ethmoidal artery.

Anterior skull base meningiomas often grow to a large size (≥4cm) prior to detection. Their blood supply is mostly provided by the anterior and posterior ethmoidal arteries. Because of their vascularity, intraoperative bleeding can be a challenging prospect that increases the risk of perioperative complications. Pre-operative ethmoidal arteries ligation has been employed to aid in limiting blood loss. The objective is to assess the effect of pre-operative arterial ligation on the perioperative course of large [1].

Optimal vascular control during neurosurgical resection of large sub-frontal meningioma is hindered by limited early access to the ethmoidal arteries. Pre-operative ligation of the ethmoidal arteries 1) induces tumor necrosis simplifying resection and 2) minimizes blood loss and operative time. Early arterial ligation is an advantage of endoscopic approaches to transnasal resection of anterior skull base meningiomas that is not appreciated in open approaches with larger meningioma [2].

1)
≥4cm) to giant (≥6cm) anterior skull base meningiomas. METHODS: We retrospectively searched our database for large anterior skull base meningiomas (≥4cm). We analyzed differences in intraoperative blood loss, operative time, intraoperative transfusion, and hematological parameters between patients who did not undergo pre-operative ethmoidal arteries ligation (Group 1) and those who did (Group 2). RESULTS: Average estimated blood loss (EBL) was 825 mL (Group 1) vs. 350 mL (Group 2) (p = 0.42), drop in hemoglobin (Hg) was 4g/dl vs. 3.2g/dl (p = 0.53), drop in hematocrit (HCT) was 12.4% vs. 9.6% (p=0.64) and average operative time was 656 min vs. 598 min (p=0.58). EBL per volume yielded a ratio of 10.6 mL/cm3 vs. 4.1 mL/cm3 (p=0.06). CONCLUSION: Ethmoidal arteries ligation may have a benefit in large to giant anterior skull base meningiomas surgery. Our results showed a decrease in EBL and less drop in pre- and post-operative haemoglobin and hematocrit levels as compared to cases where no vascular ligation was performed when corrected for tumor volume ((Aref M, Kunigelis KE, Yang A, Subramanian PS, Ramakrishnan VR, Youssef AS. The Effect of Preoperative Direct Ligation of Ethmoidal Arteries on the Perioperative Outcomes of Large Anterior Skull Base Meningiomas Surgery: A Clinical Study. World Neurosurg. 2018 Sep 6. pii: S1878-8750(18)31949-1. doi: 10.1016/j.wneu.2018.08.166. [Epub ahead of print] PubMed PMID: 30196172.

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Ung TH, Waziri AE, Ramakrishnan VR. Preoperative ethmoid artery ligation facilitates resection of large sub-frontal meningiomas. Am J Otolaryngol. 2014 Jan 10. pii: S0196-0709(14)00004-0. doi: 10.1016/j.amjoto.2014.01.003. [Epub ahead of print] PubMed PMID: 24499924.