Assessment of viability of vascularized nasoseptal (Hadad) flap using postoperative MRI

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Introduction: The Expanded Endonasal Approaches (EEAs) have been widely used for various skull base lesions. The reconstruction of the skull base defects is of vital importance to prevent postoperative complications. The vascular pedicled nasoseptal flap (Hadad-Bassagasteguy flap) is used as a work horse in reconstruction of majority of the defects.

The purpose of this study was
a. To assess the postoperative MR imaging appearance of vascularized pedicled nasoseptal flap for its viability.
b. To determine the variations in MRI that may suggest potential flap failure.

Methods: A prospective study of 13 patients was done, who underwent endoscopic skull base surgery with reconstruction using the Hadad-Bassagasteguy flap. Preoperative MRI was done to assess the size, extent and location of the lesion and a Postoperative MRI was done to evaluate flap configuration, enhancement patterns, location, flap thickness and signal intensity characteristics.

Results and Imaging features: On the MRI the thickness of the flaps ranged between 2-7 mm.
- The postoperative Contrast Enhanced MRI of all our patients had enhancing detectable flap covering the skull base defects forming an “open cup” appearance. (Fig. 1, 2).
- They were uniformly hyperintense to the adjacent nasal mucosa on T2-WI (Fig.2) and isointense on T1-WI (Fig.3)/FLAIR images (Fig. 4).
- One flap migrated slightly to the left side; however there was no CSF leak.(Fig.5).
- Fig 6. shows the intra-op picture of placement of Hadad flap.

Discussion: The flaps tend to contract in size post operatively which correlates with the finding of a thinner, enhancing flap in the post operative MRI.1 The enhancement pattern is the most important predictor of flap failure.2 The main limitation of our study is a small sample size.

Conclusion: MRI is a very useful tool in assessing the viability of the flap postoperatively and to evaluate for variations that suggest potential flap failure. To the best of our knowledge, this is the first Prospective Study of Assessment of viability of vascularized nasoseptal flap using post-operative MRI.