Anatomic landmark

Localization of internal cranial anatomy based on superficial landmarks is paramount in identifying and avoiding various important structures and, thus, decreasing surgical morbidity. We have studied external skull bony landmarks to facilitate the placement of the initial “strategic” burr hole just inferior and medial to the junction of transverse-sigmoid venous sinuses during standard retrosigmoid craniotomy.

One hundred adult skulls (200 sides) underwent intracranial drilling of a small hole from the inside surface of the cranium, 5 mm inferior and medial to the border of the transverse sigmoid sinus junction (defined as the ideal location for the center of the strategic burr hole). Localization of this hole from the external surface of the skull was made based on easily identifiable superficial landmarks, including the mastoid process and zygomatic arch. A horizontal line was established parallel to the superior border of the zygomatic arch (“zygomatic line”), and a vertical line was fashioned by connecting the mastoid notch superiorly to the squamosal suture (“mastoid line”). RESULTS: For left sides, 81% of the strategic burr holes were inferior to the zygomatic line and 86% were medial to the mastoid line. For right sides, 91% of the strategic burr holes were inferior to the zygomatic line and 97% were medial to the mastoid line. For left and right sides, the mean distance for the center of the burr holes from the zygomatic line was 4.5 and 7.7 mm, respectively. For left and right sides, the mean distance from the mastoid line was 9.1 and 9.8 mm, respectively. CONCLUSION: Because landmark data in the literature for externally identifying the transverse sigmoid sinus junction is variable, we have attempted to refine this location with the largest sample size to date. These data can assist surgeons to localize the external cranial projection of the area just inferior and medial to the junction between the transverse and sigmoid sinuses when image guidance devices are not available. This localization is important in creation of appropriate size for craniotomy/craniectomy during the posterolateral approaches to the cranial base [1)].

1)

Tubbs RS, Loukas M, Shoja MM, Bellew MP, Cohen-Gadol AA. Surface landmarks for the junction between the transverse and sigmoid sinuses: application of the “strategic” burr hole for suboccipital craniotomy. Neurosurgery. 2009 Dec;65(6 Suppl):37-41; discussion 41. doi: 10.1227/01.NEU.0000341517.65174.63. PubMed PMID: 19935000.