Chapter – 8

SUMMARY

The present work elucidates the anatomical and morphometric evaluation of human skull base foramina in North Indian population. The objective of the study was to analyze the various foramina at base of skulls. The investigation was conducted in two different study groups which comprised of three hundred forty-seven dry skulls and computed tomographic scans of three hundred fourteen subjects. The observations recorded in these two distinct study groups were discussed in the light of previous respective studies.

The study provided information pertaining to anatomical variation and dimensions of individual human skull foramina at the base. It became evident that the dimensions of individual foramina displayed a wide range.

The obtained result of study were tabulated and compared with available literature. The shape of the foramen magnum in dry skulls was round in 31.12%, oval in 34.88%, irregular in 8.64%, tetragonal in 6.92%, pentagonal in 7.78%, hexagonal in 8.93% and egg shaped in 1.73% whereas in patient’s computed tomographic scans it was round in 24.21%, oval in 37.58%, irregular in 7.96%, tetragonal in 12.11%, hexagonal in 11.46%, pentagonal in 5.41% and egg shaped in 1.27% (Table no. 5.1).

In the present study, mean anteroposterior diameters of foramen magnum on dry human skulls and patients computed tomographic scans were found to be 34.202 ±2.47mm and 35.22±3.31 mm respectively. The mean transverse diameters were 28.36±2.08 mm and 28.80 ±3.09 mm respectively. In dry skulls the mean area of the foramen magnum was found to be 763.37±96.41mm² whereas in computed tomography scans it was 831.52±147.44mm² respectively and this difference was found to be highly significant statistically (p=0.001) statistically significant as the p value was less than 0.05 (Table no. 5.2).

The mean mediolateral diameters of the Jugular foramen in right and left foramina were found to be 15.52 ±1.98 mm 14.38±1.96 mm respectively. The differences in
values of the MLD of the JF on right and left sides were found to be statistically significant as the p value (p=0.0001) was less than 0.05 (Table no. 5.3).

Anteroposterior diameters measured on right and left were 9.36±1.50 mm and 7.70±1.64 mm respectively. The differences in values of the APD of the JF on right and left sides were found to be statistically significant as the p value was less than 0.05 (Table no. 5.3).

The mean anteroposterior diameters of the anterior hypoglossal canal on right and left were found to be 4.72 ±0.74 mm and 4.23±0.67mm respectively. The differences in values of the APD of the anterior hypoglossal canal on right and left sides were found to be statistically significant as the p value (p=0.0001) was less than 0.05 (Table no. 5.6).

The transverse diameters measured on right and left were 5.19±0.88 mm and 5.32±0.85 mm respectively. The differences in values of the APD of the anterior hypoglossal canal on right and left sides were found to be statistically significant as the p value (p=0.0001) was less than 0.05 (Table no. 5.6).

The mean anteroposterior diameters of the posterior hypoglossal canal on right and left side were found to be 2.51 ±1.59mm and 2.49±1.66 mm respectively. The difference between the anteroposterior diameter of right and left posterior hypoglossal canals was found to be insignificant statistically (p=0.265) as the p value greater than 0.05 (Table no. 5.7).

The transverse diameters measured on right and left were 3.18±1.34 mm and 2.49±1.66 mm respectively. The difference between the transverse diameters of of right and left posterior hypoglossal canals was found to be insignificant statistically (p=0.110) as the p value greater than 0.05 (Table no. 5.7).

Anterior Hypoglossal Canal out of 347 (Right & left) samples while in the right side all canals are present 347 (100%) whereas the left side only one 1(0.29%) canal is absent, & 346 (99.71%) present (Table no. 5.4).
Posterior Hypoglossal Canal out of 347 (Right & left) samples while in the right side 267 (76.95%) is present & 80 (23.05%) canals is absent whereas the left side present 260 (74.93%) is present & 87 (25.07%) canal is absent (Table no. 5.5).

The present findings are of clinical significance to neurosurgeons, as in dealing with the lesions of posterior cranial fossa, basic knowledge about its anatomy and its variations is necessary. These findings may also be helpful to the physicians and radiologists. The data of the present study may also serve as an anatomical reference for researchers. Hence our study adds to the knowledge about metric analysis of foramen magnum, jugular foramen and hypoglossal canal at the base of skulls in North Indian population.