# Foramen magnum

(Latin: “great hole”) is a large opening in the occipital bone of the cranium. It is one of the several oval or circular apertures in the base of the skull (the foramina), through which the medulla oblongata enters and exits the skull vault.

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FM contains several critical neuroanatomical and vascular structures. The neural structures include the cerebellar tonsils, inferior vermis, fourth ventricle, caudal aspect of the medulla, lower cranial nerves (CNs) (IX–XII), rostral aspect of the spinal cord, and upper cervical nerves (C-1 and C-2). CN IX through CN XI arise as a series of rootlets along the anterior medulla, with the spinal component of the CN XI arising midway between the anterior and posterior spinal rootlets of the spinal cord. The spinal accessory rootlets coalesce and ascend rostral to join the CN IX, X, and the cranial portion of the CN XI. Together, these nerves exit the skull through the jugular foramen. CN XII exits the medulla more anteriorly than the other lower CNs and passes anterior to the ipsilateral vertebral artery (VA) on its course to the hypoglossal canal, located within the superior and anterior–most portion of the occipital condyle [1].

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Apart from the transmission of the medulla oblongata and its membranes, the foramen magnum transmits the vertebral arteries, the anterior and posterior spinal arteries, the membrana tectoria and alar ligaments. It also transmits the spinal component of the accessory nerve into the cranial fossa.

Anatomical landmarks can reliably guide an endonasal anteromedial condyle resection. Minimal condyle resection is required to widen lateral access at the Foramen Magnum, which minimizes the risk of craniocervical instability [2].

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Foramen Magnum Area (FMA) and posterior cranial fossa volume (PCFV) are constitutionally smaller in girls at birth ($P \leq .02$) and suggest that a sex-related difference in the FMA is related to earlier closure of anterior interoccipital synchondroses in girls ($P = .01$) [3].

Since intraoccipital synchondroses close earlier in Crouzon syndrome, from early life on their foramen magnum is smaller compared with controls. Within Crouzon patients, the presence of cerebellar tonsillar herniation could not be related to foramen magnum size [4].

## Foramen magnum decompression

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1)
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2)

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3)

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4)

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