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Anatomical assessment of posterior condylar foramen present in human skulls

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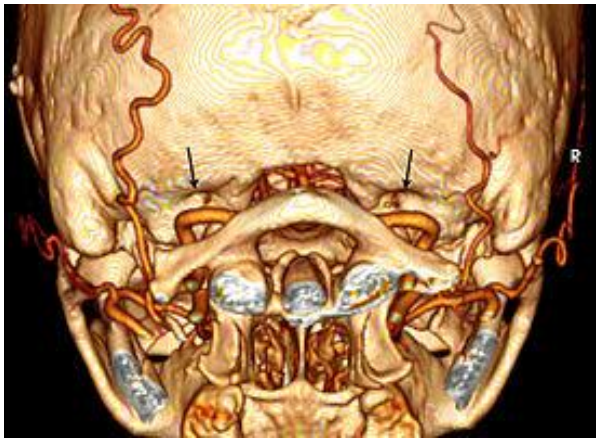
Abstract
The condylar canal (canalis condylaris) is situated in the condylar fossa. It is posterior to the occipital condyles. It communicates the emissary veins which invent at the sigmoid sinus and drain into the occipital vein.
The study had included the 25 dry adult skulls. These are collected from the Department of Anatomy, in the Hind Institute of Medical Science, Mau, Ataria, sitapur. The study is planned to assess the unilateral or bilateral presence or absence of the posterior condylar canal. The occipital condyles were examined vigilantly for the condylar foramina and watchful whole foramina as variation for the existing study. We perceived by transient a probe into the bilateral and unilateral subsequent condylar foramina to novelty where they were opening into the posterior cranial fossa in their complete sequence.
The hypoglossal dural arterio venous fistulas can be accessed through the condylar veins. Anatomical discrepancies of the posterior condylar foramina are note worthy concluded the management of dural arterio venous fistula. From the present study the elementary awareness to the clinicians and surgeons will be provided before planning a surgery in the occipital condylar regions.

Keywords: condylar canal, Condylar Foramen, bilateral, position of foramen etc.

Introduction
The condylar canal (or condyloid canal) is a canal in the condyloid fossa of the lateral parts of occipital bone behind the occipital condyle. Resection of the rectus capitus posterior major and minor muscles reveals the bony recess leading to the condylar canal, which is situated posterior and lateral to the occipital condyle. It is immediately superior to the extradural vertebral artery, which is making a loop above the posterior C1 ring to enter the foramen magnum. The anteriomedial wall of the condylar canal thickens to join the foramen magnum rim and connect to the occipital condyle.
The condylar canal (canalis condylaris) is located in the condylar fossa, posterior to the occipital condyles. It transmits the emissary veins which originate at the sigmoid sinus and drain into the occipital vein.
The condylar canaI has a variable presence and seen only in ~55% (range 50-60%) of cases. It is more commonly bilateral. Identification of this structure and its role as an alternative source of venous drainage from the brain will help avoid misinterpretation.
The posterior condylar canal is the largest emissary foramen of the posterior cranial fossa. It is apparent just poster inferior to the jugular foramen and posterior to the hypoglossal canal. The Condylar canal gives way to a condylar emissary vein from sigmoid sinus to vertebral vein between the axis and atlas, in most cases or between the superior bulb of the internal jugular vein and sub occipital venous plexus. The posterior condylar foramen is located behind the condylar of the occipital bone.
Through the condylar canal, the occipital emissary vein connects to the venous system including the sub occipital venous plexus, occipital sinus and sigmoid sinus.
It is not always present, and can have variations of being a single canal or multiple smaller canals in cluster [1-2].



Bilateral condylar canals

Methodology
The study had included the 25 dry adult skulls. These are collected from the Department of Anatomy, in the Hind Institute of Medical Science, Mau, Ataria, sitapur, from Jan 2016 to dec 2016. The study is planned to assess the unilateral or bilateral presence or absence of the posterior condylar canal. The occipital condyles were examined vigilantly for the condylar foramina and watch full whole foramina as variation for the existing study. We perceived by transient a probe into the bilateral and unilateral subsequent condylar foramina to novelty where they were opening into the posterior cranial fossae in their complete sequence.

Results & Discussion
After the permission from the Institutional ethical committee the study was conducted. The data from the 25 human dry skulls was presented as below.

Table 1: Presence of posterior condylar foramina

Posterior condylar foramina	Unilateral		Bilateral
	Right Sides	Left Sided	
	2	2	5
Total	4		5

The table 1 indicates the data of the presence of posterior condylar foramina. There are total 4 unilateral sided condylar foramina. 5 bilateral condylar foramina were observed in the present study.

Table 2: Incidence of posterior condylar foramina in comparison with sigmoid sinus

	Posterior condylar foramina		Total
	Right	Left	
Intra sinus	4	2	6
Retro sinus	1	2	3

The table2 indicates Incidence of posterior condylar foramina in comparison with sigmoid sinus. There are total 6 cases of Intra sinus. In the total 6 cases of intra sinus 4 cases are of right side and 2 cases are of left side. In 3 Retro sinus cases, 1 is of right side and 2 are of left side.

Ginsberg observed the posterior condylar canal to be bilateral in 55.9% and unilateral in 17.6% [3]. Boyd found the posterior condylar canal with an incidence of 77% unilaterally [4]. Galarza *et al*. found intra sensual form in 24.6% bilaterally, 17.8% on the right side and 13.5% on the left side, whereas retro sinus form of the posterior condylar foramina in 1.2% bilaterally and 1.2% unilaterally on the right side [5] Krause discovered that condylar canal was present bilaterally in 21% and unilaterally in 38% [6].

In the present study we had found that 16% cases are of unilateral posterior condylar canal and 25% cases are of bilateral condylar canal. The present study had the limitation of less number of specimens due to the availability.

Conclusion

The hypoglossal dural arterio venous fistulas can be accessed though the condylar veins [7]. Anatomical discrepancies of the posterior condylar foramina are significant through the management of dural arterio venous fistula. From the present study the elementary awareness to the clinicians and surgeons will be provided before planning a surgery in the occipital condylar regions.

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