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Original Research Article

STUDY OF INCIDENCE, LATERALITY, AND PATENCY OF POSTERIOR CONDYLAR FORAMINA IN 60 DRY HUMAN SKULLS IN NORTH GUJARAT

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ABSTRACT

Introduction: Posterior Condylar foramina present just behind the occipital condyles, which transmits emissary vein connecting sub occipital venous plexus with intracranial sinuses.

Materials and Methods: Study conducted on 60 dry human skulls. Each skull is observed for incidence, laterality and patency of posterior condylar foramina. Here patency of foramina is observed by probe.

Result: We observed that 77% skulls have presence of condylar foramina and 23% have absence of foramina.50% skulls have bilateral foramina,20% skulls have left sided and 7% have right sided foramina.70% skulls have patent foramina and 30% skulls have absent patency.

Conclusion: There is variation in incidence, laterality and patency of condylar foramina so knowledge of variation in condylar foramina is important for neurosurgeon and ENT surgeon in skull base surgery and also for radiologist.

KEY WORDS: Posterior condylar foramina, Emissary vein, Sub occipital venous plexus.

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INTRODUCTION

Superior articular facet of atlas vertebrae articulates with the occipital condyles of occipital bone and to form the ellipsoid variety of synovial joint. Behind this joint there lies a condylar fossa which accommodates posterior part of superior articular facet of atlas during extension of head. This condylar fossa sometimes contains posterior condylar foramen which opens into posterior condylar canal transmits emissary vein (condylar vein) communicating sigmoid sinus with sub occipital venous plexus [1] and also transmits a meningeal branch of occipital artery [1].So in case of venous obstruction emissary vein act as alternate route of circulation and also way of infection to intracranial sinuses [4, 5].

Dural arteriovenous fistulas also involve the condylar veins [2].The posterior condylar foramina is the largest of the emissary foramina's in the human skull [3]. Enlarged posterior condylar vein is one of the cause for pulsatile tinnitus [6] and it may be mistaken by radiologist as glomus jugulare tumor [7].Due to this clinical significance this study should be done.

MATERIALS AND METHODS

This study was done on 60 dry human skulls collected from GMERS medical college, dharpur-patan.First we observed incidence [presence or absence] of posterior condylar foramen on both side of skulls ,then observed its laterality [bilateral or unilateral], if unilateral then observed for right or left side. We also observed patency of foramen by probe.

RESULTS

We observed that 46 [77%] skulls have foramina and 14 [23%] skulls have absence of foramina out of 60 dry skulls [Table 1].

Now out of 46 skulls we observed that 30 [50%] skulls have bilateral presence of foramina, 4 [7%] skulls have right sided foramina and 12 [20%] skulls have left sided foramina [Table 2].

We also observed patency of foramina in 42 [70%] skulls and absence of patency in 18 [30%] skulls by probe [Table 3].

Table 1: Incidence of condylar foramina.

Incidence	Presence of foramina	Absence of foramina
Total [60]	46 [77%]	14 [23%]

Table 2: Unilateral and bilateral presence of foramina.

Laterality	Bilateral presence of foramina	Unilateral presence of foramina (right side)	Unilateral presence of foramina (left side)
Total [46]	30 [50%]	4 [7%]	12 [20%]

Table 3: Patency of foramen.

Patency of foramen	Present	Absent
Total [60]	42 [70%]	18 [30%]

Fig. 1: Presence of Foramina [Both side].

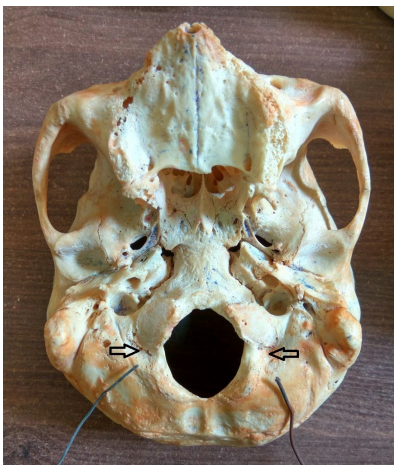

Fig. 2: Absence of Foramina [Both side].

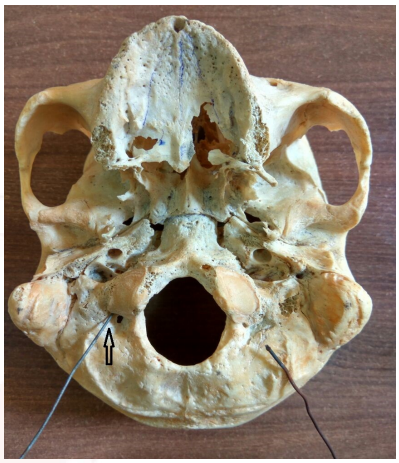

Fig. 3: Presence of Foramina [Right side].

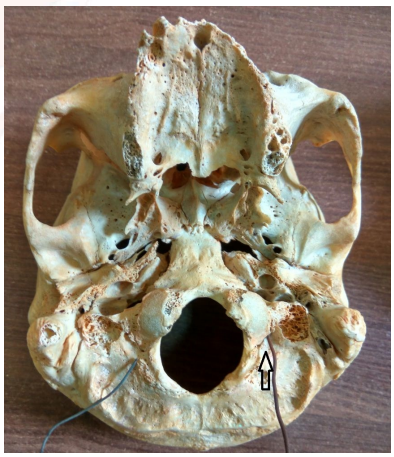

Fig. 4: Presence of Foramina [Left side].

DISCUSSION

Here we observed that 46[77%] dry skull have condylar foramina and 14[23%] dry skull have absence of foramina out of 60 dry skulls. Out of these 46 skulls 30[50%] skulls have bilateral foramina, 4[7%] skulls have right side foraminaand 12[20%] skulls have left side foramina. If we observe patency then 42[70%] skulls shown patent foramen and 18[30%] skulls have absence of patency. In the study done by Ginsberg noted that 73.5% of the skulls have foramina and also noted foramina in 81% of CT images, 55.9% of the skulls have bilateral foramina, 17.6% of the skulls have unilateral

foramina [7].In the study done by Jatin Goda noted foramina in 90.6% of skulls[5] and Kavitha noted foramina in 94.2% of the skulls, 78.9% of the skulls have bilateral foramina,61.3% of the skulls have left sided and 38.7% have right sided foramina, 62.8% of the skulls have patent foramina[8].In the study done by Boyd noted foramina in 76.9% of skulls, 46.6% of the skulls have bilateral foramina, 16.5% of the skulls have right sided and 13.8% of the skulls have left sided foramina[3].In the study done by Boryslawski noted foramina in 90% of skulls[9].

In the study done by Galarza noted 30.8% of the skulls have unilateral foramina, 17.8% of the skulls have right sided and 13.5% of the skulls have left sided foramina[10]. In the surgical treatment of dural arteriovenous fistulas and tumours emissary vein have importance [11]. In the case of lesions in the jugular foramen or hypoglossal canal surgeon do surgery through trans condylar approach and in this condition condylar foramen act as anatomical landmark. That's why anatomical knowledge of condylar foramen and its variation in the form of incidence, laterality is important for neurosurgeon and ENT surgeon during the surgery.

CONCLUSION

The posterior condylar canal is one of the larger emissary channels in the skull, which transmits posterior condylar vein. So its incidence and variation is important for neurosurgeon and ENT surgeon during the surgery and also important for the radiological diagnosis. Anatomical variations of the posterior condylar foramina are important during the treatment of dural arteriovenous fistula. That's why this study should be done.

Conflicts of Interests: **None**

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