

ORIGINAL RESEARCH

VARIANTS OF CAROTICO-CLINOID FORAMEN IN THE DRY HUMAN SKULL OF MEDICAL COLLEGE AND HOSPITAL, BHUBANESWAR, ODISHA

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ABSTRACT

Incidence of carotico-clinoid foramen is an occasional presence in the human skull within the middle cranial fossa. The presence may lead to compression of upturned course of internal carotid artery, which may result in symptoms of compression of the artery like headache, hypertension, etc.

Aims & objectives: To study the incidence of carotico-clinoid foramen in Odisha population.

Materials and Methods: The present study is carried out in 41 dry human skull of Odisha population. All the skulls were observed to find the presence or absence of different variants of carotico-clinoid foramen, whether complete or incomplete and unilateral or bilateral foramen.

Results: After thorough observation, it was found that, out of total 41 skull studied, 10 skull showed the presence of different variants of carotico-clinoid foramen. Complete type was found in 5 skull out of which 1 was seen on right side, 1 on left side and 3 skull showed on both sides of different skulls. Incomplete type was present in 5 more different skull where 2 on right side, 2 on left side and 1 skull showed on either side.

Conclusion: Detailed anatomical information regarding the occurrence of carotico-clinoid foramen is of great help for various clinicians specially neurosurgeons for pre-operative evaluation

Key words: Sellaturcica, clinoid process, carotico-clinoid foramen, internal carotid artery

INTRODUCTION:

The tuberculum sellae is the posterior limit of sulcus chiasmaticus and gives anterior attachment to diaphragmasellae which forms the dural roof of hypophyseal fossa or pituitary fossa. On each side the tuberculum presents a small projection, the middle clinoid process, which is connected to the anterior clinoid process by the carotico-clinoid ligament. (1,2)

The carotico-clinoid foramen thus formed between the ligament and the body of sphenoid transmits upturned course of internal carotid artery (i.e. cavernous part). Occasionally the carotico-clinoid ligament is converted into a bone.

The caroticoclinoid foramen is formed by an osseous bridge between the tip of middle clinoid process and anterior clinoid process of sphenoid bone(2).Internal carotid artery is having four parts i.e.cervical,petrous,cavernous and cerebral part.The cavernous part of the internal carotid artery after passing along the floor of cavernous sinus,it runs anterosuperiorly and passes through the caroticoclinoidforamen.Hence there's always a risk of compression of the internal carotidartery within the caroticoclinoid foramen or haemorrhage while performing any surgical intervention.(4)

The present study was aimed to find out the incidence of the caroticoclinoid foramen in the population of Odisha.

MATERIALS AND METHODS:

The present study was performed on 41 dry human skull of Odisha population.The study was done in Department of Anatomy,HiTech Medical College and Hospital,Bhubaneswar,Odisha.All the skulls were observed for the occurrence of caroticoclinoid foramen.The presence of caroticoclinoid foramen was then categorized as a)Complete b)Incomplete.If the caroticoclinoid ligament completely ossifies it is considered as complete type and if partially ossified with a space then considered as incomplete type.Later on grouped as unilateral or bilateral.

RESULTS:

After thorough observation,it was found that out of total 41 skulls studied,10 skull showed presence of caroticoclinoid foramen.Out of which complete foramina was found in 5 skull (2 unilateral and 3 bilateral).Incomplete foramen was found in 5 skull (2 in right, 2 in left and 1 bilateral).Incidence for complete on the right(2.44%),left(2.44%),bilateral(7.32%) and for incomplete on right (4.88%),left (4.88%),bilateral (2.44%).

Observation Table

Types	Right	Left	Bilateral
Complete	1 (2.4%)	1 (2.4%)	3 (7.32%)
Incomplete	2 (4.88%)	2 (4.88%)	1 (2.4%)

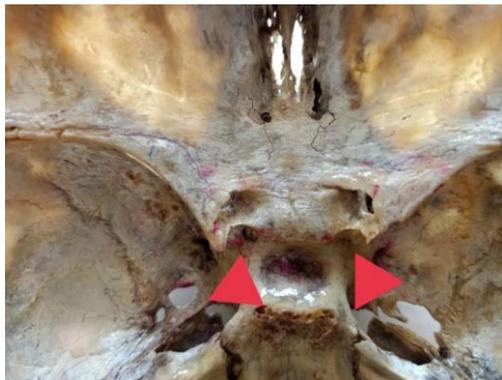


Figure 1- Absent

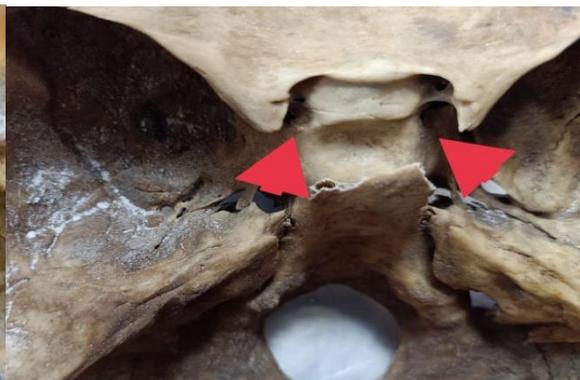


Figure 4- Absent

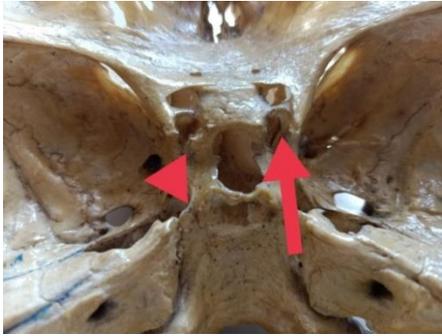


Figure 2- Rt. Absent, Lt. Incomplete



Figure 5- Rt. Incomplete, Lt. Absent

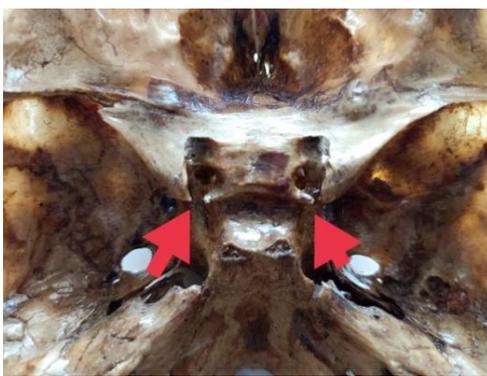


Figure 3- Both Incomplete



Figure 6: Complete, bilateral

DISCUSSION: The regional surgery planning may be affected by the various anomalies of sellar region. Compression of internal carotid artery may occur due to presence of carotico-clinoid foramen (5). In certain surgical intervention by neurosurgeon where anterior clinoid process is to be removed (clinoidectomy), there is a chance of severe haemorrhage when carotico-clinoid foramen is present. Clinoidectomy is an important procedure in skull base surgeries, hence its anatomical correlation is of utmost importance.

In our present study 24% cases showed the occurrence of different variants of carotico-clinoid foramen which was in accordance with the findings of Gupta et al. (22%); Sanobar I et al. (24%); Erturk et al. (23.68%) (1,7,8). But the incidence within two different sides of the skull or complete vs incomplete type is varying in all the studies done so far. (9,10,11)

CONCLUSION: Detailed anatomical information regarding the occurrence of carotico-clinoid foramen is of great help for various clinicians specially neurosurgeons for pre-operative evaluation and surgical approaches. It is a cardinal procedure for expanding access to the proximal carotid artery, optic nerve, sella and the central part of skull base.

Conflicts of Interests: None

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