L. Sri Varsha et al /J. Pharm. Sci. & Res. Vol. 7(9), 2015,711-713

ISSN:0975-1459
Journal of Pharmaceutical Sciences and Research
www.jpsr.pharmainfo.in

Incidence and Morphological Study of Supraorbital Foramen in South Indian Skulls

L. Sri Varsha[*] , M.S.Thenmozhi[**]
First year BDS[*]
Department of anatomy,Saveetha Dental College and Hospitals
162,poonamalle high road, chennai-77.

Abstract

Aim : The supraorbital foramen is a bony elongated path located above the orbit (eye socket) and under the forehead. The supraorbital foramen lies directly under the eyebrow. The aim of this study is to find out about the prevalence of supraorbital foramen and its morphological analysis in south indian skulls at saveetha dental college chennai .

Method : The study will be done in about 50 dry skulls . The occurrence of supraorbital foramen is examined in those skulls. The distance between the supraorbital foramen and infraorbital foramen , fronto zygomatic suture and midline is measured using a digital vernier calliper.

Results: Out of the 50 skulls examined, 10 skulls had bilateral supraorbital foramen, 25 skulls had bilateral supraorbital notch, 7 skulls had supraorbital foramen only on right side and 8 skulls had supraorbital foramen only on left side. The average distance between the supraorbital foramen and midline on right side is 15.4-38.4mm and 13.7-39.4mm on left side. The average distance between the supraorbital foramen and frontozygomatic suture on right side is 15.38-40.4mm and 18.19-41.5mm on left side. The average distance between the supraorbital foramen and infraorbital foramen on right side is 23.4-47.8mm and 32.14-60mm on left side.

Conclusion: It is important to know about the location of supraorbital foramen when supraorbital block is given. This block is carried out in migraine and chronic paroxysmal hemicrania. Thus, the landmark of supraorbital foramen will be helpful for surgeons while giving nerve blocks.

Key words: fronto zygomatic suture, infraorbital foramen, midline, supraorbital block, supraorbital foramen.

INTRODUCTION

The supraorbital foramen is a bony elongated path located above the orbit (eye socket) and under the forehead. The supraorbital foramen lies directly under the eyebrow.The structures passing through supraorbital foramen are supraorbital nerves and vessels.The supraorbital nerve is a terminal branch of the frontal nerve. It is one of the main cutaneous nerves supplying the forehead and scalp region. It exits through its foramen to innervate the skin and may be injured during various surgical and anaesthetic procedures.

In this study, measurements were made on cadaveric dry skulls from South India to determine the location and dimensions of the supraorbital notch (SON) or the supraorbital foramen (SOF) and the morphometric analysis by determining the distance between the supraorbital foramen and infraorbital foramen,supraorbital foramen and midline,supraorbital foramen and frontozygomatic suture , on both right and left sides of the dry skulls.

The data may be useful to anaesthetists and surgeons for providing appropriate nerve blocks and planning the surgical flaps.

MATERIALS AND METHOD

50 dry south indian skulls of unknown age and sex were examined from the collection of Anatomy department of Saveetha dental college, Chennai. The prevalence of supraorbital foramen in the 50 skulls were recorded. Observations taken in the study were distances from the supraorbital foramen to midline , supraorbital foramen to frontozygomatic suture and supraorbital foramen to infraorbital foramen on both right and left sides. The measurements were taken using a digital vernier calliper scale.

RESULTS

Prevalence of supra orbital foramen :
Total skulls-50
Bilateral supra orbital foramen-10 skulls
Bilateral supraobital notch-25 skulls
Supraorbital foramen only on right side- 7 skulls
Supraorbital foramen only on left side-8 skulls

Figure 1: Bilateral supraorbital foramen

Figure 2: Bilateral supraorbital notch

Figure 3: Supraorbital foramen on right side with supraorbital notch on left side

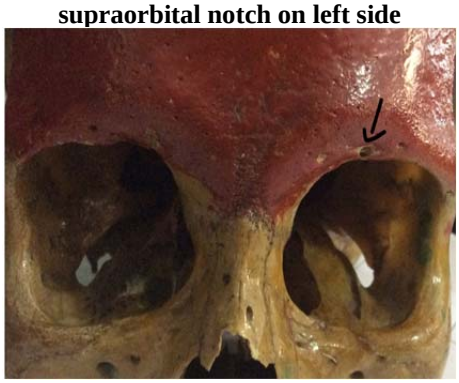

Figure 4: Supraorbital foramen on left side with supraorbital notch on right side

SOF- SupraOrbital Foramen
FZS- FrontoZygomatic Suture
IOF- InfraOrbital Foramen
(Measurements in millimetre.)

Table 1: Morphological analysis

	Right (mean value)	Average distance	Left (mean value)	Average distance
Distance between SOF and midline	26.42	15.4-38.4	25.97	13.7-39.4
Distance between SOF and FZS	30.30	15.38-40.4	32.13	18.19-41.5
Distance between SOF and IOF	40.9	23.4-47.8	43.45	32.14-60

DISCUSSION

Supraorbital nerve is the important cutaneous nerve which passes through this nerve to innervate skin of forehead and scalp region. The supraorbital nerve blocks are commonly performed in the region of supraorbital foramen during procedures such as closure of facial wounds, biopsies, and debridements, as absolute but temporary treatment for supraorbital neuralgia and other cosmetic cutaneous procedures.

Webster[1] observed that out of 108 skulls studied, 49.07% demonstrated bilateral supraorbital notching, 25.93% demonstrated bilateral supraorbital foramina, 25% demonstrated a notch on one side and a contralateral foramen.

Sinha D. N[2] observed that out of 400 skulls studied, 44.25% demonstrated bilateral supraorbital notches, 18.25% demonstrated bilateral supraorbital foramina, 12.55% demonstrated a notch on one side and contralateral foramen.

Chung M.S[3] found supraorbital notches (69.9%) were more frequent than supraorbital foramina (28.9%). Present study of 233 skulls showed, bilateral notches in 35.62% of skulls and bilateral foramina in 21.45 % of skulls and 16.73 % of skulls demonstrated a notch on one side and a contra lateral foramen

Hollinshed[4] had described a total incidence of supraorbital foramina as 25% but has not given the side difference.

Warwick and Williams[5] did not mentioned the absence of all the three (notch, foramen and incomplete foramen) features at supraorbital margin of human skull.

In this study,out of the 50 skulls examined,supraorbital foramen was not present in 25 skulls , instead supraorbital notch was present bilateral in those skulls . Supraorbital foramen was present on both right and left sides (bilateral) in 10 skulls . Supraorbital foramen was present only on the right side with notch on the left side in 7 skulls. Supraorbital foramen was present only on the left side with supraorbital notch on the right side in 8 skulls. The measurements were taken accordingly on both sides or either right side or either left side depending upon the prevalence of the supraorbital foramen in the skull. Therefore , 50% of the skulls had supraorbital notch. 25% of skulls had supraorbital foramen on both sides.14% of skulls had supraorbital foramen on right side and supraorbital notch on left side.16% of skulls had supraorbital foramen in left side and supraorbital notch on right side. Figure 1 shows bilateral supraorbital foramen in the skull. Figure 2 shows bilateral supraorbital notch in the skull. Figure 3 shows supraorbital foramen on right side with supraorbital notch on left side. Figure 4 shows supraorbital foramen on left side with supraorbital notch on right side.

Table 1 shows the morphological analysis of this research.The mean value of the distance between the supraorbital foramen and midline in right side is 26.42mm and 25.97mm in left side, between supraorbital foramen and frontozygomatic suture in right side 30.30mm and 32.13mm, between supraorbital foramen and infraorbital foramen in right side is 40.9mm and 43.45mm in left side. The average distance between the supraorbital foramen and midline on right side is 15.4-38.4mm and 13.7-39.4mm on left side. The average distance between the supraorbital foramen and frontozygomatic suture on right side is 15.38-40.4mm and 18.19-41.5mm on left side. The average distance between the supraorbital foramen and infraorbital foramen on right side is 23.4-47.8mm and 32.14-60mm on left side. All these measurements were taken using a digital vernier calliper scale.

CONCLUSION

The end points of supraorbital nerves are not at all constant. It can either be a notch or a foramen. The knowledge provided by various measurements recorded in this study will be helpful for the surgeons . These measurements will help them identify the correct location of the supraorbital foramen during surgeries to prevent the injury or damage of

any other nerves passing near the foramen[6] . It is also important to know about the location when supraorbital block is given. This block is carried out in migraine and chronic paroxysmal hemicrania[7]. The measurements such as the distance between the supraorbital foramen and the midline, infraorbital foramen and frontozygomatic suture was done to give a better understanding about the location of the supraorbital foramen. This landmark is very important during surgeries, thereby reducing the risk factors.

ACKNOWLEDGEMENT

I would like to express my deep gratitude to Dr.M.S.Thenmozhi for her valuable support at every stage of this research. I would also like to thank my college, Saveetha Dental College, Chennai, for providing me with the materials needed for this research work.

REFERENCES

[1] Webster R C.; Gaunt J.M et al. (1986) : supraorbital and supratrochlear notches and foramina : anatomical variations and surgical relevance. Laryngoscope 96(3): 311-15.

[2] Sinha D.N (1978) : study of supraorbital notch and foramen in north indian human skulls. Journal of anatomical society of India.27:124-26.

[3] Chung M.S(1995):Locational relationship of the supraorbital notch/foramen and infraorbital and mental foramina in koreans. Acta anatomica. 154(2):162-66.

[4] Hollenshed W. Henry (1966). Anatomy for surgeons. Vol.1 Newyork & London Hoeber-Harper PP-111.

[5] Warwick R. ; Williams (1973): Gray's anatomy. 35th ed. Edinburgh Loneman :pp262 .

[6] Dr. D. J. Trivedi*, Dr. P. S. Shrimankar*, Dr. V.B. Kariya**, Dr C. A.Pensi***: A Study Of Supraorbital Notches And Foramina In Gujarati Human Skulls

[7] Antonacie F. ; Pareja J.A ; Caminero A.B.(1997): chronic paroxysmal hemicrania and hemicranias continua;Anaethetic blockades of pericranial nerves. Functional neurology. 12(1):11-15