Section: Anatomy

Original Research Article

ANTHROPOMETRIC MEASUREMENT AND VARIATION OF INFRAORBITAL FORAMEN IN ADULT HUMAN DRY SKULLS OF NORTH INDIANS AND ITS ANESTHETIC SIGNIFICANCE

Roshan Kumar Yadav[1], Sadakat Ali[2], Shashi Munjal[3]

[1]Ph.D. Scholar, Department of Anatomy, S.G.R.R.I.M. and H.S., Patelnagar, Dehradun, Uttrakhand, India.
[2]Professor and Head, Department of Anatomy, S.G.R.R.I.M. and H.S., Patel nagar, Dehradun, Uttrakhand, India.
[3]Professor and Head, Department of Anatomy, G.B.C.M., Jhajhara. Dehradun, Uttrakhand, India.

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Corresponding Author:
Dr. Sadakat Ali,
Email: drsadakat786@gmail.com

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Abstract

Background: An opening present near the orbital cavity on the maxilla below the inferior border of the orbital cavity known as infraorbital foramen (IOF) and provide a passage from where the infraorbital neurovascular bundle passes through it. **Materials and Methods:** One hundred twenty-five dry adult human skulls were included in the present study of which sixty-eight (68) were male skulls and 57 were female skulls. This study was performed at S.G.R.R.I.M. & H.S., Patel nagar, Dehradun, Uttrakhand. **Result:** The mean distance of IOF from infraorbital margin was 6.79 ± 1.38 on right , 6.92± 1.44 on left the side and 6.85±1.42 on both side on males skulls and 6.96 ±1.53 on right side, 6.96 ± 1.49 on left side and 6.96±1.52 on both side on females skulls and 6.91 ± 1.47 on both males and females skulls. The mean distance of IOF from ZMS was 19.04±2.93 on right side, 19.12±2.49 on left side and 19.08±2.73 on both side on male skulls and 18.23 ± 2.91 on right side, 18.58 ± 2.69 on left side and 18.41±2.82 on both side on female skulls and 18.77 ± 2.79 on both males and females skulls. The mean distance of IOF from ANS 33.24±2.22 on right side, 32.78±3.34 on left side and 33.01±2.85 on both side on male skulls and 32.65 ± 2.47 on right side, 31.9 ± 2.28* on left side and 32.28±2.42*on both side on female skulls and 32.66 ± 2.68 on both males and females skulls. The mean distance of IOF from PA was 17.43 ± 1.84 on right, 17.61 ± 1.82 on left the side & 17.52±1.84 on both side on males skulls and 17.3 ± 2.15 on right, 17.04 ± 1.93* on left the side and 17.17±2.06 on both side on female skulls and 17.36 ± 1.95 on both males and females skulls. The mean vertical diameter of IOF was 3.81±0.87 on right, 3.68± 0.77 on left the side and 3.75 ±0.83 on both side on male skulls and 4.22 ± 4.09 on right, 3.66±0.61 on left the side and 3.94±2.95 on both side on female skulls and 3.84 ±2.08 on both males and females skulls. The mean transverse diameter of IOF was 3.68±0.93 on right, 3.79 ±0.72 on left the side and 3.74 ±0.83 on both side on male skulls and 3.53 ± 1.12 on right, 3.66±0.66 on left the side and 3.6±0.93 on both side on female skulls and 3.67 ± 0.88 on both males and females skulls. The mean distance of IOF from upper maxillary tooth the IOF mostly lies in between the upper 2nd premolar & 1st molar 28.99 ±2.73 in males and was 28.99±2.73 on right & 28.76 ±2.55 left side. And 27.93 ±2.65 in females and was a maximum of 20.30±12.81 on right side & 19.05±13.00 on the left side. **Conclusion:** The results of this study useful to clinical practioner and anesthesiologist when using the Infraorbital nerves Block for a variety of dealings to localize the Infraorbital foramens.

INTRODUCTION

An opening present near the orbital cavity on the maxilla below the inferior border of the orbital cavity known as infraorbital foramen (IOF) and provide a passage from where the infraorbital neurovascular bundle passes through it.[1] Anatomically the infraorbital foramen is a more important structure with a close relationship to its neurovascular bundle of it.[2] In maxillofacial surgery, it is an important structure for anesthesia in infraorbital nerve block.[1] The infraorbital nerve is a purely sensory nerve which is emerging from the suborbital foramen and it

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is a continuous of the maxillary nerve in orbital canal. When the ION (infraorbital nerve) emerges from the suborbital foramen is the continuance of the maxillary nerve in pterygopalatine fossa. And maxillary nerve is the branch of the 2nd division of the trigeminal nerve which is 5th cranial nerve. The second division of the trigeminal nerve enters the orbital cavity through the infraorbital fissure and then runs in the inferior orbital canal after that it reached the face through the infraorbital foramen as an infraorbital nerve. It is divided into many terminal branches which innervate the different areas of the face that is, the midface mucous membrane and skin, labial gum and upper lip, on the lateral surface of nose, and inferior eyelid. These parts of the face are the most important in facial surgeries.[3] When a large area of the face is required to repair, the infraorbital nerve block is necessary because it innervates the large area of the face. There are many benefits over local tissue infiltration in this procedure. In regional anesthesia the infraorbital nerve block is frequently used in the face, the infraorbital foramen is an important anatomical structure where injected an anesthetic agent in the midface region for surgical interferences. The failure of local anesthesia or ineffective may result in distortion or tissue damage in this condition the infraorbital nerve block is useful. It is a more useful procedure involving ipsilateral maxillary teeth (dental) procedures, the skin between the upper lip, and the lower eyelid.[4]

The position and direction of the foramen similarly define the acupuncture topic used in the handling of trigeminal neuralgia.[5] During the surgical treatment, the infraorbital nerve may injuries at the anterior and superior walls such as tumor surgery, Rhinoplasty, orbital basis reduction (blow-out), Caldwell-Luc surgical procedures, and fractures of the zygomatic region.[6]

The infraorbital nerve may also be smashed during maxillofacial surgery, therefore, make difficulties in a neurovascular bundle section and a hemorrhage occurred so knowing the characteristics status of morphometric of suborbital foramen is useful.[7]

The infraorbital foramen position may vary among other racial groups. That why the suborbital foramen were studied on dry skull human bones, with imaging technology having multislice CT (computed tomography) scan or dissection on the cadaver. The knowledge of location of suborbital foremen is helpful to escape complicating harms to the structures passed from it.[8]

Therefore, knowing the precise position of the suborbital foramen is more important in delivering successful regional anesthesia without any injuries. And interested to study on dry human skulls of the suborbital foramen because their information is vital in the preparation of administration of critical neuralgia of V2, anesthesia by maxillary block, and maxillary surgery. Many other studies explain and demonstrate that the sizes and positions of infraorbital foramen differ between sex and population on dry human skull bones.

Our research aims to learn the feature appearance and measuring the infraorbital foramens of the north Indian population on a dry human skull in the department of anatomy at S.G. R.R.I.M. & H.S. (S.G.R.R. University). The current study is an effort to fulfillment of resembling statistics breach as we explain the IOF location and diameters, direction of infraorbital foramen some distances from other anatomical landmarks in a sample of the north Indian population.

MATERIALS AND METHODS

One hundred twenty-five dry adult human skulls were included in the present study of which sixty-eight (68) were male skulls and 57 were female skulls. This study was performed at S.G.R.R. I.M. And H.S., Patel nagar, Dehradun, Uttrakhand. All the skulls were carried out from the anatomy department of different medical colleges these are N.S.C.B.S.M. College, Meerut, Uttar Pradesh, G.B.C.M., Dehradun, Uttrakhand and S.G.R.R. I.M. And H.S., Dehradun, Uttrakhand. A total of two hundred fifty (250) sides of both sides of the skull's infraorbital foramen were included.

The skulls of males and females were differentiated with some anatomical morphology of skulls had well marked muscular rides, the weight of skulls, superciliary arches, large prominent mastoid process, and prominent glabella these structures were more prominent in male skulls and less prominent in female skulls when compare both the skulls. This study was approved by the Institutional Research and Ethics Committee (Human study) of S.G.R.R. University, Patharibagh, Dehradun, Uttarakhand.

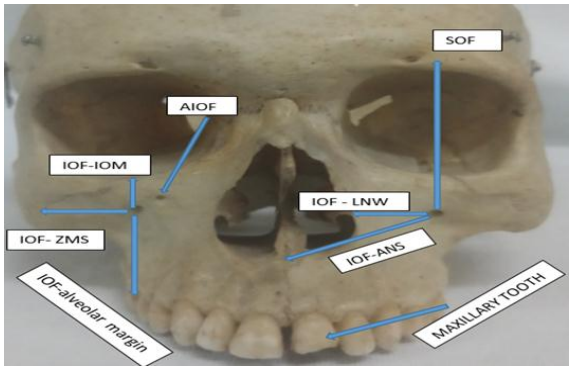

Figure 1: shows the morphometric point of measurement

Exclusion criteria

Any damage sign showed bilaterally or unilaterally in the area of orbital margin, infraorbital foramen, piriformis aperture, maxillary and zygomatic bone of skulls, and fetal skulls were excluded. All the required measurements were taken with the help of vernier digital calipers from IOF to the various most important anatomical landmarks.

1. Vertical measurements
   A) Upper margin of IOF to lower margin of IOM
   B) Upper to lower margin of IOF

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C) IOF to maxillary tooth
D) IOF to ANS

2. Transverse measurements
A) Medial to the lateral margin of IOF
B) Center of IOF to the lateral nasal wall
C) Center of IOF to zygomatico-maxillary suture

The positions of the suborbital foramen with related to the upper maxillary tooth were also assessed. All the parameters were studied in the Right and Left side in male skulls and Left and Right side in female skulls; right & left side in male & female; both side male & female total of 250 IOF. Mean and standard deviation were calculated and the results were statistically compared using an anova test.

RESULTS

In the comparison of morphometric data in males and females of IOF, table no. 1 shows the distance from the center of IOF to ANS statically significant whereas entirely the parameters showed not statically significant.

Table 1: Comparison and measurements of IOF from different anatomical structures of Male and female skulls.

Measurement in mm (Mean ± SD)						
Gender	**Male (n = 68)**			**Female (n= 57)**		
	Right	**Left**	**Both(n=136)**	**Right**	**Left**	**Both(n=114)**
IOF–IOM	6.79±1.38	6.92±1.44	6.85±1.42	6.96 ±1.53	6.96 ± 1.49	6.96±1.52
IOF-ZMS	19.04±2.93	19.12±2.49	19.08±2.73	18.23 ± 2.91	18.58 ± 2.69	18.41±2.82
IOF–ANS	33.24±2.22	32.78±3.34	33.01±2.85	32.65 ± 2.47	31.9 ± 2.28*	32.28±2.42*
IOF–PA	17.43±1.84	17.61±1.82	17.52±1.84	17.3 ± 2.15	17.04 ± 1.93*	17.17±2.06
V. D.	3.81±0.87	3.68±0.77	3.75 ±0.83	4.22 ± 4.09	3.66 ± 0.61	3.94±2.95
T. D.	3.68±0.93	3.79±0.72	3.74 ±0.83	3.53 ± 1.12	3.66 ± 0.66	3.6±0.93

*P<0.01 statistically significant (Male vs. female)

TD - width of infraorbital foramen, and VD - Height of infraorbital foramen, IOM - infraorbital rim; ZMS – zygomatico-maxillary suture, LNW- lateral nasal wall, IOF – Infraorbital foramen.

Table 2: Comparison in measurements between Male and female Right and Left side and total 250 IOF.

Measurement in mm (Mean ± SD)			
Gender	**Male and female**	**Male and female**	**Both (Right & Left)**
	Total Right (n=125)	**Total Left (n=125)**	**Total 250 IOF**
IOF – IOM	6.87 ± 1.46	6.94 ±1.47	6.91 ± 1.47
IOF - ZMS	18.67 ± 2.95	18.88 ± 2.60	18.77 ± 2.79
IOF – ANS	32.97 ± 2.36	32.38 ± 2.93	32.66 ± 2.68
IOF – PA	17.37 ± 1.99	17.35 ± 1.89	17.36 ± 1.95
V. D.	3.99 ± 2.85	3.67 ± 0.71	3.84 ±2.08
T. D.	3.61 ± 1.02	3.73 ± 0.70	3.67 ± 0.88

The comparison of morphometric data between Male and female Right and Left sides and a total of 250 IOF [Table 2]. Showed not statically significant.

Table 3: Comparison, measurement, and position of IOF to upper maxillary tooth Right, Left, and both sides in male and female of IOF.

Measurement in mm (Mean ± SD)						
Gender	**Male**			**Female**		
	Right	**Left**	**Both side**	**Right**	**Left**	**Both side**
IOF-B/W 1 &2 PM	18.21±13.04	19.78±14.18	28.75±2.77	20.30±12.81	19.05±13.00	27.93 ±2.65
AT 2 PM	24.16±3.41	25.97±2.24	24.82 ±3.16	…….	26.09 ± 3.44	26.41 ± 3.47
IOF-B/W 2 PM &1 Molar	28.99±2.73	28.76 ±2.55	28.99 ±2.73	26.95 ± 2.36	26.45 ± 2.75	26.72 ± 2.56
AT 1 Premolar	21.78±4.78	31.01±1.25	26.39 ±5.79	26.62 ±1.78	27.49 ± 1.55	27.05 ± 1.73
At 1 molar	……	……	24.61 ±2.79	21.5 ± 1.93	…….	21.5 ± 1.93
IOF-B/W C. & 1 PM	32.89±5.89	……	29.87 ±6.43	28.45 ± 0.52	…….	27.3 ± 2.04

Table 4: Comparison and position of IOF to an upper maxillary tooth in between Male and female Right and Left side and total 220 IOF with an upper maxillary tooth.

Measurement in mm (Mean ± SD)			
Gender	**Male and female**	**Male and female**	**Both (Right & Left)**
	Total Right Side	**Total Left Side**	**Total IOF with M. Tooth**
IOF-B/W 1 &2 PM	28.75 ± 2.77	27.93 ± 2.65	28.51 ± 2.76
AT 2 PM	24.82 ± 3.16	26.41 ± 3.47	25.41 ± 3.37
IOF-B/W 2 PM &1 Molar	28.99 ± 2.73	26.72 ± 2.56	27.56 ± 2.84
AT 1 Premolar	26.39 ± 5.79	27.05 ± 1.73	26.79 ± 3.91
At 1 MOLER (L)	24.61 ± 2.79	21.5 ± 1.93	23.05 ± 2.86
IOF-B/W Canine & 1 PM	29.87 ± 6.43	27.3 ± 2.04	28.40 ± 4.66

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IOF- lies in between the line with 1st and 2nd premolar; at the line with 2nd premolar; IOF- lies in between line with 2nd premolar and 1st molar; at the line with 1st premolar; at the line with 1st molar; IOF- lies in between line with canine and 1st molar.

Table 5: ?

Authors & year	No. of S. & countries	G.	Side	IOF-IOM	IOF-ZMS	IOF–ANS	IOF–PA	VD	TD
Hong J. H. et al (2022)	191 with 3D CT. (Korea)	M	Rt.	8.2±1.6	……	26.3±2.3	15.5±2.1	3.2±0.6	3.2±0.6
			Lt.	8.2±1.7	……	26.5±2.1	15.3±2.2	3.1±0.5	3.1±0.5
		F	Rt.	8.2±1.8	…..	24.7±2.6*	13.9±1.9*	2.9±0.5*	2.9±0.5*
			Lt.	8.5±2.6	……	25.4±1.7*	14.1±1.7*	2.8±0.5*	2.8±0.5*
		M F	T. Rt.	8.2±2.0	……	25.8±2.5	15.1±2.2	3.1±0.6	3.4±0.8
			T. Lt.	8.2±1.8	……	26.2±2.1	14.9±2.1	3.0±0.6	3.2±0.9
Varalakshmi K.L. et al (2021)	90 Dry skulls (Bangalore,India)		Rt.	6.34±1.63	14.11±2.24	32.21±3.07	…….	……	……
			Lt.	6.43±1.48	13.87±3.59	32.26±3.29	……..	…….	…….
Dagıstan S. et al (2017)	125 with CBCT (Ankara, Turkey)	M	Rt.	5.40±1.77	……	18.58±3.23	9.62±3.27	…….	…….
			Lt.	5.34±1.62	……	18.78±4.79	8.78±2.50	…….	…….
		F	Rt.	5.87±1.78	……	17.37±3.87	9.77±2.22	…….	…….
			Lt.	5.88±1.84	……	17.29±3.73	9.11±2.60	…….	…….
		M F	T. Rt.	5.64 ±1.78	……	17.95±3.66	9.70±2.76	3.70±0.60	3.17±0.60
			T. Lt.	5.63±1.76	……	17.99±4.32	8.95±2.54	3.73±0.63	3.16±0.53
		M F	T. IOF 250	5.63±1.77	……	17.97±3.99	9.32±2.68	3.71±0.61	3.17±0.56
Veeramuthu M. et al (2016)	105 Dry Skulls Tamilnadu, India		Rt.	7.22+1.64	15.16+2.67	32.62+3.49	17.8+2.94	3.88+1.17	3.82+1.58
			Lt.	6.78+1.64	17.8+2.94	33.52+3.37	17.2+2.75	3.68+0.89	3.92+1.46
Joseph C. C. et al (2015)	82 Dry Skulls (Mangalore , India)	M		6.6 ± 1.78	6.7 ± 2.12	……..	15.83±2.25	……..	…….
		F		6.52 ±1.62	6.44 ± 1.6	……..	15.55±1.74	……..	…….
		M F	Rt.	6.51 ± 1.78	6.62± 2.11	……..	15.76±2.08	……..	…….
			Lt.	6.61 ±1.64	6.56 ± 1.7	……	15.67±2.02	…….	……..
Riyaz Z. H. et al (2016)	43 Dry Skulls Badnapur, India		Rt.	6.75+1.76	…….	33.35+3.25	18.50+2.52	…….	……..
			Lt.	6.95*+1.68	…….	33.23+3.75	18.30+2.35	……..	……..
			T. 82		……..	…….	……	2.58+0.74	2.68+0.72
Singh R. (2011)	55 Dry Skulls Lucknow, India		Rt.	6.12±1.79	……..	……..	15.31±1.77	3.39±0.96	3.19±1.18
			Lt.	6.19±1.81	……..	……..	15.80±2.86	3.75±1.07	3.52±1.35
			Both	6.16±1.8	……..	…….	15.56±2.6	3.57±1.0	3.35±1.3
Raj T. et al (2014)	70 dry skulls Lucknow, India		Rt.	6.75±1.85	14.71±2.54	……..	15.79±1.76	2.93±0.78	3.05±0.79
			Lt.	6.92±1.81	14.83±2.36	……..	16.14±1.72	3.08±0.85	3.27±0.85
Gnanagurudasan E. et al (2014)	50 Dry Skulls Kerala, Tamil Nadu, India	M	Rt.	7.60 ±1.07*	28.35 ± 8.57*	36.30 ± 2.26	…….	……	……
			Lt.	6.80 ± 0.42*	27.40 ± 9.33*	36.00 ± 2.36	……..	…….	……
		F	Rt.	7.11 ± 1.02	27.32 ± 7.50*	34.31 ± 2.20	……..	…….	……
			Lt.	6.02±0.41	27.31 ± 6.31*	33.01 ± 2.31	……	……	……
The present study	125 Dry Skulls Dehradun, Uttrakhand.	M	Rt.	6.79±1.38	19.04±2.93	33.24±2.22	17.43±1.84	3.81±0.87	3.68±0.93
			Lt.	6.92±1.44	19.12±2.49	32.78±3.34	17.61±1.82	3.68±0.77	3.79±0.72

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			Both	6.85±1.42	19.08±2.73	33.01±2.85	17.52±1.84	3.75 ±0.83	3.74 ±0.83
		F	Rt.	6.96 ±1.53	18.23±2.91	32.65±2.47	17.3±2.15	4.22 ± 4.09	3.53 ± 1.12
			Lt.	6.96 ±1.49	18.58±2.69	31.9 ± 2.28*	17.04±1.93*	3.66 ± 0.61	3.66 ± 0.66
			Both	6.96±1.52	18.41±2.82	32.28±2.42*	17.17±2.06	3.94±2.95	3.6±0.93
		MF	T. Rt.	6.87 ± 1.46	18.67±2.95	32.97±2.36	17.37±1.99	3.99 ± 2.85	3.61 ± 1.02
			T. Lt.	6.94 ±1.47	18.88±2.60	32.38±2.93	17.35±1.89	3.67 ± 0.71	3.73 ± 0.70
		MF	T. IOF 250	6.91 ± 1.47	18.77±2.79	32.66±2.68	17.36±1.95	3.84 ±2.08	3.67 ± 0.88

Location and (mean & standard deviation) of IOF concerning upper maxillary tooth the IOF mostly lies in between the upper 2nd premolar & 1st molar 28.99 ±2.73 47.45% in males and was 28.99±2.73 on right & 28.76 ±2.55 left side. And 27.93 ±2.65 in females and was a maximum of 20.30±12.81on right side & 19.05±13.00 on the left side. The occurrence of another frequency was on lies in between the upper 1st & 2nd premolar tooth 28.75±2.77 in males and was maximum of 19.78±14.18 on the left side whereas 28.99±2.73 on the right side. In line with the 2nd premolar 24.82 ±3.16 in males and 26.41 ± 3.47 in females and was maximum on left side in table number 3 and 4. The total 250 IOF where 30 sides were found edentulous. In position of IOF There was no statistically significant difference on the right and left sides.

DISCUSSION

Anatomically the infraorbital foramen is located nearly to the infraorbital rim, oral and nasal cavity which is the important structure of the face. In infraorbital nerve block, the position of the infraorbital foramen has abundant significance at the time of surgical procedure on the face near the buccal, nose, and orbital region. The distance from center of IOF to the margin of infraorbital boarder differs from some other studies was Hong J. H. et al,[9] Dagıstan S. et al.[10] However, nearly the same distance was Varalakshmi K.L. et al,[11] Joseph C. C. et al,[12] Riyaz Z. H. et al,[13] Singh R,[14] Raj T. et al,[15] but the left is nearly the same and right side slightly higher than present study in Veeramuthu M. et al,[16] study in Tamilnadu, India. Gnanagurudasan E. et al,[17] study in Kerala, Tamil Nadu, India as shows in [Table 5].

In a comparison of the mean distance of IOF from center of IOF to midpoint of zygomaticomaxillary suture between the previous and present study, it was perceived the mean distances were greater than the Varalakshmi K.L. et al,[11] Veeramuthu M. et al,[16] Joseph C. C. et al,[12] Raj T. et al,[15] and lower than the Gnanagurudasan E. et al.[17] The mean and standard deviation of IOF from center of IOF to midpoint of the zygomaticomaxillary suture was 6.7 ± 2.12 in males and 6.44 ± 1.6 in females in the study of Joseph C. C. et al,[12] 15.16+2.67 in the right side and 17.8+2.94 in left side, in the study of Veeramuthu M. et al.[16] Whereas left side of Veeramuthu M. et al,[16] and the female skull in the present study were nearly the similar. The mean and standard deviation were 19.08±2.73mm on males and 18.41±2.82mm on females in the present studies. Previous and present studies show a high fluctuation in the distance of IOF to midpoint of a zygomaticomaxillary suture.

The current study shows the distances of IOF to the ANS in males right side to be 33.24±2.22 mm, left side 32.78±3.34 mm and both sides 33.01±2.85 mm in male skulls whereas in females right side 32.65±2.47 mm, left side 31.9 ± 2.28* mm and both side 32.28±2.42* mm in female skulls. When comparing male and female skulls the ANS distance showed a significant result in our studies. The distances of the infraorbital foramens to the ANS the result was lesser than the result gotten by the Gnanagurudasan E. et al,[17] and higher than the Hong J. H. et al,[9] Dagıstan S. et al,[10] their study was done with CT scan.

The mean distances of IOF to the lateral nasal wall was 17.43±1.84 mm on the right, 17.61±1.82mm on the left, and 17.52±1.84 mm in both side males and 17.3±2.15mm on right side, 17.04±1.93*mm left side and 17.17±2.06 mm on both in female skulls. And was 17.36±1.95 mm of Total IOF of 250. The present work revealed that when compared with other authors as mentioned in table no. 5 the present result was the similar to the Veeramuthu M. et al,[16] and it was higher than the result of Dagıstan S. et al.[10]

The means and standard deviations of V. diameters of IOF in the present study was 3.81±0.87mm right side, 3.68±0.77mm left, and 3.75 ±0.83 mm on both sides in males and 4.22 ± 4.09 mm on the right side, 3.66 ± 0.61 mm on the left side and 3.94±2.95mm on both side in female skulls. All 125 skulls of total 250 sides of male and female skulls were 3.84 ±2.08 mm. The measurement coincided with the Dagıstan S. et al,[10] Hong J. H. et al,[9] Singh R.[14] in total IOF and total right and left of the Veeramuthu M. et al,[16] and left side of the Raj T. et al,[15] whereas higher than the Riyaz Z. H. et al,[13] and right side of the Raj T. et al,[15] but in present study right side of female skulls was higher than all other authors as in [Table 5]. The means and standard deviations of the T. diameters of IOF in present study was3.68±0.93mm on the right, 3.79±0.72mm on the left side and 3.74 ±0.83mm on both side on male and was 3.53 ± 1.12mm on the right

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side, 3.66 ± 0.66mm on the left side and 3.6±0.93mm on both side on female skulls. All 125 skulls of a total 250 side of male and female skulls were 3.67 ± 0.88 mm. The measurement coincides with the Singh R.[14] Raj T.et al,[15] Veeramuthu M.et al,[16] Dagıstan S. et al,[10] right & left sides on males and both sides in males and females in the Hong J. H. et al.[9] Whereas higher than (Riyaz Z. H. et al,[13] and right & left sides in females in Hong J. H.et al,[9] studies.

The distances of the suborbital foramen to upper alveolar margin in line between 1st & 2nd premolar was 18.21±13.04mm on the rights side, 19.78±14.18mm on the lefts side and 28.75±2.77 mm on both sides in males. Whereas 20.30±12.81mm rights side, 19.05±13.00mm left side, and 27.93 ±2.65 mm on both sides in females. Which is nearly close to the distances from suborbital foramen to the upper alveolar margin on female and males.

And in line between 2nd premolar & 1st molar 28.99±2.73 mm in the right, 28.76 ±2.55mm in the left, and 28.99 ±2.73mm on both sides in males. Whereas 26.95 ± 2.36 mm in the right, 26.45 ± 2.75mm in the left, and 26.72 ± 2.56mm on both sides in females. The distances of suborbital foramen from the upper alveolar margin was more than in males than in female's distance of IOF to upper alveolar margin. Thus, though feeling the IOF with palpation, the IOF extraoral specialists take cautious about the difference in the situation from dissimilar structural landmarks.

CONCLUSION

To avoid injury to the infraorbital nerve, artery, and vein and assist in operational surgery, local anesthetic, and further intrusive measures. The information on the spaces from surgically faced structural breakthroughs in the current study may contribute to the specialists to localizing the IOF.

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