RESULTS

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The present study was carried out on twenty skulls, all were subjected to CT scanning and anatomical studies. Measurements from CT study and the anatomical study were tabulated in table (1)&(2), then they were sent to statistical unit , the following results and tables were obtained.

Tables 2&3 represent the different measurements collected by both the anatomical method and from CT photos

These tables were further analysed

Table (1)

CT scanning measurements of the temporal bones

Specimen Number	A-B length in mm	C-D length in mm	Jugular bulb
1	3.4	1.5	no
2	3.9	-0.7	no
3	22.88	1.7	no
4	3.1	1.5	no
5	2.9	3.4	no
6	2.0	2.0	no
7	3.0	1.8	no
8	2.6	1.6	no
9	3.6	-1.0	yes
10	3.3	-0.1	yes

Table (1) : cont.

CT scanning measurements of the temporal bones

Specimen Number	A-B length in mm	C-D length In mm	Jugular bulb
11	2.0	1.7	no
12	3.0	3.4	no
13	2.6	1.8	no
14	3.6	-1.0	no
15	2.6	1.8	no
16	3.4	1.5	no
17	3.9	2.0	no
18	2.9	1.6	no
19	2.8	-0.1	yes
20	3.1	1.5	yes

Table (2)

Anatomical measurements of the temporal bone.

Specimen Number	X-Y length in mm.	Depth of S.T. in mm.	F- S.T. in mm.
1	3.4	2.8	0.8
2	3.85	4.9	1.6
3	2.8	2.8	0.2
4	3.0	3.1	0.7
5	2.9	1.3	1.5
6	1.94	2.1	0.8
7	3.0	2.1	0.4
8	2.6	2.9	1.0
9	3.6	5.8	0.75
10	3.3	4.0	1.2

Table (2) (cont.)

Anatomical measurements of the temporal bone

Specimen Number	X-Y length in mm.	Depth of S.T. in mm.	F- S.T. in mm.
11	2.1	1.9	1.4
12	3.1	1.8	0.9
13	2.6	2.2	0.8
14	3.6	5.6	0.4
15	3.3	4.9	1.1
16	3.45	2.5	1.1
17	3.9	1.0	1.0
18	2.85	2.3	0.7
19	2.8	4.6	0.9
20	3.1	2.3	0.6

1- A-B line

On studying table (5) as regard (A-B) line:- (the line representing the distance between the lateral wall of the inferior limb of the posterior semi-circular canal and the medial wall of the descending portion of the fallopian canal), it was found out that :-

-The the minimum length of that line was 2.00 mm,

-The maximum length was 3.90 mm

-The mean length was (3.060 mm)

-The standard deviation was 0.5236 .

On reviewing table (4) we found that :-

-In the majority of the specimens (60%) = 12 specimens : the length of the line (A-B) ranged from (2.9) mm. to (3.6) mm. In half of these cases (50%) = 6 specimens the length ranged from 2.9 mm to 3.2 mm and in the other 6 specimens the length ranged from 3.3 mm and 3.6 mm.

-The two extreems of length occur in only 20% of specimens = 4 specimens : in half of them (2 specimens) the length was less than 2.4 mm while in the other two specimens the length was above 3.7 mm.

-In the remaining 4 specimens the length ranged from 2.5 mm. and 2.8 mm.

Table (3)

A-B line
Frequency and Percentage

	Freq.	percent	valid percent	cummulative percent
-2.4	2.0	10.0	10.0	10.0
2.5-2.8	4.0	20.0	20.0	30.0
2.9-3.2	6.0	30.0	30.0	60.0
3.3-3.6	6.0	30.0	30.0	90.0
3.7-	2.0	10.0	10.0	100.0
Total	**20**	**100.0**	**100.0**	

Table (4)

A-B line Statistics

Mean	**3.0600**
Std. Deviation	**0.5236**
Range	**1.90**
Minimum	**2.00**
Maximnm	**3.90**

2- X-Y line

As regard tables (5) & (6) which shows the statistics of the line (X-Y) :- (the line representing the distance between the lateral wall of the inferior limb of the posterior semi-circular canal and the medial wall of the descending portion of the fallopian canal) :-

-The minimum length was 2.1 mm.

-The maximum length was 3.90 mm.

-The mean length was 3.0450 mm

-The standard deviation was 0.5326.

and it was found that :-

-In 10% of specimens the length was less than 2.4 mm.

-In 20% of specimens the length ranged from 2.5 mm. to 2.8 mm.

-In 30% of specimens the length ranged from 2.9 mm. to 3.2 mm.

-In 30% of specimens the length ranged from 3.3 mm. to 3.6 mm.

-In 10% of specimens the length was above 3.7mm.

Paired sample correlation study of these two lines (A-B) & (X-Y) showed in table (7) & (8). From these tables we found that the correlation was 0.998 and this means that there is high positive correlation and that the correlation is highly significant.

Table (5)

X-Y line Frequency and Percentage

		Frequency	percent	Valid percent	Cumulative percent
	-2.4	2.O	10.0	10.0	10.0
	2.5-2.8	4.O	20.0	20.0	30.0
	2.9-3.2	6.O	30.0	30.0	60.0
	3.3-3.6	6.O	30.0	30.0	90.0
	3.7-	2.O	10.0	10.0	100.0
	Total	20	100.0	100.0	
Total		20	100.0		

Table (6)

X-Y line Statistics

Mean	3.0450
Std. Deviation	0.5326
Range	1.80
Minimum	2.10
Maximum	3.90

Table(7)

Paired sample statistics
pair (1)
A-B & X-Y lines

	Mean	N	Std. Deviation	Mean Std. Error
A-B	3.0600	20	0.5236	0.1171
X-Y	3.0450	20	0.5326	0.1191

Table (8)

Paired sample Correlation
pair (1)
A-B & X-Y lines

	N	Correlation	Sig.
Pair (1)	**20**	**0.998**	**0.000**

3- C-D line

As regard C-D line :- (the line extending from the mid point of the (A-B) line to the most posterior aspect of the sinus tympani).

Table (10) shows the statistics of this line.

-The minimum length of the C-D line was (-1.0) mm.

-The maximum length was 3.40 mm.

-The mean length was 1.570 mm.

-The standard deviation was 0.7968.

Table (9) showed that:-

-In 50% of the specimens = 10 specimens the length ranged from 1.0 mm. to 1.9 mm.

-While the other 50% of specimens i.e the other 10 specimens were distributed as following :-

-In 5 specimens = 25% of all specimens : the length ranged from (-1.0) to 0.0 mm. and this means that the C-D line is very short which denote deep sinus tympani .

-In 2 specimens (10% of specimens) the length ranged from 2.0 mm. to 2.9 mm.

-While the line was very long ranged from 3.0 to 3.9 mm. in 20 % of specimens indicating shallow sinus tympani.

Table (9)

C-D line Frequency and Percentage

		Frequency	percent	Valid percent	Cumulative percent
	(-1.0) - 0.0	5	25.0	25.0	25.0
	0 - 0.9	1	5.0	5.0	30.0
	1.0-1.9	10	50.0	50.0	80.0
	2.0-2.9	2	10.0	10.0	90.0
	3.0-3.9	2	10.0	10.0	100.0
	Total	**20**	**100.0**	**100.0**	
Total		**20**	**100.0**		

Table (10)

C-D line Statistics

Mean	**1.5700**
Std. Deviation	**0.7968**
Range	**3.30**
Minimum	**-1.0**
Maximum	**3.40**

4- Depth of the sinus tympani

On studying the depth of the sinus tympani from table (12) it was found that :-

-The minimum measurement of the depth was 1.0 mm.

-The maximum depth was 5.80 mm.

-The mean was 3.075 mm.

-The standard deviation was (1.410).

Table (11) showed that :-

-In the majority of cases = 60% of specimens (12 specimens) the depth ranged from 1.4 mm. to 2.9 mm.

-The deepest sinus tympani had occured in 4 specimens (20% of specimens) ranged from 4.5mm. to 6.0 mm.

-While only 10% of specimens fall in the group 3.0 - 4.4 mm.

-The rest 10% (2 specimens) were less than 1.4 mm.

Paired sample statistics and correlation of the second pair (C-D line and the depth of the sinus tympani) in tables (13) & (14) showed that :-

-The mean length of C-D line was 1.57mm. while the mean depth of sinus tympani was 3.075mm.

-The correlation was (- 0.743) which means highly significant negative correlation i.e the longer the C-D length the shallower the sinus tympani and vice versa, and that was clear on reviewing table (1)&(2) : in specimen (2) the C-D length was (-0.7) mm. (negativeC-D value) while the depth of the sinus tympani was 4.9mm. (deep sinus tympani).

Figure (29) :- CT photo showing deep sinus tympani

Figure (30) :- CT photo showing shallow sinus tympani

Table (11)

DEPTH Frequency and Percentage

		Frequency	Percent	Valid percent	Cumulative percent
	0.0-1.4	2	10.0	10.0	10.0
	1.4-2.9	12	60.0	60.0	70.0
	3.0-4.4	2	10.0	10.0	80.0
	4.5-6.0	4	20.0	20.0	100.0
	Total	**20**	**100.0**	**100.0**	
Total		**20**	**100.0**		

Table (12)

Depth statistics

Mean	**3.0750**
Std. Deviation	**1.4104**
Range	**4.80**
Minimum	**1.00**
Maximum	**5.80**

Table (13)

Paired sample statistics
Pair (2)
C-D line & Depth

Pair 2	Mean	N	Std. Deviation	Std. Error Mean
CD	1.5700	20	0.7968	0.1782
DEPTH	3.0750	20	1.4104	0.3154

Table (14)

Paired Samples Correlation
Pair (2)
C-D line & Depth

	N	Correlation	Sig.
Pair 2	**20**	**- 0.743**	**0.000**

5- F-ST line

As regard (F-ST) line (the distance from the lateral wall of the sinus tympani to the medial wall of the facial canal) : table (16) showed the statistics of the (F-ST) line :-

-The minimum measurement was 0.20 mm. while

-The maximum measurement was 1.60 mm.

-The mean length was 0.867 mm.

-The standard deviation was 0.392

On studying table (15) It was found that : -

-In 40% of specimens (8 specimens) the length ranged from 0.5mm. to 0.9 mm.

-In 30 % of specimens (6 specimens) the length ranged from 1.0 mm. to 1.4 mm.

-In 2 specimens only (10%) the length was above 1.5 mm. (long F-ST line).

-While in 4 specimens (20%) the F-ST length was less than 0.4 mm.(short F-ST line).

-In 20% of specimens (4 specimens)the jugular bulb was found to be encroaching on the middle ear cavity. (Fig 31) table 2.

Figure (31) :- An encroaching jugular bulb

Table (15)

F-ST line Frequency and Percentage

		Frequency	percent	Valid percent	Cumulative percent
	0.0-0.4	4	20.0	20.0	20.0
	0.5-0.9	8	40.0	40.0	60.0
	1.0-1.4	6	30.0	30.0	90.0
	1.5-1.9	2	10.0	10.0	100.0
	Total	20	100.0	100.0	
Total		20	100.0		

Table (16)

Statistics of
F-ST Line

Mean	0.8675
Std. Deviation	0.3928
Range	1.40
Minimum	0.20
Maximum	1.60

Table (17)

Paired Difference

		Mean	Std. Devition	Std. Error Mean	95%Confidence Interval of the Difference		t	df	Sig. (2-taile
					Lower	Upper			
Pair 1	A-B & X-Y	1.500E-02	3.66E-03	8.192E-03	-2.145E-03	3.215E-02	1.831	19	.083
Pair 2	C-D & DEPTH	-1.5050	2.0722	..4634	-2.4748	-.53352	-3.248	19	.004