

# Estimation of dimension of zygomatic arch in human dry skull

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## ABSTRACT

### Aim:

The main aim of the research is to study the difference in morphometry of zygomatic arch in different human skulls.

### Objective:

The direct measurement is taken from the human skulls. Both the right and left zygomatic arch are considered for measurement.

### Background:

The dynamic response of the human skull is to study about morphometry of the zygomatic arch varies among different skulls. A detailed examination and comparison between each skulls will be taken.

### Material and Method:

About 50 skulls will be taken into consideration. The assessment of difference between the morphometry will requires standard measurement hence, the measurement is taken twice.

### Reason:

The purpose of this study is to make the difference in morphometry of zygomatic arch is more widely applicable for use in the human craniofacial skeleton.

**Keywords:** Zygomatic complex, morphometry, craniofacial skeleton, anthropometric study

## INTRODUCTION

The zygomatic arch is part of temporal bone which is the common site for fracture. zygomatic arch is important feature of the face. It protects the face from all strong blow. It is second most common place which often get fractured. In traffic accident, assault, the zygomatic arch get fractured. This lead to the series of implants of zygomatic arch. But zygomatic implants were difficult without proper measurement of zygomatic arch. Implants are lagging without proper parameter.

Thus, more precise and clear measurement of zygomatic arch is needed. The anthropometric measurement which involve the length and breadth measurement of the human dry skull. This provide us the clear data of morphometry of zygomatic arch. A new method of measuring the zygomatic arch involved a better study of dimension necessary for implants of zygomatic arch.

## MATERIALS AND METHOD

The digital calliper is used to measure the length and breadth of the zygomatic arch. About 25 skulls are taken into study. Both the right and left zygomatic arches were measured. The length of the zygomatic arch is measured from commencement of zygomatic process, the front of the zygomatic suture to the end of the zygomatic arch extended on the temporal bone, till the upper margin of the extension of the mastoid process. Measuring the zygomatic arch lead to series of error, Because measurement tends to vary among observers. Hence, measurement taken for thrice to prevent observing error. The breadth of the zygomatic arch is also measured using the digital vernier calliper. The middle part of the zygomatic arch is taken for measuring the breadth of the zygomatic arch. the digital calliper is always checked whether it is in 0.00mm before taking the measurement. These measurement are taken very accurately which are essential for the zygomatic arch.

## RESULT

As study was took under major concentration, to prevent the error occur during the study to get a perfect tends of measurement which is necessary for zygomatic implants. many researchers had reviewed that measuring the zygomatic arch is hard to due to its unilateral structures. So, in this present study, a great effect was took to measure the zygomatic arch.

Table 3: dimension of zygomatic arch in human dry skull(mm)

	Length	Breadth
Right	50.9 $\pm$ 5.4	9.7 $\pm$ 11.1
Left	50.3 $\pm$ 10.2	6.9 $\pm$ 4.7

The zygomatic arch measurement were gotten by series of studies.hence,the result of the study gives the measure of zygomatic arch which is essential for zygomatic implants.

As from the table 3, we can get the values as the length of the right zygomatic arch, it's mean is 50.9 and standard deviation is 5.4 and the left one , it's mean is 50.3 and standard deviation is 10.2

Breadth of the zygomatic arch is found to be, it's mean is 9.7 and standard deviation is 11.1. It is breadth of right zygomatic arch. Left breadth of the zygomatic arch , it's mean is 6.9 and standard deviation is 4.7

## DISCUSSION

The Aim of this study is to measure the correct dimension of the zygomatic arch on each sides. It is necessary for zygomatic implants, which is done using the easy method of direct measurement of skull. The study is done easily using the marker to prevent error of wrong measuring the extent of arch.since, Frust has used CT scan to measure the zygomatic arch.

Frust also took very tough method of measuring by taking four study for measuring zygomatic arch and also the values of the measurement were also some range similar to the present study. The values of the studies also gives small variation among their measurement.

Table 1: length of the zygomatic arch in human dry skull(mm).

Length	Present study	M. Frust	Sahin
Right	50.9 $\pm$ 5.4	40.5 $\pm$ 3.1	50.4 $\pm$ 1.3
Left	50.3 $\pm$ 10.2	63.4 $\pm$ 6.5	56.7 $\pm$ 1.9

Table2: breadth of the zygomatic arch in human dry skull(mm).

Breadth	Present study	M.frust	Sahin
Right	9.7 $\pm$ 11.1	6.3 $\pm$ 4.9	4.68 $\pm$ 1.09
Left	6.9 $\pm$ 4.7	4.7 $\pm$ 3.2	4.58 $\pm$ 0.89

Measuring the zygomatic arch is seem to be very tough to measure because of its unilateral structures. It has important for the zygomatic implant, has it becoming very important for nowadays due to major injuries caused by accident.

## CONCLUSION

A retrospective study is completed by sensitive method of measuring the zygomatic arch, using marker and digital calliper for simple and accurate method of measurement.zygomatic arch is irregular in shape and hence it is difficult to measure it.it is very important for the study and also for the zygomatic implants in the time of series of accident occurring today. With the knowledge of the error, the study was done series of method to prevent the error caused during the investigation in clinical sides. This will help the sensitive type of treatments. The study was accepted to be readily sensitive and hence used for the treatment of zygomatic complex fractures.

## REFERENCES

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