Original Research Article

A comparative morphological study of human hyoid bone in Malwa Region of Central India

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ABSTRACT

There are many tools and a technique for identification of sex in unknown human skeletons one of them is morph metric study of the human hyoid bone is a useful tool. Work for hyoid bone with respect weight and different measurement of identification of sex. In our study 32 male and 18 female bones of age group range 15 to 60 years were received from the human deceased body during post-mortem. In greater part dimension there is a obvious dissimilarity between male & female hyoid bone. The Mean, Range, SD & all parameter of the hyoid bone were calculated by the typical technique.

Materials and Methods:
The material include 50 specimens of hyoid bones received from deceased human body during dissection, museum at Index medical college institute and research centre at Indore and autopsy at M.G.M Medical College, Indore from 2013-2016. Out of 200 medico legal cases in the age range from 15 years to 60 years, measurements carried out with the help of vernier caliper & electronic weighing machine.

Result:
The consequences of these boundary female qualities are not exactly the in male. The mean vertical length between center of the foremost surface of the body & cross over line drawn between the tubercles of more cornua in the midline in males is 36.812±3.16 mm & in females is 32.31±2.44 mm, the distinction being significant (p value < 0.001).

Conclusion:
The investigations of the male human hyoid bone for the principal of the estimations were more when contrasted with the estimations of female human hyoid bones. In a large portion of the boundaries there was a clear differentiation between the estimations of both male female. For recognition of sex in these bones, single figuring may not be adequate to choose the sex of the bones and it gets required to see all the estimation before choosing the sex of a unidentified hyoid bone.

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1. Introduction

Hyoid is located in the front of midline of neck just above the larynx and below the mandible & U-shaped bone. It lies inverse the upper aspect of the fourth cervical vertebra and around 2 cm underneath the degree of the lower edge of the mandible when the head is very still. It is suspended from styloid cycle of the transient bone by the styloid tendons. It is the main bone in the body that explains with no different bones. Hyoid bone gives solid connections to the muscles, that frames the floor of the mouth and to the tongue above, to the larynx underneath, and to the epiglottis and pharynx posteriorly.¹

The hyoid bone serves as a fulcrum for the muscles involved in the process of swallowing. During the process of swallowing, the suprahyoid muscles elevate the hyoid bone when the mandible is fixed. Various muscular attachments² of the hyoid bone.

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Table 1: Human hyoid bone in male & female

| S. No | Parameters                                                                 | M (N=32)     | Range   | F (N=18)     | Range   |
|-------|-----------------------------------------------------------------------------|--------------|---------|--------------|---------|
| 1     | Max. len. of greater cornua – right side                                    | 32.07±2.052  | 28-37   | 28.73±2.454  | 24-32.5 |
| 2     | Max. len. of greater cornua – left side                                     | 32.01±2.008  | 28-37   | 28.68±2.398  | 24-33   |
| 3     | Among tubercle of greater cornua – transverse length – external (outer measurement) | 44.59±7.944  | 31-70   | 38.49±4.973  | 31-48   |
| 4     | Among tubercle of greater cornua – transverse length – middle (central measurement) | 41.03±7.671  | 28-66   | 35.34±5.963  | 25-45   |
| 5     | Among tubercle of greater cornua – transverse length – internal (inner measurement) | 37.25±7.749  | 23-62   | 32.69±5.685  | 22-42   |
| 6     | Among internal surface of greater cornua length – at their middle         | 33.12±4.973  | 22-43   | 28.25±2.735  | 24-33   |
| 7     | Lesser cornua – length – right side                                         | 5.5±1.22     | 3.49-10.0 | 4.7±0.699 | 3.50-6.0 |
| 8     | Lesser cornua – len.– left side                                             | 5.5±1.22     | 3.49-10.0 | 4.7±0.699 | 3.50-6.0 |
| 9     | Transverse len. among bases of lesser cornua                                | 21.46±3      | 11.5-27 | 18.6±2.87    | 10.5-22 |
| 10    | Measurement of body in middle one side to another side                      | 22.64±3.170  | 13.5-27 | 20.369±1.595 | 18-23   |
| 11    | Body anterior posterior Measurement in middle                               | 6.222±1.252  | 4-9     | 5.536±1.207  | 4-8     |
| 12    | Body len. among the upper and lower margins                                 | 11.856±1.553 | 9-17    | 10.01±1.073  | 7-11.5  |
| 13    | Among middle of anterior surface of body - and transverse line among the tubercles of greater cornua in the midline –vertical measurement | 36.811±3.159 | 30-44   | 32.313±2.445 | 26-36   |
| 14    | The posterior surface of body max. dept of concavity in the middle         | 1.8392±0.646 | 1-3     | 1.536±0.534  | 1-25    |
| 15    | Wt. of human hyoid bone                                                    | 0.9973±0.254 | 0.67-1.78 | 0.7215±0.1153 | 0.49-0.90 |

1.1. Greater cornua

Are attached to the body by cartilage, in younger life, however after 50 years age they are typically joined by bone. They venture backwards from the lateral ends of the body & flattened, taper posteriorly & each end in tubercle, when the throat is grasped amid finger & thumbs above the thyroid cartilage, the greater cornua can be acknowledged.1

2. Materials and Methods

For this study the material include 50 specimens of hyoid bones received from deceased human body during dissection, museum at Index medical College Institute and research centre at Indore and autopsy at M.G.M Medical college Indore from 2013-2016, out of 200 medico legal cases in the age group ranging from 15 years to 60 years.

3. Result

The mean length of more prominent cornua – outside (right side) males is 32.08±2.05mm & in females it is 28.74±2.45mm, the mean length of more cornua (left side) in males is 32.02±2.009mm & in females is 28.69±2.39mm. The consequences of these boundary female qualities are not exactly the in male. The mean vertical length between center of the foremost surface of the body & cross over line drawn between the tubercles of more cornua in the midline in males is 36.812±3.16 mm & in females is 32.31 ± 2.44 mm, the distinction being significant (p value < 0.001).

4. Discussion

We are correlating with Harjeet, Jit I2 & other studies. Since metric examinations of hyoids are regularly centered
around size instead of morphological shape, it is conceivable that misclassifications can happen for those bones that are nearer in size to individuals from the other gender as opposed to those of its own sex. The male hyoids are bigger than female hyoids in all measurement, our study is similar with the study of Harjeet & JitI the distinction being statistically significant (p value < 0.001). This may bring about little males being mistakenly delegated females and bigger females. Utilizing an absolutely metric, measurable technique gives a target way to deal with testing for contrasts fit as a fiddle. The muscles fix the hyoid unresolved issue, mandible & skull above and to thyroid ligament, sternum bone and scapula beneath. The strong development of rumination, deglutition and phonation depends on the incredible versatility of the hyoid bone.

The former concentrated on the cross over length in the midst of tubercles of more prominent cornua – External\(^5\) and the cross over length among the tubercles of more noteworthy cornua-Midderesults were further in male hyoids as assess to female hyoids. Mean length of more prominent cornua – outer (right side) males is 32.08±2.05mm and in females it is 28.74±2.45mm, the mean length of more noteworthy cornua (left side) in males is 32.02±2.09mm and in females is 28.69±2.39mm. The consequences of female qualities are lesser than the male worth is profoundly huge (p esteem < 0.001).

As indicated by Ranjith and Pillai S\(^7\) the mean load of the hyoid bone in male was 1474.41 ± 289.67 mg and that of the female hyoid bone was 960 ± 233.36 mg. The hyoid bone is mostly suspended by tendons which reach out from the tips of the styloid cycles to the hyoid littler horns. In addition, the soundness may rely upon the anatomical and productive connection between the hyoid bone and the laryngeal ligament. Nonetheless, by eliminating size from the sex assurance measure the probability of misclassifications could be diminished. Tragically, explicit shapes are regularly hard to pass judgment and onlooker predisposition might be acquainted while attempting with order the hyoid as one specific shape or the other.

5. Conclusion

The investigations of the male human hyoid bone for the principal of the estimations were more when contrasted with the estimations of female human hyoid bones. In a large portion of the boundaries there was a clear differentiation between the estimations of both male female. For recognition of sex in these bones, single figuring may not be adequate to choose the sex of the bones and it gets required to see all the estimation before choosing the sex of a unidentified hyoid bone.

6. Source of Funding

None.

7. Conflict of Interest

None.

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