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RESEARCH ARTICLE

Morphometric Study of Malleus in Gujarati Population

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Abstract

Back ground:

In present study an attempt is made to evaluate morphometry of malleus in - Gujarati population which is very help full for making prosthesis in ossicular disease.

Aim:

To study the normal morphometric value of malleus.

Material and method:

Present study was carried out on 60 mallei in anatomy department at 3 medical colleges namely Govt. Medical College, Bhavnagar, Shri M.P. Shah Govt. Medical College, Jamnagar and P.D.U Medical College, Rajkot. The present study was conducted after approval from the institutional ethics committee.

Results:

The mean value of the **length of malleus** was 7.81 mm. The maximum value of was 8.69 mm. The minimum value was 7.16 mm and standard deviation was 0.320 mm

The mean value of the **length of manubrium of malleus** was 4.59 mm. The maximum value of was 5.25 mm. The minimum value was 3.87 mm and standard deviation was 0.34 mm.

The mean value of **Length of head and neck of malleus** was 5.00 mm. The maximum value was 5.40 mm. The minimum value was 4.57 mm and standard deviation was 0.20 mm.

Conclusion:

The result of morphometry of malleus is very important tool for malleus prosthesis in various ossicular pathology. Variation in morphometry of malleus is might be due to racial difference or regional population difference in India. It might be due to inter observer error by other worker, method used for measurement or instruments used for measurement.

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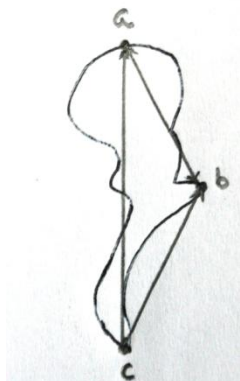
INTRODUCTION

Fewer studies have been done on the morphological and morphometry of ear ossicles. Study is helpful for establishing the normal value of morphometric parameters of ear ossicles in Gujarati population. This study is very helpful in making prosthesis in Gujarati population.

Material and method

Present study was carried out on 60 mallei in anatomy department at 3 medical colleges namely Govt. Medical College, Bhavnagar, Shri M.P. Shah Govt. Medical College, Jamnagar and P.D.U Medical College, Rajkot. The present study was conducted after approval from the institutional ethics committee.

Measurements /parameters of Malleus were as follows.



(Malleus)

- **Total Length of malleus (mm):** (a-c) maximal distance between the top of the head and the end of the manubrium.¹
- **Length of manubrium mallei (mm):** (b-c) distance from the end of the lateral process to the end of manubrium.¹
- **Length of head and neck of malleus (mm):** (a-b) maximal distance between the top of the head and the end of the lateral process.

Observation

➤ **Malleus:**

Statistics	Mean (mm)	Max (mm)	Min (mm)	SD (mm)
Length of malleus	7.81	8.69	7.16	0.32
Length of manubrium of malleus	4.59	5.25	3.87	0.34
Length of Head & Neck of malleus	5.00	5.40	4.57	0.20

Discussion

❖ Morphometric parameter of ear ossicles:

In present study (2013), the mean total length of malleus was 7.81 mm which was almost similar with reported by **Arsenburg et al (1981)²** (7.8 mm), **Oschman Z and Meiring JH (1991)³** (7.844mm) and **Unur E et al (2002)¹** (7.69 mm). It was lower than reported by **Bhatnagar DP et al (2001)⁴** (8.36 mm) and **Ramirez L M and Ballesteros LE (2013)⁵** (8.18 mm) and higher than reported by **Harneja NK and Chaturvedi RP (1973)⁶** (7.15 mm).

In Present study (2013), the mean Length of manubrium of malleus was 4.59 mm which was almost similar with reported by **Bhatnagar DP et al (2001)⁽¹⁾** (4.65 mm), **Unur E et al (2002)¹** (4.70 mm). It was higher than reported by **Harneja NK and Chaturvedi RP (1973)⁶** (4.22 mm), **Arsenburg et al (1981)²** (4.4 mm) and **Oschman Z and Meiring JH (1991)³** (4.399 mm) and lower than reported by **Ramirez L M and Ballesteros LE (2013)⁵** (4.91 mm).

In Present study (2013), the mean Length of head and neck of malleus was 5.00 mm which was higher than reported by **Unur E et al (2002)¹** (4.85 mm).

- **Total Length of Malleus (mm):**

Researcher	Study population	Sample size	Min (mm)	Max (mm)	Mean (mm)	SD (mm)
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Harneja NK and Chaturvedi RP (1973)⁶	Rajasthan	50	6.60	8.00	7.15	0.31
Arsenburg et al (1981)²	India	31	7.01	8.41	7.80	0.35
Oschman Z and Meiring JH (1991)³	Negroid/ Caucasoid South Africa	122	–	–	7.844	–
Bhatnagar DP et al (2001)⁽¹⁾	Patiala	60	7.20	9.60	8.36	1.39
Unur E et al (2002)¹	Turkey	40	–	–	7.69	0.60
Ramirez LM and Ballesteros L E (2013)⁵	Colombian adult mestizo	23	–	–	8.18	0.24
Present study (2013)	Gujarat	60	7.16	8.69	7.81	0.32

- Length of Manubrium of malleus (mm):**

Researcher	Study population	Sample size	Min (mm)	Max (mm)	Mean (mm)	SD (mm)
Harneja NK and Chaturvedi RP (1973)⁶	Rajasthan	50	3.75	5.20	4.22	0.35
Arsenburg et al (1981)²	India	30	3.56	5.65	4.40	0.47
Oschman Z and Meiring JH(1991)³	Negroid/ Caucasoid south Africa	122	–	–	4.399	–
Bhatnagar DP et al (2001)⁴	Patiala	60	3.78	5.21	4.65	0.27

Unur E et al (2002)¹	Turkey	40	–	–	4.70	0.45
Ramirez L M and Ballesteros LE (2013)⁵	Colombian adult mestizo	23	–	–	4.91	0.25
Present study (2013)	Gujarat	60	3.87	5.25	4.59	0.34

• **Length of Head and Neck of Malleus (mm):**

Researcher	Study population	Sample Size	Min (mm)	Max (mm)	Mean (mm)	SD (mm)
Unur E et al (2002)¹	Turkey	40	–	–	4.85	0.29
Present study (2013)	Gujarat	60	4.57	5.40	5.00	0.20

CONCLUSION

Morphometric parameter:

The mean total length of malleus was 7.81 ± 0.32 mm. The mean Length of manubrium of malleus was 4.59 ± 0.34 mm. The mean Length of head and neck of malleus was 5.00 ± 0.20 mm. The result of morphometry of malleus is very important tool for malleus prosthesis in various ossicular pathology. Variation in morphometry of malleus is might be due to racial difference or regional population difference in India. It might be due to inter observer error by other worker, method used for measurement or instruments used for measurement.

References:

1. Unur E, Ulger H, and Ekinci N; Morphometrical and Morphological Variation of Middle Ear Ossicles in the Newborn; Erciyes Medical Journal; 2002; volume 24; Issue 2; page no.57-63.
2. Arsensburg B, Harrell M, Nathan H; The Human Middle Ear Ossicles: Morphometry and Taxonomic Implications; J Hum Evol; 1981; Volume 10; Page No.199-205.

3. Oschman Z and Meiring JH; A Morphometric and Comparative Study of The Malleus; Acta Anatomica; 1991; Volume 142; Issue 1; Page no.60-61.
4. Bhatnagar DP, Singal P and Thapar SP; Anatomy of Malleus- A Human Ear Ossicle; Anthropologists; 2001; Volume 3; issue 2; Page no. 139-141 .
5. Ramirez, LM and Ballesteros, LE; Anthropometry of the Malleus in Humans: A Direct Anatomic Study; Int. J. Morphol.; 2013; volume 31; issue 1; page no.177-183.
6. Harneja NK, Chaturvedi RP; A Study of the Human Ear Ossicles. Indian J Otol.; 1973; Volume 25; Page No. 154-160.