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Research Article

**INTERNAL LENGTH SIDE MEDIUM WIDTH IN THE
CENTRAL AXLE FOR SEXUAL GENDERS SAURASHTRA
REGION: METACARPAL STUDY****Dr Nauman Khurshid, Dr. Sumbal Mushtaq, Dr. Zeshan Daoud**

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Article Received: February 2020**Accepted:** March 2020**Published:** April 2020**Abstract:**

The metacarpal bones are of great importance for anatomists, anthropologists and forensic specialists in the routine teaching and analysis of quantitative and qualitative traits in skeletal remains. The purpose of this study was to provide different parameters for the first metacarpal bone of the saurashtra population. The first 42 metacarpal jawbones were measured, and their size was compared with the white American and Spanish population. The mean, SD, t value and p value were calculated, and in the case of sexual dimorphism the border point method was used.

Keywords: *Internal Length, Side, Medium Width, Central Axle, Sexual Genders, Saurashtra Region, Metacarpal Study.*

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INTRODUCTION:

E.J. According to field and Harrison R.J. (1947), the word metacarpal comes from the Greek word "Meta" means later and "carpus" means child^{1,2}. So, the part of the palm where the metacarpus is placed and distal to the wrist. According to Barrio PA, Trancho GJ, Sánchez JA, (2006) every day in human society there are accidental expiries and criminal activities that require investigative techniques that are precise enough to identify the dead. Examples where this is important are floods, catastrophes, murders, fires, terrorist acts, etc., often with fragmentary or missing skeletal remains^{3,4}. According to Scheuer JL and Elkington NM (1993), sex determination is the first and perhaps the most significant step in both scientific and archaeological analysis of human skeletal remains. If this assessment is correct, other studies are likely to be more accurate because separate standards for men and women can be used to estimate age and height^{5,6}. Therefore, this study was conducted to measure the osteometric dimensions of various metacarpus and compare the readings with different authors⁷. Assisting a forensic expert in identifying a person's sex and race in the absence of additional information by creating different models.

MATERIALS AND METHOD:

The study material consisted of 42 groups of normal human metacarpal bones (unchanged) on both sides, obtained from M.P. Shah School of Medicine, Jamnagar. The following methods described by AB falsetto (1995) are used.

1) Intra-articular length: length measured with vernier calipers between the midline of the head and the midline of the metacarpal base.

2) The lateral width of Milan on the central axis: The width measured in the median-lateral plane at the midpoint of the axis (i.e. the midpoint between the head and the metacarpal base) using a vernier caliper. The study material consisted of 42 groups of normal human metacarpal bones (unchanged) on both sides, obtained from M.P. Shah School of Medicine, Jamnagar. The following methods described by AB falsetto (1995) are used. one). Inter-articular length: the length measured between the midline of the head and the midline of the metacarpal base with a vernier caliper.

a). Lateral width of Milan on the central axis: The width measured in the median-lateral plane at the midpoint of the axis (i.e. the midpoint between the head and the base of the metacarpal base) using a vernier caliper.

All previous measurements were made on the male and female metacarpus on the right and left, and then the average of this sample was recorded, and then this standard deviation was taken. The statistical analysis ("t" test) shown in Table 2 was applied to male and female data on the right, and male and female samples on the left.

The "T" test is an accurate way to assess the importance of a difference between two paths or speeds in small samples.

Table1: Comparison of different diameter of 1st metacarpal bone.

Diameter	Sex	Side	Barrio et al(2006) Spanish population (n=79)		Burrows et al (2003) American white (n=23)		Case & rose(2007) American white (n=259)		Scheuer & Elkington(1993) British white(n=60)		Present study (n=42)	
			Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
INTERARTICULAR R Length	Male	R	46.49	2.32	46.31	2.33	46.86	3.44	44.12	3.72	45.41	2.37
		L	46.11	2.75							45.44	2.40
	Female	R	41.51	2.32	43.14	3.24	42.79	2.63	41.65	3.46	42.33	2.62
		L	41.61	2.31							42.83	3.48
mediolateral width at midshaft	Male	R	12.28	1.00	12.52	1.28					11.22	1.24
		L	11.99	1.11							11.05	1.10
	Female	R	10.88	1.08	11.18	0.90					10.16	0.36
		L	10.48	1.10							10.00	0.57

Table2: Bisexual dimorphism of different diameter of 1st metacarpal bone.

Diameter	side	Male			Female			't' value	'p' value
		Mean+3S.D.	Demarking point	Percentage & no. beyond demarking point	Mean+3S.D.	Demarking point	Percentage & no. beyond demarking point		
Inter-articular length	R	38.30-52.52	>50.19	0%	34.47-50.19	<38.30	16.66% (1)	1.28	>0.05
	L	38.24-52.64	>50.11	0%	32.39-50.11	<38.24	16.66% (1)	1.01	>0.05
medio lateral width at midshaft	R	7.50-14.94	>11.24	36.11% (13)	9.08-11.24	<7.50	0%	0.90	>0.05
	L	7.75-14.35	>12.28	13.88% (5)	7.72-12.28	<7.75	0%	1.00	>0.05

DISCUSSION:**INTERARTICULAR LENGTH:****(a) Male:**

Comparison of the inter-articular length of men in the first metacarpus between this study and other studies is shown in Table 1. In another study 45.44 (left) ranged from 46.11 mm to 46.86 mm. In the first metacarpus in the Saurashtra region, the inter-are length was shorter than in the Spanish (Barrio et al⁸.) and American white (case and rose) and American white (Burrows et al⁹.) populations. The average increase in the Spanish and American population is higher than that of the Pakistani population. Since then, the metacarpal length was also greater than in the Indian population.

(b) Female:

The comparison of the inter-articular length of the woman in the first metacarpus in this study and among other studies is presented in Table No. 1 on the right) and 42.83 (on the left) in another study ranged from 41.57 mm to 43.14 mm.

(c) Gender difference:

In general, male bones are longer and more massive, and this difference is reflected in higher average delivery length values on both sides than in men¹⁰. The calculated t-value and p-value showed that the difference in mean inter-articular length in men and women was statistically less significant at $p > 0.05$ on the left and right. The calculated range for the right bone was 40-50 mm and the calculated range for the right female bone was 38-6 mm. Using these dividing points, the first right metacarpal line with a joint length > 50.19 can be classified as male, and the first right metacarpal line with a joint length < 38.30 . However, if the bone length was 38.30 mm to 50.90 mm, sex was not possible due to overlapping. The analysis of the

split point after application in the study group showed that the male right bone sex was 0.00% and the sex 6 bones (16.66%) for the right right female bone was precisely determined^{11,12}. The calculated range for the calculated left bone was 40-50 mm, and for the female left bone 37-49 mm. Using the split point for the left male bone (> 50.11) we can accurately determine that sex is 0.00% and for the female left bone (< 38.24).

Give the sex to 1 in 6 people (16.66%).

(a) Male

M.L. comparison in the first metacarpus between this study and other studies, the width of the middle human axis in the average number of M.L. In this study, the middle axis of the male metacarpus was 11.22 (right) and 11.05 (left) in another study, ranging from 11.99 mm to 12.52 mm. M.L. The width in the central axis of the first metacarpus in the Saurashtra region was smaller than the Spanish population (Barrio et al¹³.) and the white American population (Burrows et al¹⁴).

(b) Female:

M.L. comparison the width of the central axis of the woman in the first metacarpus between the current study and other tests is shown in Table 1. Average M.L. In this study, the width of the female middle metacarpal axis was 10.16 (right) and 10.00 (left) in another study ranging from 10.48 mm to 11.18 mm. M.L. central axis width

It was lower than the first white American metacarpal white (Burrows et al.) and the Spanish population (Barrio et al¹⁵.) in the Saurashtra region. The width of the front axle and the medial lateral width on the central axis indicate a more common metacarpal thickness in the white populations of Spain and America.

(c) Sex difference:

Average M.L. the width in the middle axis is greater for men than for women. Calculated t value and p value, M.L. The width on the central axis in men and women was statistically less significant at $p > 0.05$ on the left and right. The calculated range for the right bone was 9-14 mm and the calculated range for the right female bone was 10-11 mm. Using these limitations points M.L. only with the first metacarpus. on the central axis > 11.24 width, M.L. It can be correctly classified as male and first right metacarpal. The central axis < 7.50 wide can be accurately classified as female. However, M.L. 7.50 mm wide in the middle axis of the bone

Due to the overlapping of sex 11.24 mm was not possible. The analysis of the separation point used in the study group showed that the gender of the respective man was 13 out of 36 (36.11%) and the woman 0.00%. The calculated range for the left bone was 9-13 mm and for the left female bone was 9-11 mm. Using the split point for the left male bone (> 12.28) we can accurately determine 36 sexes 6 (16.66%) and gender for the left female bone (< 7.75) 0.00%.

CONCLUSION:

Therefore, by providing various data on the parameters of the first metacarpus, the current study has shown that the first metacarpal models can be created to help anatomists and forensic specialists identify a person's race and gender. Therefore, using the border-point method, the most effective parameters for first metacarpal sexing are the inter-articular length (6) (16.66%) of 6 right bones and 1 left bone 6, and the median for a right bone male. The medial width in the axis diameter is 13 of 36 (36.11%) and the left bone 36 is 6 (16.66%). For this reason, the borderline method was used in this study along with the "t" and "p" values that no other scientist has mentioned before.

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