



## ANATOMY OF MAXILLARY CENTRAL INCISORS IN SEX DETERMINATION

**Dr. Sarbada Makaju**

Department of Anatomy, MCOMS, Pokhara

**Dr. Nirjalla Shrestha**

Department of Dental, MTH, Pokhara

**Dr. B.P Powar**

Department of Anatomy, MCOMS, Pokhara

### ABSTRACT

**Back-ground;** Nowadays forensic medicine has become one of the cheap and easy methods to determine the gender. All the parts of the human body get damaged by bacteria and fire except the teeth. Teeth is consider as the hard skeleton which don't damage in terms of bacterial decomposition and fire. Out the all 32 human teeth the maxillary central incisors are more accessible and can be used for sex identification. **Objectives;** To determine the gender by measuring the length and breadth of the maxillary central incisors. And also to do the comparisons between the maxillary central incisors. **Methods** A cross-sectional study was done in total 118 dental patients. Out of that 59 female and 59 male respectively. The data were collected in the Manipal teaching hospital. All the measurements were done by the instrument- venier calipers. **Results;** Both the length and breathe of male is greater than the female. Statically the length of the central incisors are highly significant. **Interpretation & Conclusion;** They are many methods to determine the gender in forensic medicine. Whereas the length and the breadth of the maxillary central incisors can be used for sex determination. Economically, this methods is the cheapest and less time consuming.

**KEYWORDS :** Forensic odontology, fragmentation, central incisors, economic

### INTRODUCTION

Gender determination is one of the most important parameters in forensic medicine. As the years passes by the forensic odontology has become the charm for the sex determination. Forensic odontology or forensic dentistry is defined by Keiser-Neilson in 1970 as 'the branch of forensic medicine, which in the interest of justice deals with the proper handling and examination of dental evidence with proper evaluation and presentation of the dental findings'.<sup>1</sup> On top of it, forensic odontology is one of the best because teeth is the one structure which provides resistance to damage in terms of bacterial decomposition and fire when the rest of the body is damaged beyond recognition which makes it a valuable tool in forensic investigation.

Being the most indestructible part of the body and exhibiting the least turnover of natural structure, they not only survive death, but also remain relatively unchanged for many years.<sup>2</sup> It is one of the most effective aid to determine the gender. If u come across financially, the amount of the dental investigation can be bearable to any class of the family. The every dental department should have the solid pre-mortem records. This pre-mortem will definitely help in the sex determination. The accuracy of sex differentiation by using post-mortem radiographs of the cranium, long-bone dimensions and pelvic structures can be ranges from 96 to 100%. However, in case of the lack of the post-mortem records the measurements of the teeth can be used for sex determination. Even though in most severe cases of devastation and body fragmentation or decomposition, dental identification is the most commonly used biometric methods for human identification.<sup>3</sup> Out the all human teeth the maxillary central incisors are more accessible for the gender identification.

This topic has brought me an interest from the forensic odontology training which was conducted by NRHC. I aim to determine the gender from a sample of Nepalese population in adults measuring the mesio-distal crown and dimensions of the maxillary central incisors. Theirs size, shape, and position aids to determine and create a definite coherence in order to identify the gender. According to Roy Sabrithe average vertical height of the maxillary central incisor is 10.6 mm in males and 9.8 mm in females. According to Pascal Magne

mesio-distal width of the maxillary central incisor is 9.10 to 9.24 mm.

### METHODS

#### Sample;

118 subjects 59 male and 59 female. The age ranging from 20-35 years.

#### Sample collection:

Department of Dental, Manipal Teaching Hospital and other private clinics.

#### Financial Support:

Not required

#### Study design;

Observation

#### Time periods;

8-12 months.

#### History and clinical examination

Each of 100 subjects will be asked to sit comfortably on the dental chair and taken the information about the name, age, ethnicity, medical history, the history of facial trauma and orthodontic treatment. Then they will be asked to look forward horizontally for clinical examination to check their fulfillment of the required criteria for sample selection.

#### Dental cast analysis

#### Dental cast production

Upper arch Impressions will be taken for every subject using Alginate impression material then poured with dental stone material. Allow to set the dental stone.

#### Measurements

Mesio-distal crown width of the right and left maxillary central incisors will be taken by measuring the greatest mesio-distal crown width of these teeth from the casts.

The measurement also done in live patient with taking the oral consents Long axis (vertical) length will be measured from the highest point.

**Instruments used**- Vernier caliper  
**Exclusion and inclusion Criteria:**

**Exclusion;**  
 Under age 20 excluded because below 20 the central incisors are not in proper alignment.

Above age 35, there will be attrition and excessive periodontal problems.

History of trauma, flap surgery and any dental prosthesis of central incisor.

**Inclusion;**  
 Age range from 20-35.

- Objectives of the study**
- To determine the sex by measuring the maxillary central incisors
  - Comparisons between the right and left central incisors

**Statistical Analysis**

- SPSS 21 is used

**Discussion**  
 The authors came with the researches conclusion that permanent maxillary incisors and canines showed that the mesiodistal dimensions of only right and left exhibited larger mean values of mesio-distal dimension in males compared to females but only canines were found to be statistically significant for sexual dimorphism maxillary canines were significantly different in males compared to those in females.<sup>4</sup>

According to author Mohammed Nahidh, the mesio-distal dimensions of the maxillary central incisor but the canine were larger in males than females with a high significant difference.<sup>5</sup>

According to Dr S.Kaushal who have done the study on maxillary central incisor in North Indian showing the range of Males right-7.62-9.90 mm left 7.70-9.98 mm.<sup>6</sup>

Same studies have been done by Anjali S etal has proved that mesio-distal dimensions of left maxillary central incisors were significantly different in males than female.<sup>7</sup>

In the thias population, the author has proved that dimension of the central incisor can be used for sex determination.<sup>8</sup>

The study have made in Kosovo–Albanian population aged between 18-25 years which established that established mesio-distal of the maxillary central incisor recognize significant sexual dimorphism.<sup>9</sup>

Sonal Pamecha, H. R. Dayakara done the study mesio-distal length of all the six anterior teeth which showed that the male is having greater than female.<sup>10</sup>

Rahul Srivastava etal, An Odontometric study done in maxillary central and canine to determine the gender which showed that mesio-distal diameter of the central incisors in the male is greater than female.<sup>11</sup>

**Results**  
**Length of the central incisors**

	Gender	N	Mean	Std. Deviation	Std. Error	p value
Length - L Male		59	9.73	.85	.11146	.004

Female	59	9.28	.76	.10007	.004
Length - R Male	59	9.74	.95	.12435	.004
Female	59	9.23	.74	.09734	.004

The above table showing that the length of central incisors (Right and Left) is greater in male than a female. If you see statistically, it is highly significant.

**Breadth of the central incisors**

Gender	N	Mean	Std. Deviation	Std. Error Mean	p value
Breadth-left					
Breadth - L Male	59	8.230	.6069	.0790	.41
Female	59	8.145	.5253	.0684	.41
Breadth-right					
Breadth - R Male	59	8.123	.6811	.0887	.99
Female	59	8.124	.6081	.0792	.99

The above table shows that the breadth of the central incisors is greater in male than a female. But statically, it is insignificant.

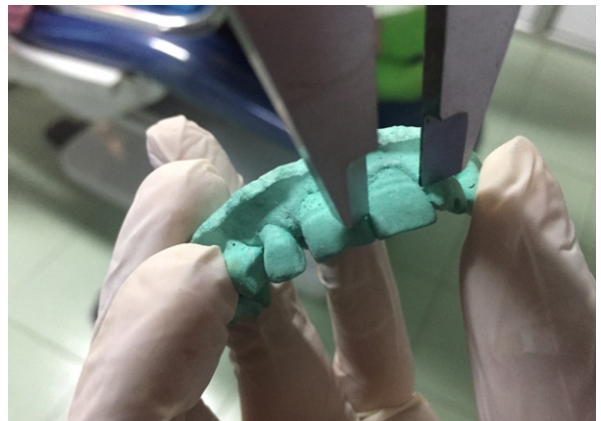
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**Conclusion:**

Central incisors teeth of maxilla is the most accessible and easy to do the measurement. The length and breadth of the central incisor of maxillary teeth can be used for the sex determination. The teeth is hardest skeleton and can't be destroyed by bacteria.

**Pictures**



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