

Mandibular Notch Configuration in Iraqi Adults

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Key words

mandibular notch.
mandibular incisure.

Abstract

The shape of the mandibular notch (mandibular incisure) of both sides of 100 fresh macerated and dry adult human mandibles divided between 58 males and 42 females of Iraqi origin with their age ranges (23-52) years that had been studied in order to classify the variations in the shapes of mandibular incisure. Three types were evident: type I triangular shape, type II rounded shape and type III truncated quadrilateral shape. The triangular shape mandibular notch were found in 92 (46%) sides and truncated quadrilateral shape in 40 (20%) sides, they are mainly prevalent in male, while the rounded shape was founded in 68 (34%) sides mainly prevalent in female. Minor differences appeared on both sides founded in 28 sides but keep the general shape. The incidence of the rounded types was almost in female mandible while triangular & truncated shapes were faced mainly in the male mandibles.

Introduction

The mandibular notch or the mandibular incisure of the mandible ⁽¹⁾, appears as a gap facing upwards and slightly backwards occupied the upper border of the ramus of the mandible ⁽²⁾. Its opening is bordered by coronoid process from anterior margin and condylar process from posterior margin ⁽³⁾. It allows the passage of the masseteric nerve (a branch of the mandibular nerve (V3) division of the trigeminal nerve), masseteric artery (a branch from maxillary artery) and masseteric vein to and from masseter muscle ⁽⁴⁾. The region is of clinical significance to the maxillofacial surgeon for reconstructive purposes ⁽⁵⁾, and also for surgical approach and management ⁽⁶⁾.

Material and Methods

The study was conducted on fresh well macerated mandibles were gotten from consent cadavers, according to police sectors orders, to the forensic medicine institute in Baghdad city and Salah-al-din province between 2010-2011 beside other dried adult mandible their sexual category and age were identified and predetermined, whole samples comprise one hundred human adult mandibles (200 sides), 58 males and 42 females of Iraqi origin, their ages ranged from (23-52) years, to determine the variations in the outline of the mandibular notch, following Grants method in getting the mandible from side of the skull ⁽⁷⁾.

Results

Contour of mandibular notch are depending on configurations of the coronoid processes, condyle process and its neck in addition to the form of indentation of the upper portion of ramus

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of the mandible. According to the direct visual inspection and manual manipulation of the mandibular notches, configurations were classified into three types: type I triangular shape, type II rounded shape and type III truncated shape (Diagram 1, Table I, Figs. 1- 3). Minor difference appeared on both sides founded in 32 sides but keep the general shape as in figure (1) the closed side looked triangular while the other away side seemed to be almost rounded. The opening of the notch in anatomical position was directed upward and forward, while if the body of mandible put parallel to the horizontal plane it will be directed upward and backward. The triangular shaped mandibular notch (type I), had two dimensions represented by condylar and coronoid processes meet at an angle was pointing downwards and indent bottom of the mandibular notch. Also in this type, the coronoid projection might be shorter than condylar projection so they will form right mark appearance. This was presented bilaterally in 92(46%) sides of 12 female mandibles and 34 male mandibles (fig1). While in 68 mandible sides (24 female mandible and 10 male mandibles) were without any angulations the mandibular notches looked rounded outline (type II), appear as smooth curve constitute less than half circle bordered by the same extensions of condyle with its neck and coronoid processes (fig.2). The truncated (type III) shape was similar to the rounded shape but the bottom here take the shape of straight line more than curved, and from its ends extended the condylar and coronoid processes keep the same distance and showed degree of divergence above, so this type being more angular than other types. It was founded in 40 mandible sides (6 female mandibles and 14 male mandibles) represents 20% of the mandible shape type mainly prevalent in male mandibles (fig.3).

Discussion

This study was designed to identify and classify the different morphological shapes of the mandibular notch and according to the researchers knowledge there is no previous study of the mandibular notch

configuration to put side by side the results. Minor difference appeared on both sides founded in 32 sides but keep the general shape, and the explanation for this variety is may be related to the food way mastication, old trauma or simple anatomical variety. In addition, the research exhibits prevalence of the coarse and rough triangular and truncated quadrilateral shapes of the mandibular notch in male might be due to the strongest muscles than female that also clarify prevalence of rounded smooth shape in female. Along with other features of the skull known as non-metric variants, these could be used as anthropological markers to assess different populations and races⁽⁸⁾. Mintz et al⁽⁶⁾ showed that the knowledge of the morphological shapes of the mandibular notch is useful for the maxillofacial surgeon and the coronoid process makes an excellent donor graft site for reconstruction of orbital floor deformities. Use of a temporalis myofascial flap both as a single and as composite flap with cranial bone, coronoid process or skin island in all aspects of reconstructive craniomaxillofacial surgery including trauma, deformities, tumors, temporomandibular joint ankylosis and facial paralysis⁽⁵⁾. Morphological shapes of the mandibular incisure are useful for the maxillofacial surgeon in treatment of chronic mandibular dislocations using a new miniplate that reported by Cavalcanti & Vasconcelos⁽⁹⁾.

Conclusion

The principle findings of present study can be summarized as following: Three types configuration were evident:

type I triangular shape, type II rounded shape and type III truncated quadrilateral shape. The triangular shape mandibular notch showed high incidence percentage (46%), truncated quadrilateral shape (20%), they are mainly prevalent in male, while the rounded shape was founded in (34%) mainly prevalent in female. Minor differences appeared on both sides founded in 28 sides but keep the general shape.

Recommendations

From the outcome of the present study the following recommendations may be suggested:-

Metric study of the notch and finding its distance.

Mandibular notch configuration in other races to compare with present results.

Used as anthropological markers to assess different populations and races.

Follow the variation of mandibular notch outline from newborn up to adult ages.

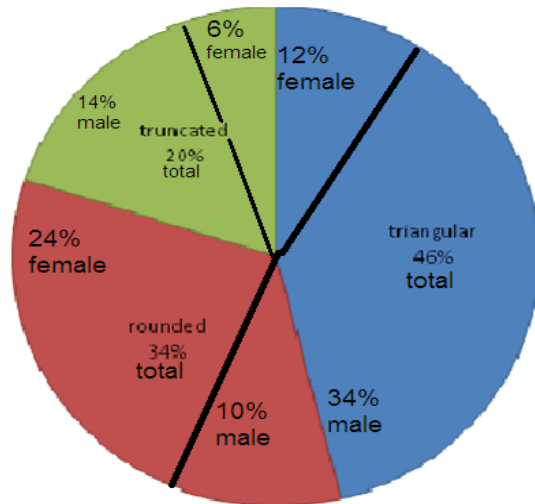


Diagram (1):- Prevalence rate of shapes of mandibular notch.

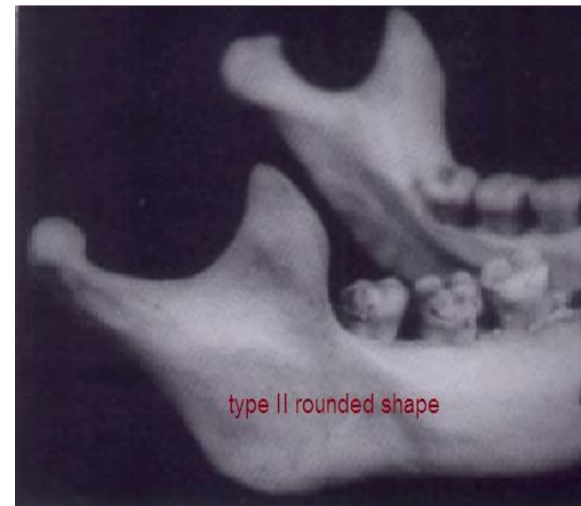


Fig.(2):- Type II, Rounded mandibular notch.

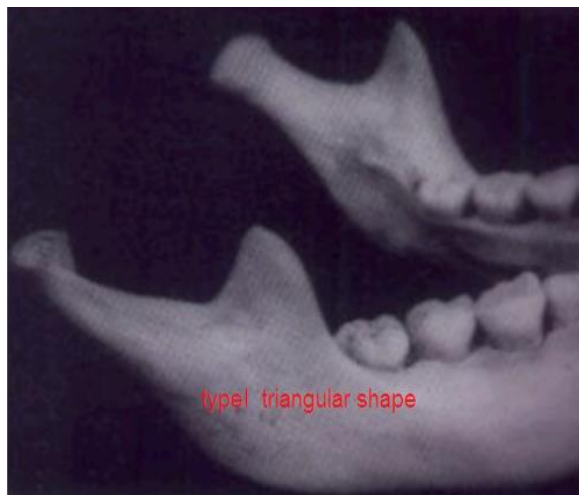


Fig.(1):- Type I, Triangular mandibular notch.

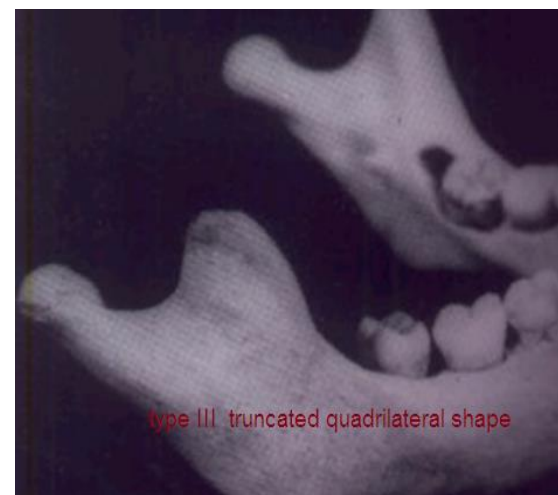


Fig.(3):- Type III, Truncated quadrilateral mandibular notch.

Table (1):- Shape types and their distributions within male & female cases.

Type	Shape	Cases %	Female Mandible	Female %	Male Mandible	Male %
I	Triangular	46%	12	12%	34	34%
II	Rounded	34%	24	24%	10	10%
III	Truncated	20%	6	6%	14	14%

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