

PREVALENCE AND VARIATIONS OF CARTILAGO TRITICEA

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ABSTRACT

Background: Text-books in Anatomy describe the presence of 'small and unimportant cartilage triticea (like a wheat grain)'. The lateral portion of thyrohyoid ligament is round cord like and very elastic and in its upper part contains a small nodule. The cartilage triticea probably reinforce the thyrohyoid ligament. It presumably adds to the strength of ligament.

Objective: The objective of this study was to determine the prevalence of triticeous cartilage and to study its shape, dimensions and weight.

Material and method: The study was carried out on 50 Laryngeal preparations from cadavers of both sexes. Presence/Absence of cartilage triticea was observed. The cartilages were cleaned and preserved in 5% formalin. Dimensions (length and diameter) of triticeous cartilages were measured with the help of digital Vernier caliper. The measurements were taken to the nearest 0.01 mm. The cartilages were weighed on Single pan electronic balance (sensitive to 0.01 gm).

Result: In the present study prevalence of triticeous cartilages was 58 % (40% bilaterally and 18% unilaterally). The shapes varied from oval (44%) to spindle shaped (8%). Its length varied from 3.37 to 13.94 mm. Its diameter 2.4 to 4.79 mm. In one case unilaterally two cartilage triticea were found. Very interesting variation in lateral thyrohyoid ligament were observed varying from its complex absence due to the union of superior cornu of thyroid to greater cornu of hyoid. The weight of cartilage triticea was varying from 11 mg to as much as 109 mg.

Conclusion: It seems that the prevalence of triticeal cartilage is quiet variable in studies carried out in the different population. Knowledge of shape size and location of cartilage triticea can be of great help in differentiating it from carotid atheroma and other dystrophic calcifications of soft tissue.

KEYWORDS: Cartilago triticea, Prevalence, Variations.

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INTRODUCTION

Triticeous cartilages are bilateral ovoid structures that are part of a complex of structures found in the area of the laryngeal skeleton. Text-books in Anatomy describe the presence of 'small and unimportant cartilage triticea (like a wheat grain) [1,2,3]. The lateral portion of thyrohyoid ligament is round cord like and very elastic and in its upper part contains a small nodule of cartilage known as the cartilago triticea [4].

The cartilage triticea probably reinforce the thyrohyoid ligament. It presumably adds to the strength of ligament [3]. Differential diagnosis of the structures that constitute the carotid region is extremely important. It is necessary to have extensive knowledge of all anatomical structures that may produce radiographic images similar to carotid atheroma, such as the hyoid bone, the epiglottis, calcified stylomandibular and stylohyoid ligaments, and the

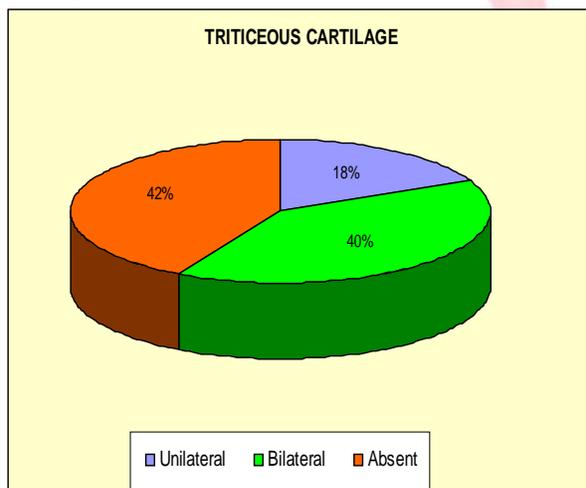
triticeal cartilage, as well as pathological processes such as sialoliths, phleboliths, and calcified lymph nodes [5]. Most of these are readily distinguishable on the basis of location and morphologic features. The calcified triticeous cartilage, however, can be a confounding alternative that is frequently misdiagnosed as a calcified atheroma [6]. Clinicians need to differentiate between a calcified triticeous cartilage and a calcified carotid atheroma, a risk factor for stroke. The objective of this study was to determine the prevalence of triticeous cartilage and to study its shape, dimensions and weight.

MATERIALS AND METHODS

The study was carried out on 50 Laryngeal preparations from cadavers of both sexes. Along with the tongue, the specimen of the larynx was removed by cutting the muscles of soft palate, muscles of posterior pharyngeal wall and fascia. Larynx was separated from tongue from the level of hyoid bone to 3rd tracheal ring. Larynx excised from cadaver with any possibilities of laryngeal damage as a result of diseases, diagnostic or manipulation was not taken into consideration. Presence/Absence of cartilage triticea was observed. The cartilages were cleaned and preserved in 5% formalin. Dimensions (length and diameter) of triticeous cartilages were measured with the help of digital Vernier caliper. The measurements were taken to the nearest 0.01 mm. The cartilages were weighed on Single pan electronic balance (sensitive to 0.01 gm).

RESULTS

Graph 1: Showing the incidence of the Triticeous Cartilage.



Triticeous cartilages were seen in lateral Thyrohyoid ligament (Fig. 1) in 29(58%) specimens out of which they were unilateral in 9 (18%) specimens and bilateral in 20(40%) specimens of larynx. In one specimen of larynx unilaterally two triticeous cartilages were found on left side. Triticeous cartilages were specifically located between the greater cornu of the hyoid and superior cornu of the thyroid.

Variations in lateral thyrohyoid ligament were also observed such as, complete absence of lateral thyrohyoid ligament due to union of superior cornu of thyroid to the greater cornu of hyoid, complete ligamentous band and absence of superior cornu of thyroid cartilage with large spindle shaped triticeal cartilage. (Fig. 2)

Fig. 1: Triticeal cartilage in lateral thyrohyoid ligament.



Fig. 2: Showing absence of superior cornu with large triticeal cartilage.



Table 1: Shapes of Triticeous Cartilage.

| Shapes | Right (%) | Left (%) | Total (%) |
|-------------|-----------|----------|-----------|
| Oval | 15(30) | 7(14) | 22(44) |
| Circular | 6(12) | 7(14) | 13(26) |
| Pyramidal | 2(4) | 6(12) | 8(16) |
| Cylindrical | 2(4) | 1(2) | 3(6) |

It is evident from Table 1 that shape of triticeous cartilages (Fig 3) were more oval (44%) or circular (26%). Remaining were pyramidal (16%), spindle shaped (8%) and cylindrical (6%).

Fig. 3: Shapes of triticeous cartilages.



Table 2: Length and Diameter of Triticeous Cartilage.

| Parameter | Right Mean ± S.D and Range (mm) | left Mean ± S.D and Range (mm) |
|-----------|---------------------------------------|--------------------------------------|
| Length | 6.05±1.43 (3.37-9.48) | 6.51±2.32 (3.9-13.94) |
| Diameter | 3.46±0.51 (2.4-4.18) | 3.78±0.52 (2.71-4.79) |

The length of triticeous cartilages varied from 3.37 to 13.94 mm. Its diameter was 2.4 to 4.79 mm.

Graph 2: Showing the length & Diameter of Triticeous Cartilage on both sides.

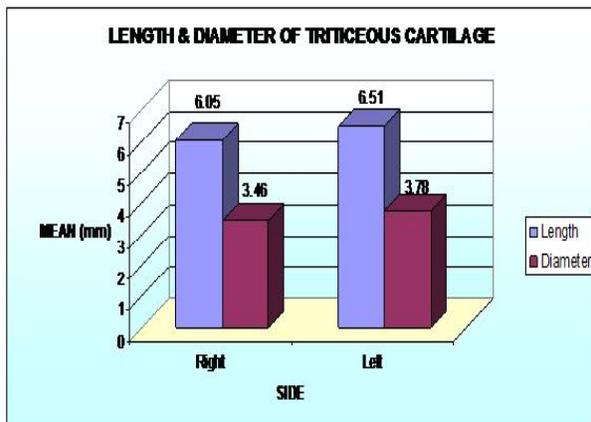


Table 3: Weight of Triticeous Cartilage.

| S. No | Side | Mean ± S.D(mg) | Range (mg) |
|-------|-------|----------------|------------|
| 1 | Right | 49.92±21.32 | Nov-93 |
| 2 | Left | 57.52±24.48 | 20-109 |

The weight of triticeous cartilages was varying from 11mg to as much as 109mg.

DISCUSSION

The triticeous cartilages occur in the lateral thyrohyoid ligaments and are seen radiologically to lie just above the superior horns of the thyroid. The present cadaveric study describes the prevalence of triticeous cartilage and its shape, dimensions and weight, as this knowledge can be of great help in differentiating it from carotid atheroma and other dystrophic calcifications of soft tissue.

In the present study triticeous cartilages were seen in lateral Thyrohyoid ligament in 29(58%) cases out of which they were unilateral in 9(18%) specimens and bilateral in 20(40%) specimens of larynx. In one specimen of larynx unilaterally two triticeous cartilages were found on left side. Grossman JW (1945) reported that the triticeous cartilage may be present on one side only and be either cartilaginous or ossified and the superior horn of thyroid cartilage on the side of absent triticeous cartilage was elongated compared to the opposite superior horn. The length of the elongated horn was approximately equal to the combined length of opposite superior horn plus the developed triticeous cartilage. The probable explanation of this appearance was that in development one triticeous cartilage does not separate inferiorly but remains attached to the cartilage destined to form the superior horn of the thyroid cartilage on that side [7]. Di Nunno, Nunzio et al (2004) found 30 % prevalence of triticeous cartilages [8]. They were bilateral in 7 (17.5%) and monolateral in 5 (12.5%). Mansur Ahmad et al (2005) determined the prevalence of triticeous cartilage on panoramic radiographs, which was 5% in males and 12 % in females. The prevalence was 9.3% in the 40 to 60 year old group and 7.8% in the group older than 60 years [9]. In studies done on Indian and Nigerian cadavers triticeous cartilages were more common in females compared to males [10,11]. However, in a study

by Hatley et al (1965) there was higher prevalence of calcification of the triticeous cartilage in males compared to females, in the age group 21-80 years, 54 of 187(29%) males and 47 of 209(22.5%) females showed such calcification of triticeous cartilage [12].

Shapes of triticeous cartilages (Table 1) were more oval (44%) or circular (26%). Remaining were pyramidal (16%), spindle shaped (8%) and cylindrical (6%). Similar to present study, Mansur Ahmad et al (2005) noted that triticeous cartilages were more circular to oval. The margins of the triticeous cartilage were smooth and can be differentiated from large calcified carotid atheroma which had irregular margins [9]. As the Latin word triteceus translates to a grain of wheat, a calcified triticeous cartilage was similarly oval grain shaped. In the present study it can be seen from Table 2 that the length of triticeous cartilages varied from 3.37 to 13.94 mm and diameter varied from 2.4 to 4.79 mm. The weight of triticeous cartilages was varying from 11mg to as much as 109mg. (Table 3). No comparable data was available in the literature reviewed.

In conclusion, it seems that the prevalence of triticeal cartilage is quiet variable in studies carried out in the different population. Knowledge of shape size and location of cartilage triticea can be of great help in differentiating it from carotid atheroma and other dystrophic calcifications of soft tissue.

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