# PREVALENCE OF TRITICEOUS CARTILAGE: A DESCRIPTIVE CROSS-SECTIONAL STUDY

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## ABSTRACT

### INTRODUCTION

Triticeous cartilage is a small cartilage resembling a wheat grain, embedded in the lateral thyrohyoid ligament. It is believed to support thyrohyoid ligaments by adding strength to it. The aim of the study is to find out the prevalence of triticeous cartilage in cadavers.

### MATERIAL AND METHODS

The study was carried out in the Department of Anatomy of College of Medical Sciences from February to October 2021 after taking an ethical approval from the Institutional Review Committee (Ref. No. COMSTH-IRC/2021-58). Thirty laryngeal preparations from formalin embalbed cadavers of both sexes were obtained. Presence or absence of triticeous cartilage was noted in the lateral thyrohyoid ligament.

### RESULTS

In the present study, triticeous cartilage was observed in 30% of cadavers. The occurrence of triticeous cartilage in male was 23.33% and that in female was 6.67%. Of nine cadavers with triticeous cartilage, three (10%) had unilateral triticeous cartilage while six (20%) had bilateral triticeous cartilage. Among unilateral triticeous cartilage, all three were present on the left side.

### CONCLUSION

The prevalence of triticeous cartilage is quite variable. The clinician must consider the existence of triticeous cartilage while making differential diagnosis of neck pathologies like the calcific deposits in the soft tissue of neck, carotid atheroma and fracture of superior cornu of thyroid cartilage.

### KEYWORDS

Carotidatheroma, Triticeal Cartilage, Lateral Thyrohyoid Ligament, Cadaver

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## INTRODUCTION

Triticeal cartilage (TC) is usually a small ovoid cartilage embedded in the lateral thyrohyoid ligament between the superior cornu of thyroid cartilage (SCTC) and the greater cornu of the hyoid bone.[1] However, the shape of the cartilage may vary substantially. It might be circular, pyramidal, spindle like or cylindrical.[2] TC isn't always present; it might be missing or occurs unilaterally or bilaterally. Grossman proposed that the inability of hypothyroid cartilage (a cartilaginous bar connecting the embryonic hyoid and thyroid cartilage) to separate from SCTC causes agenesis of TC, resulting in an elongated SCTC.[3]

The function of TC is not clear. The triticeoglossus muscle of Bochdelek was thought to be attached to TC, but we haven't been able to discover any accounts or evidence of this muscle. Since then, it's been proposed that the cartilage assist to reinforce the thyrohyoid ligament.[4]

TC are discovered radiologically only when it is calcified.[5] Calcification of TC begins at the age of 20 and completes by 61 years of age. Calcified TC is often confused with carotid atheroma during evaluation of radiolological images. Fracture of SCTC might also be mistaken for TC.[6] Hence, clinicians must consider the existence of TC while contemplating the differential diagnosis of calcified carotid artery atheroma, neck pathologies (calcific deposits) and fracture of SCTC.

## MATERIAL AND METHODS

A descriptive cross-sectional study was conducted to access the prevalence of triticeous cartilage in the human cadavers in the dissection hall of Department of Anatomy of College of Medical Sciences, Bharatpur, Chitwan, Nepal over the period of nine months from February to October 2021. Ethical approval was taken from the Institutional Review Committee (Ref. No. COMSTH-IRC/2021-58).

Anterior triangle of the neck of 30 formalin embalbed cadavers were dissected. The muscles of soft palate, muscles of posterior pharyngeal wall and fascia were severed to remove the specimen of the larynx along with the tongue. Presence or absence of TC was observed in the lateral thyrohyoid ligament as shown in figures 1 and 2.[7] Convinient sampling method was used. Cadavers with scars or pathological lesions in the neck were excluded.

Data obtained were analyzed using Stastical Package for Social Science version 20 using descriptive statistics. Point estimate at 95% Confidence Interval was calculated along with frequency and proportion for binary data.

## RESULTS

In the present study, we dissected 30 cadavers, out of which 17 were male and 13 were female. TC was observed in 30% of cadavers, constituting 23.33% of male and 6.67% of female. Of 9 cadavers with TC, 3 (10%) had unilateral TC while, 6 (20%) had bilateral TC. Among unilateral TC, all 3 were present on the left side.

**Figure 1. Triticeous cartilage within lateral thyrohyoid ligament (arrow marked)**

**Figure 2. Larynx specimen with unilateral (on the left side) presence of Triticeous cartilage (arrow marked)**

**Table 1. Distribution of triticeous cartilage based on gender and laterality**

| | Number of cadavers | Cadaver with TC | Cadavers without TC | Unilateral | Bilateral |
|---|---|---|---|---|---|
| **Male** | 17 | 7 (23.33%) | 10 (33.33%) | 3 (10%) (right side - 0; left side-3) | 4 (13.33%) |
| **Female** | 13 | 2 (6.67%) | 11 (36.67%) | 0 | 2 (6.67%) |
| **Total** | 30 | 9 (30%) | 21 (70%) | 3 (10%) | 6 (20%) |

## DISCUSSION

TC is component of complex of structures present in the region of laryngeal skeleton. Triticea is derived from the Latin term triticeous, which means resembling a wheat grain.[6,8] It lies at the level of third and fourth cervical vertebrae. Previous studies suggested that the presence of TC varies among individuals. The overall prevalence of TC in our study was 30%. Similar findings were observed in the previous studies in which prevalence of TC was 30%[1,9] and 33%.[10] In contrary, occurence of TC was significanly lower, 13.5% in a study performed in 40 Nigerian cadavers[11] whereas that of TC was much greater, 58% and 65% in 50 Indian and 232 japanese cadavers[12] respectively.

The TC was more common bilaterally (20%) than unilaterally (10%) in the current study. Watanabe et al also discovered that bilateral TC (17.5%) was more frequent that unilateral TC (12.5%).[12] These findings were supported by the study of 50 laryngeal preparation, in which TC was observed bilaterally in 40% of the cases and unilaterally in 18% of the cases.[2] Furthermore, TC was present bilaterally in all 48 specimens.[10] On the other hand, one study reported that unilateral TC (16) was more prevalent than bilateral (12).[1]

The prevalence of TC was much higher in males (23.33% ) than in females (6.67 %) in the present study. Similar results were noted in the study conducted in 40 cases to observe the frequency of anomalies and alterations of the hyoid-larynx complex in radiological examination (males-31%, females-28.5%).[9] On opposite, Mansur et al observed TC on the panoramic images of 5% males and 12% females.[6] Wantanabe et al also noted that TC were four time more common in females compared to males cadavers. Few studies, however, revealed no sex prediliction in the incidence of TC.[1,9,11]

Several studies have revealed that TC varies considerably in location, shape and size. Detailed information regarding the TC will assist in differentiating atheromatous plaque in carotid artery and other dystrophic calcification of soft tissue in the carotic region from TC. Hence, further research on TC is needed to be done.

## CONCLUSION

The TC is not a rare entity, hence, knoweledge of presence of TC is essential and the clinician must take into account TC while making differential diagnosis for various pathologies in carotid region such as the dystrophic calcified deposits (calcified lymph node, sialoliths and phleboliths), calcific atheroma of carotid artery and fractured SCTC.

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