



# Fracture of the Elongated Styloid Process by Hanging

## Asıya Bağlı Uzun Styloid Proçes Kırığı

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### Abstract

It is a routine protocol to examine the soft tissues, cartilage and bone tissues of the neck during post-mortem examinations performed in the cases of hanging-related deaths. Fractures of the hyoid bone and thyroid cartilage, as well as bleeding and ecchymoses around the first fracture are practically of great importance in establishing the case as live hanging. The styloid process is a thin bone at the base of the skull that extends downward, medially, and anteriorly from the temporal bone. Elongated variations of styloid process are encountered in society. In literature, there are no reported cases of elongated styloid process fractures due to hanging. In hanging-related deaths, along with hyoid bone and thyroid cartilage tissues, styloid process should also be evaluated for fractures.

**Keywords:** Autopsy, styloid proces, hanging

### Öz

Asıya bağlı ölümlerin postmortem incelemelerinde boyun yumuşak dokularının, kıkırdak ve kemik dokularının incelenmesi rutin bir protokoldür. Uygulamada hyoid kemik ve tiroid kıkırdak kırıkları ile kırık etrafındaki kanama ve ekimozlar canlı asının belirlenmesinde büyük öneme sahiptir. Stiloid proçes, kafa kaidesinde temporal kemikten aşağı, mediale ve anteriora doğru uzanan ince bir kemiktir. Toplumda uzun styloid proçes varyasyonlarına rastlanılmaktadır. Literatürde asıya bağlı uzun styloid proçes kırığı bulunmamaktadır. Asıya bağlı ölümlerde hyoid kemik ve tiroid kıkırdak dokuların yanısıra styloid proçeste kırık açısından değerlendirilmelidir.

**Anahtar Kelimeler:** Otopsi, styloid çıkıntı, ası

## INTRODUCTION

Hanging is a common method of suicide worldwide. Hanging results in asphyxiation caused by the compression of a material wrapped around the neck due to the gravitational effect of the suspended human body weight (1). It is a routine protocol to examine the soft tissues, cartilage and bone tissues of the neck during post-mortem examinations performed in cases of hanging-related deaths. The incidence of laryngeal and hyoid bone fractures is between 0% and 76% (2,3). The styloid process is a thin bone at the base of the skull that extends downward, medially, and anteriorly from the temporal bone. The styloglossal muscles and the stylohyoid and stylomandibular ligaments attach to this process (4). In an adult, a styloid process longer than 25 mm is described as abnormal, which is reported to be present in approximately 4% of the population (5,6) There

are no studies in the literature reporting a case of styloid process fracture due to hanging. Our study discusses a case of elongated styloid process fracture in a person who died due to the asphyxiation caused by hanging.

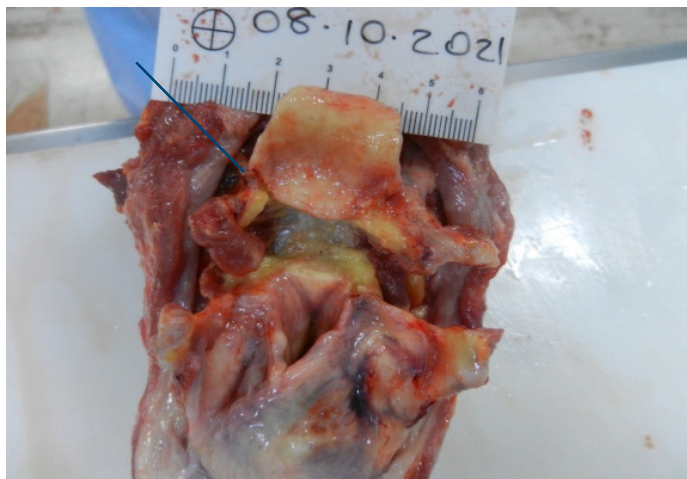
## CASE REPORT

A 62-year-old male who had been suffering from psychological problems for about 7 months was also reported to have been hospitalised and given medical treatment at a psychiatric clinic for 1 month and to have been missing for 2 days by his family, who also reported him as missing to judicial units. He was discovered to have committed suicide by hanging himself in an abandoned building, and an autopsy was performed to determine the exact cause of death. According to the external examination, the body is 169 cm tall and weighs 78kg, with hanging traces measuring 1.3cm wide on the front of

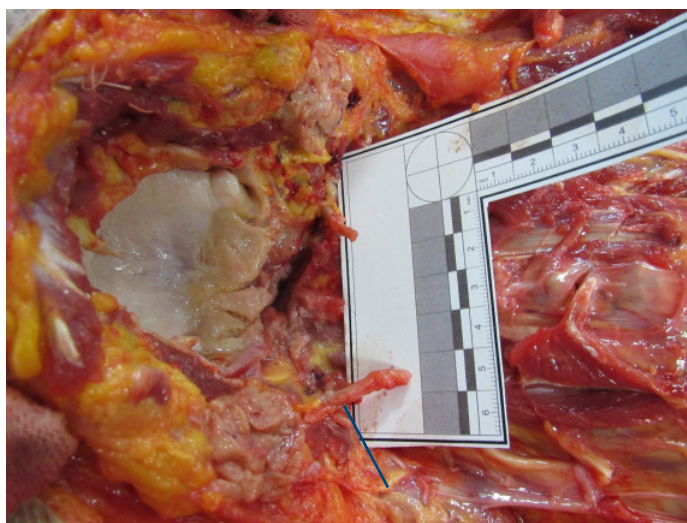
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the neck and right over the thyroid cartilage, 1.2cm wide on the right side and the widest area of the neck, 1.3cm wide on the left side with ecchymoses and abrasions inside, and rising towards the back of the neck from both oblique sides of the neck. The cervical vertebrae were intact, but there were fractures and ecchymoses around these fractures on both the cornua of the hyoid bone and the right cornu of the thyroid cartilage, according to the internal examination. Both temporal bones' styloid processes were longer than normal, measuring 4cm on the right and 4.2cm on the left, respectively. The right styloid process had fractured, with bleeding and ecchymoses in the soft tissues around the fractured ends.



**Figure 1.** Thyroid cartilage and hyoid bone fractures



**Figure 2.** Right styloid process fracture

## DISCUSSION

Deaths related to hanging are the most common cause of suicides committed across the globe. In such deaths, the focus is on the tissues in the neck area (7). According to the literature, the fracture of the cervical spine is extremely rare in deaths of hangings (8,9). It is stated that there should be a drop from a distance of at least 2.7m for cervical spinal cord injuries, which does not occur in

cases of suicidal hangings in a home setting (10). Despite the varying rates of thyroid cartilage fractures and hyoid bone fractures encountered in deaths of hangings, it is clearly stated that fractures occur in the neck structures (11). In this case, both thyroid cartilage and hyoid bone fractures were detected (Figure 1). Eagle's syndrome is a condition where the elongated styloid process affects neighbouring tissues, causing various clinical symptoms (12). Although it is rarely encountered in society, it is mostly defined in the literature as fractures caused by facial traumas (13,14). The mean length of the styloid process ranges from 20 to 32mm. Styloid process is considered elongated when its length exceeds 30mm from the temporal bone (15). In our study, both styloid processes were found to be longer than normal.

## CONCLUSION

In autopsy series, there is no available information in the literature concerning styloid process fracture. In this case, it was observed that the styloid process of the temporal bone extended to the middle line of the cervical vertebrae and the right process was fractured and contained bleeding around this fracture (Figure 2). Therefore, hanging-related deaths, styloid process should also be evaluated for fractures along with hyoid bone and thyroid cartilage tissues.

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**Conflict of Interest:** The authors declare that they have no competing interest.

**Informed Consent:** The family provided consent for publication.

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