

Spontaneous fracture of an ossified stylohyoid ligament

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Abstract

The stylohyoid ligament extends from the styloid process to the hyoid bone. For an unknown reason it occasionally ossifies and forms a solid structure which can break because of trauma or even spontaneously. Symptoms of the fracture may mimic tumours, foreign bodies, infections or neuralgia. In our cases a spontaneous fracture of totally ossified stylohyoid ligaments presented as a painful neck swelling. The diagnosis was achieved by an ortopantomographic radiograph. In both cases the healing was spontaneous and complete.

Key words: Ligaments; Ossification, heterotopic; Fractures, spontaneous

Introduction

The stylohyoid ligament is a band of connective tissue which is attached to the free extremity of the styloid process and extends to the lesser horn (cornu) of the hyoid bone (Stafne and Hollinshead, 1962). Because the ligament is cartilaginous, there is a potential for ossification of varying degrees (Porrath, 1969; Solfanelli *et al.*, 1981). When the whole ligament ossifies from the styloid process down to the lesser horn it forms a solid structure (Balasubramanian, 1964). The totally ossified stylohyoid ligament is an interesting anomaly of the head and neck region which has produced a myriad of clinical symptoms and diagnoses in the past (Solfanelli *et al.*, 1981). This solid structure may fracture because of a sudden jerk of the head, for instance in fights or traffic accidents, or in rare cases even spontaneously (Balasubramanian, 1964; McGinnis *et al.*, 1981; Solfanelli *et al.*, 1981; Patni *et al.*, 1986).

As a differential diagnostic modality of a painful neck mass we present two patients with a spontaneous fracture of the ossified stylohyoid ligament.

Case 1

An otolaryngologist referred a 46-year-old man to Jyväskylä Central Hospital because of painful swelling in the neck. The patient had had pain in his throat especially while swallowing for three weeks with no infections nor traumas in the past. On bimanual palpation a firm mass and swelling was felt in the left submandibular triangle, arousing the suspicion of a neoplasm or sialolithiasis. However, a panoramic radiograph revealed a recently fractured, totally ossified left stylohyoid ligaments (Figures 1 and 2). On the right side the ligament was only partially ossified. A wait and see method was chosen. Six months later the patient was symptomless and the ortopantomographic radiographs demonstrated a well-healed fracture with a good amount of callus.

Case 2

A general practitioner referred a 58-year-old man to Jyväskylä Central Hospital due to neck pain. While drinking coffee the patient heard a snap under his jaw, also audible to his wife. At the same moment he felt acute pain in the area, lasting for three days. A firm mass, approximately 3 × 3 cm could be palpated and a creaking sound heard during each swallow on the right side of the neck. A ultrasonographic examination of the neck was normal. The ortopantomographic radiograph showed a completely ossified right stylohyoid ligament with a fracture in the middle. No active treatment was given, only analgesic drugs for the pain. At one year follow-up visit the patient had no symptoms and the clinical examination was normal.

Discussion

The ossified stylohyoid ligament is a result of true ossification, reasons for which are speculative (Dwight, 1907; Goodman, 1981; McCorkell, 1985; Camarda *et al.*, 1989). Some authors suggest it to be a variation of normal anatomy. The presented incidences range widely, from one per cent to over 40 per cent because of differences in radiographical interpretation and measurements (Lavine *et al.*, 1968; Gossman and Tarsitano, 1977; O'Carroll, 1984;



FIG. 1

Ortopantomographic radiograph showing the fractured left stylohyoid ligament.

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FIG. 2
Close-up of the fracture.

Camarda *et al.*, 1989). Symptoms, if any, are often nonspecific and vague and rarely occur before the age of 40. The usual complaints are dysphagia, foreign body sensation, constant dull ache in the throat, otalgia, headache, carotid pain, pain in the temporomandibular joint or generalized facial pain (Camarda *et al.*, 1989). The ossified ligament is suspected by bimanually palpating the tonsillar fossa (Eagle, 1949). A panoramic radiograph with various techniques provides the best view of the styloid process and confirms the ossification of the stylohyoid ligament (McCorkell, 1985). In the past, a variety of therapeutic methods have been used for the ossified ligament but now no specific treatment, not even surgery is recommended (Chandler, 1987).

The fracture of an ossified stylohyoid ligament is very rare (Porrath, 1969). We found only seven cases in the literature. Five of them were regarded as traumatic, the inciting trauma varying from something as mild as yawning to serious blunt hits (Balasubramanian, 1964; Goodman, 1981; McGinnis, 1981; McCorkell, 1985; Chandler, 1987) and two spontaneous, with no exact moment or reason for fracturing (Solfanelli *et al.*, 1981; Patni *et al.*, 1986).

Our patients had no symptoms of their ossified stylohyoid ligaments prior to fracturing. In either case no trauma explaining the fracture could be found and only the second patient was able to name the obvious moment of fracturing. So, the fractures can be considered spontaneous in both cases. In both of them the reason for seeing a doctor was pain and clinical examination revealed swelling in the submandibular area indicating the further diagnostic tests. The fracture of the stylohyoid ligament was finally found in the panoramic radiograph. In cases described in the literature the main symptom has also been pain and diagnoses were achieved by panoramic radiographs or computer tomography (Balasubramanian, 1964; Goodman, 1981; McGinnis, 1981; Solfanelli *et al.*, 1981; McCorkell, 1985; Patni *et al.*, 1986).

The treatment of fractured ossified ligaments does not necessarily have to differ from that of unfractured (Goodman, 1981; McGinnis, 1981; Solfanelli, 1981; McCorkell, 1985; Patni *et al.*, 1986; Chandler, 1987). Local injections of corticosteroid or surgical excision have been used (Patni *et al.*, 1986). In our cases a wait and see policy with anti-inflammatory analgesics to relieve pain proved to be successful as was found also by McCorkell (1986) and Patni *et al.*, 1986.

In conclusion, as our cases show, an ossified stylohyoid ligament may fracture, even spontaneously. This should be kept in mind as a differential diagnostic modality in patients with acute onset, unexplained painful swelling in the submandibular area. A careful clinical examination, especially bimanual palpation of the tonsillar fossa suggests, and a panoramic radiograph confirms, the diagnosis. Active treatment is not recommended.

References

- Balasubramanian, S. (1964) The ossification of the stylohyoid ligament and its relation to facial pain. *British Dental Journal* **116**: 108–111.
- Camarda, A. J., Deschamps, C., Forest, D. (1989) Stylohyoid chain ossifications: A discussion of etiology I. *Oral Surgery Oral Medicine Oral Pathology* **67**: 508–514.
- Camarda, A. J., Deschamps, C., Forest, D. (1989) Stylohyoid chain ossifications: A discussion of etiology II. *Oral Surgery Oral Medicine Oral Pathology* **67**: 515–520.
- Chandler, J. R. (1987) Anatomical variations of the stylohyoid complex and their clinical significance. *Laryngoscope* **87**: 1692–1701.
- Dwight, T. (1907) Stylo-hyoid ossification. *Annals of Surgery* **46**: 721–735.
- Eagle, W. W. (1949) Symptomatic elongated styloid process. *Archives of Otolaryngology* **49**: 490–503.
- Goodman, R. S. (1981) Fracture of an ossified stylohyoid ligament. *Archives of Otolaryngology* **107**: 129–130.
- Gossman, J. R., Tarsitano, J. J. (1977) The styloid-stylohyoid syndrome. *Journal of Oral Surgery* **35**: 555–560.
- Lavine, M. H., Stoopack, J. C., Jerrold, T. L. (1968) Calcification of the stylohyoid ligament. *Oral Surgery Oral Medicine Oral Pathology* **25**: 55–58.
- McCorkell, S. J. (1985) Fractures of the styloid process and stylohyoid ligament: An uncommon injury. *Journal of Trauma* **25**: 1010–1012.
- McGinnis, J. M. Jr. (1981) Fracture of an ossified stylohyoid bone. *Archives of Otolaryngology* **107**: 460.
- O'Carroll, M. K. (1984) Calcification in the stylohyoid ligament. *Oral Surgery* **58**: 617–621.
- Patni, V. M., Gadewar, D. R., Pillai, K. G. (1986) Ossification of stylohyoid ligament with pseudojoint formation. *Journal of Indian Dental Association* **58**: 227–231.
- Porrath, S. (1969) Roentgenologic considerations of the hyoid apparatus. *American Journal of Roentgenology* **105**: 63–73.
- Solfanelli, S. X., Braun, T. H., Sotereanos, G. C. (1981) Surgical management of a symptomatic fractured, ossified stylohyoid ligament. *Oral Surgery Oral Medicine Oral Pathology* **52**: 569–573.
- Stafne, E. C., Hollinshead, W. H. (1962) Roentgenographic observations on the stylohyoid chain. *Oral Surgery Oral Medicine Oral Pathology* **15**: 1195–1200.

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