



Enostosis of Clavicle Causing Severe Dyspnea by Compressing the Trachea Externally: Case Report

Trakeaya Dıştan Bası Yaparak Ağır Nefes Darlığına Yol Açan Klavikula Enostozisi: Olgu Sunumu

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ABSTRACT

Clavicle is the bone that forms anterior border of shoulder arch. It lies on anterosuperior of thorax with first rib. Clavicle is very near to major vascular structures, brachial plexus, esophagus and trachea at thoracic inlet. Because of this, clavicular lesions fractures and sternoclavicular dislocations -especially posterior dislocations- may cause symptoms due to compressing symptoms due to these structures. In this article we present a case with enostosis of clavicle causing respiratory failure by compressing on trachea.

Keywords: Clavicle, enostosis, respiratory failure

ÖZ

Klavikula omuz kemerinin ön sınırını yapan kemiktir. Birinci kot ile birlikte toraksın anterosüperiorunda bulunur. Klavikula torasik inlette major vasküler yapılara, pleksus brakialise, özofagus ve trakeaya çok yakındır. Bu nedenle, klavikula lezyonları, fraktürleri ve sternoklaviküler çıkıklar ve özellikle posterior çıkıklar bu oluşumlarda bası semptomları oluşturabilir. Bu yazıda, trakeaya bası ile solunum yetmezliği yapan bir klaviküler enostozisli olgu sunuldu.

Anahtar Sözcükler: Klavikula, enostosis, solunum yetmezliği

Introduction

Clavicle is the bone that forms anterior border of shoulder arch. It lies on anterosuperior of thorax with first rib (1). At the upper thoracic inlet, around sternoclavicular joints area, both of clavicle are anatomically near with subclavian arteries and veins, both brachial plexuses esophagus and trachea, both carotid arteries and jugular veins. Because of nearness to major vascular structures, brachial plexus, esophagus and trachea at thoracic inlet clavicle lesions, fractures and sternoclavicular dislocations -especially

posterior dislocations- causes symptoms due to these structures being affected

Case Report

A six-year-old girl was referred to pediatric pulmonology outpatient clinic with complaint of irritative cough and dyspnea that continues for a long time in spite of medical treatment. Three months before, she was hospitalized in intensive care unit because of occurrence of respiratory failure after a catching crisis. Flexible bronchoscopy

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revealed a pulsatile externally compressing lesion on anterior wall of trachea (Figure 1).

Thorax CT angiography revealed a lesion protruding into mediastinum which was thought to be hypertrophy of the bone or osteophyte. It was below the right subclavian artery and was compressing on trachea at the junction of right common carotid artery and right subclavian artery (Figure 2).

Mediastinal vascular structures were normal. On physical examination, thoracic inlet was close-fitting because of wide interclavicular ligament. It was thought that pulsatile, external compression seen at flexible bronchoscopy was due to the lesion of clavicle, and operation was decided. Clavicle was reached by an incision started at upper point of sternum through laterally to the medial head of clavicle. Approximately, 1 cm long and 4-5 mm wide, hard and tight interclavicular ligament was seen and excised. Head of right clavicle was explored by opening the periost (Figures 4-5).

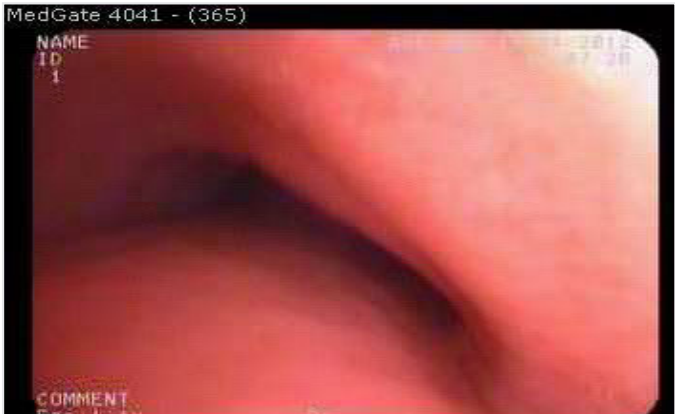


Figure 1. Pulsatile externally compression narrowing the lumen of trachea on right anterolateral

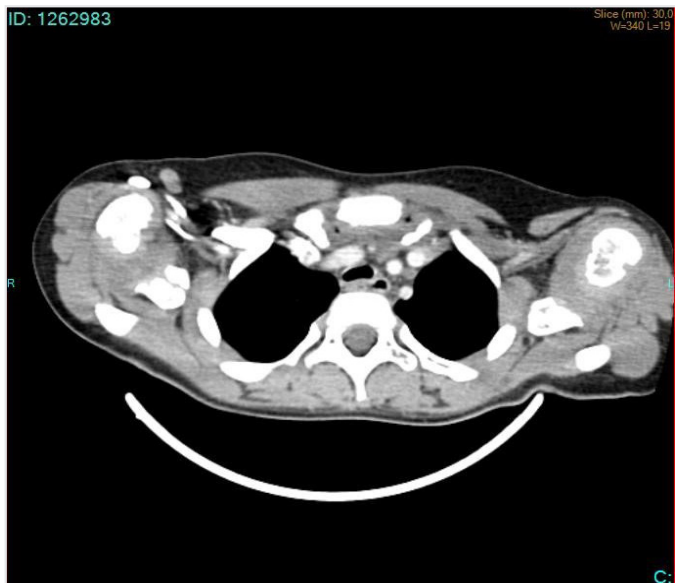


Figure 2. Preoperative thorax CT angiography: Hypertrophic osseous lesion on the head of right clavicle compressing on vascular structures and the trachea

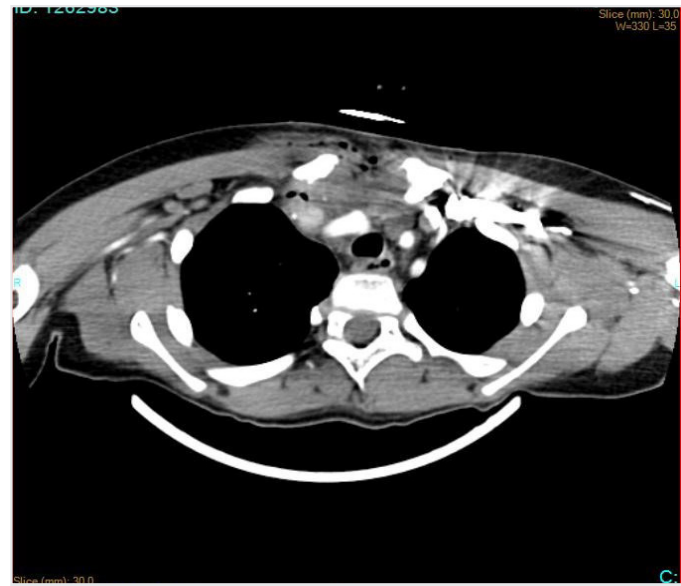
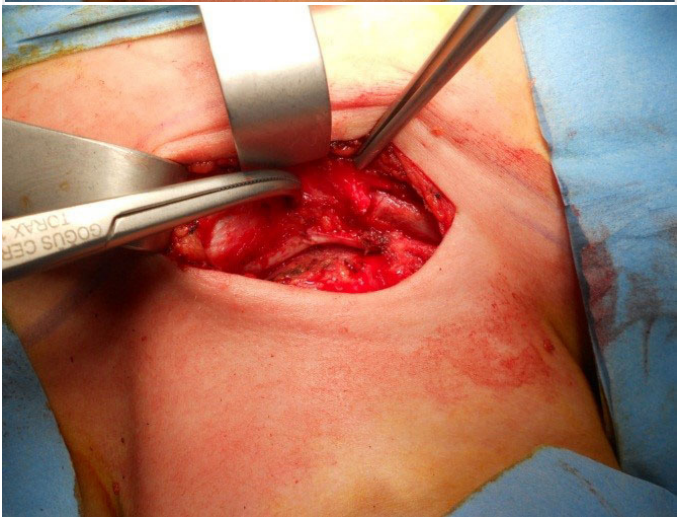
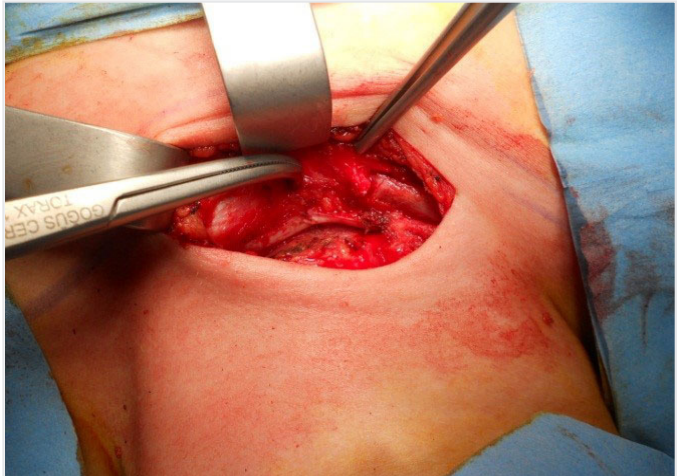


Figure 3. Postoperative thorax CT: Lesion excised, Shape of the trachea and vascular structures are circle



Figures 4-5. Thick interclavicular ligament and view after interclavicular ligament excised and clavicle was turned subperiosteally

Hypertrophic tissue protruding posteriorly was excised. Mediastinum was controlled by finger dissection as it was relaxed. Procedure was finished after placing a minivac drain into the dissection area. At postoperative CT, compression on mediastinal structures was disappeared (Figure 3). The patient was discharged on the first postoperative day. Pathology was reported as enostosis (bone island). The patient was seen on the postoperative sixth month and she was having neither cough nor dyspnea.

Discussion

Posterior dislocations may cause some symptoms due to compression of head of clavicle on contiguous structures and injuries or lacerations may occur due to direct effect or trauma. In the literature, there have been cases of injury or laceration of innominate vein, innominate artery, esophagus, trachea, brachial plexus, and even vena cava or compression on vena cava because of posterior dislocation and cases having symptoms due to compression of tumours of head of clavicle (2-9). We did not encounter such a case with enostosis in the literature. Pathologies on this area may have crucial risks. Until now, mortality because of posterior dislocation of clavicle due to injury was reported in five cases (10). In this article, we aimed to emphasize the importance of pathologies in the head of clavicle in cases with external compression to trachea causing respiratory failure.

Bone Island (enostosis) is a focus of compact bone located in cancellous bone. This is a benign entity that is rarely symptomatic and that is usually found incidentally in radiological studies. Symptoms are pain and protuberance due to enlargement of the lesion. In our case, in physical examination there was no protuberance but it was determined that thoracic inlet was close-fitting because of wide interclavicular ligament. In radiological examination, there was a lesion on the head of right clavicle protruding to mediastinum which was considered as hypertrophy or osteophyte. Under this lesion, right subclavian artery was bending to posterior and the lesion was compressing the trachea at the junction of right common carotid artery and right subclavian artery.

Tracheal stenosis caused by external compression may cause recurrent pulmonary infections, symptoms like wheezing, chronic cough and even respiratory failure. Diseases with vascular abnormalities, aneurysms, mediastinal masses, lymphadenopathies may cause tracheal stenosis. Lesions on the head of clavicle are extremely rare. In differential diagnosis of this clinical situations, lesions compressing to trachea externally, and foreign body aspirations must be considered. For diagnosis, flexible bronchoscopy and thorax CT with intravenous contrast must be used. So, that localization and severity of stenosis, and lesion causing stenosis may be determined and treatment may be planned.

In cases with external compression to trachea causing respiratory failure, pathologies of the head of clavicle must be kept in mind. Bone island is one of them. In treatment, removing

the compression on vascular structures or trachea by excising the head of clavicle partially may be performed and results are satisfactory in terms of symptoms.

Ethics

Informed Consent:

Peer Review: Externally peer-reviewed.

Authorship Contributions

Concept: S.Z., O.C.A., Ö.S., Design: N.M.E., E.Ç., N.B., Data Collection or Processing: Ö.S., M.B., A.K., Analysis or Interpretation: M.B., N.B., N.M.E., Literature Search: O.C.A., Writing: S.Z., O.C.A., Ö.S.

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References

1. Gray, Henry. *Anatomy of the Human Body*. Philadelphia: Lea&Febiger, 1918; Bartelby.com, 2000. www.bartelby.com/107/.
2. Carbone P, Rose M, O'Daniel JA, Doukas WC, O'Toole RV, Andersen RC. Posterior Remodeling of Medial Clavicle Causing Superior Vena Cava Impingement. *Am J Orthop (Belle Mead NJ)* 2011;40:297-300.
3. Fenig M, Lowman R, Thompson BP, Shayne PH. Fatal posterior sternoclavicular joint dislocation due to occult trauma. *Am J Emerg Med* 2010;28:385.e5-8.
4. Mollano AV, Hagy ML, Jones KB, Buckwalter JA. Unusual osteochondroma of the medial part of the clavicle causing subclavian vein thrombosis and brachial plexopathy. *J Bone Joint Surg Am* 2004;86-A(12):2747-50.
5. Gangahar DM, Flogaites T. Retrosternal dislocation of the clavicle producing thoracic outlet syndrome. *J Trauma* 1978;18:369-72.
6. Nakayama E, Tanaka T, Noguchi T, Yasuda J, Terada Y. Tracheal stenosis caused by retrosternal dislocation of the right clavicle. *Ann Thorac Surg* 2007;83:685-7.
7. Ono K, Inagawa H, Kiyota K, Terada T, Suzuki S, Maekawa K. Maekawa. Posterior dislocation of the sternoclavicular joint with obstruction of the innominate vein: Case report. *J Trauma* 1998;44:381-3.
8. Sykes JA, Ezerendu C, Sivitz A, Lee J Jr, Desai H, Norton K, et al. Posterior dislocation of sternoclavicular joint encroaching on ipsilateral vessels in 2 pediatric patients. *Pediatr Emerg Care* 2011;27:327-30.
9. Wasylenko MJ, Busse EF. Posterior dislocation of the clavicle causing fatal tracheoesophageal fistula. *Can J Surg* 1981;24:626-7.
10. Garg S, Alshameeri ZA, Wallace WA. Posterior sternoclavicular joint dislocation in a child: a case report with review of literature. *J Shoulder Elbow Surg* 2012;21:e11-6.