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Case Report

Common carotid artery dissection after thyroid fine needle aspiration biopsy

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Abstract

The injury of Brachiocephalic arteries due to thyroid fine needle aspiration biopsy is rare. Carotid artery dissection after thyroid fine needle aspiration biopsy was reported in limited numbers in the current literature. We present localized common carotid artery dissection just above the carotid-subclavian bifurcation. Our case report concerns the proper standard carotid artery dissection after the fine needle aspiration biopsy procedure.

Keywords: Fine needle aspiration biopsy, right common carotid artery, dissection

INTRODUCTION

Fine-needle aspiration biopsy (FNAB) is a safe, inexpensive, simple, and safe procedure for thyroid pathologies. Localized pain and hematoma may develop after FNAB. In contrast, severe pain, massive hematoma causing tracheal or esophageal compression, recurrent laryngeal nerve palsy, infection, dysphagia, and vasovagal reaction are rare but severe complications of the FNAB procedure [1]. One of the severe complications of FNAB procedures is vascular complications, which are extremely rarely reported. Superior thyroid artery pseudoaneurysm is an extremely rare complication [2]. Although post-FNAB hematoma is usually a benign complication, it resolves completely. Hematoma can cause unusual fibroblastic proliferation resembling cavernous haemangioma [3]. Occasionally, some features of a Masson's intravascular haemangioendothelioma which resembles angiosarcoma may occur [3,4]. Acute pain is a symptom of subendothelial carotid hematoma after ultrasound guided US-FNAB [5]. Carotid hematoma may spread along the carotid wall after external pressure of biopsy region. Ultrasound examination should be done if the pain persists to exclude hematoma [6]. Subendothelial hematoma of the common carotid artery (CCA) is common, but localized carotid artery dissection is rare. Herein, we reported localized standard carotid artery dissection causing severe neck pain after thyroid FNAB.

CASE REPORT

A sixty-five-year-old male patient was admitted for right-sided neck pain. He was hypertensive and ex-smoker. He had undergone thyroid FNAB because of a thyroid nodule three months ago. Neck pain started just after thyroid FNAB. Tenderness over the right CCA was found in physical examination. Carotid duplex demonstrated localized 10×4mm subintimal oval area with non-homogeneous echogenicity of the proximal right CCA. Blood velocity was 255 cm/sec (average value is 30-40 cm/sec). Computerized Tomographic angiogram showed significant stenosis on the proximal right common carotid artery, which caused a substantial restriction to blood flow. There was no clue about localized dissection. We have decided on a surgical intervention to right (CCA) stenosis. Upper mini sternotomy and right neck incision were done. Innominate artery right subclavian

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and CCA were found and taped. The proximal part of CCA was observed as distended with a thin outer layer (Figure 1). We estimated that localized dissection or false aneurysm may have caused distension of proximal Right CCA, right subclavian artery, and innominate arteries were extensively mobilized. Clamps were placed, and right CCA was transected at the bifurcation. We found a double lumen in the proximal right CCA (Figure 2). Double lumen appearance was approximately 12 millimetres in length (Figure 3A, 3B). These parts of right CCA were resected, and then the proximal part of right CCA was anastomosed to the original place of bifurcation in an end-to-side fashion without stretching (Figure 4) and the patient discharged at postoperative 4th day.

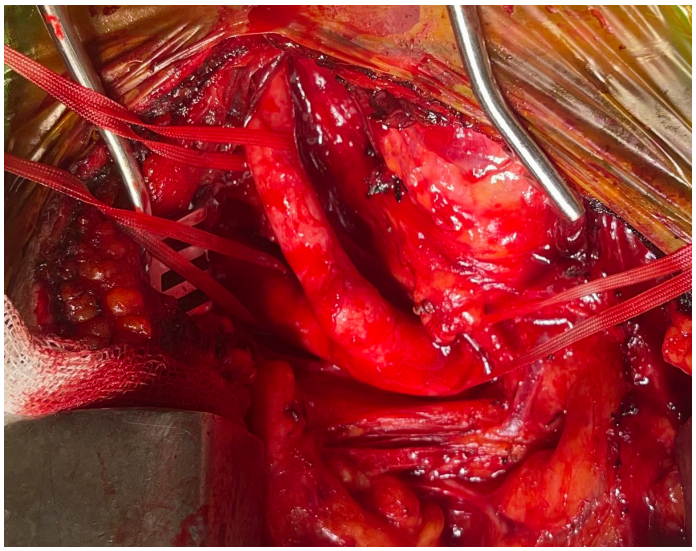

Figure 1. Intraoperative view: Upper ministernotomy and right neck incision were done. Innominate artery right subclavian and Right CCA were found and taped. Proximal part of Right CCA observed as distended with thin outer layer

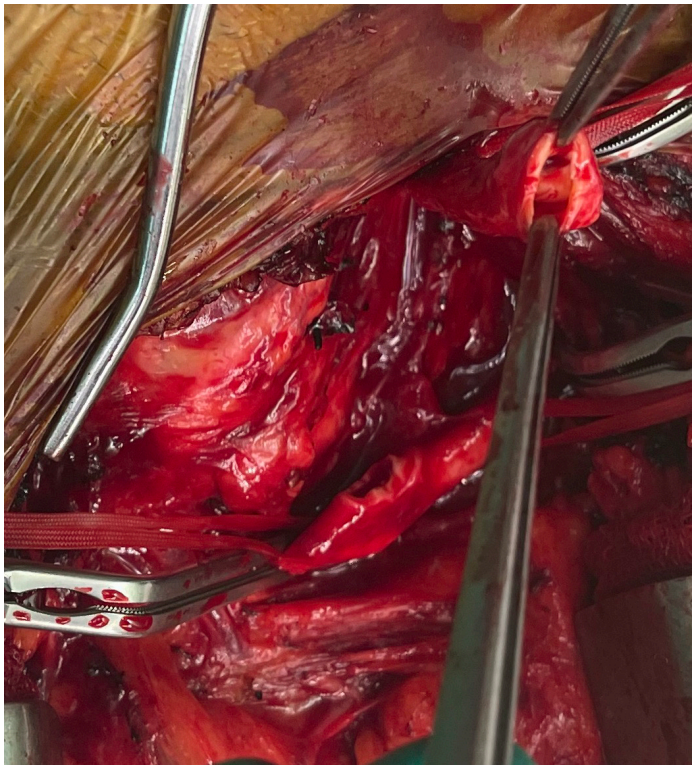

Figure 2. Intraoperative view: Right common carotid artery, right subclavian artery and innominate arteries were extensively mobilized. Clamps were placed and Right CCA transacted at the bifurcation. We have found double lumen in the proximal Right CCA

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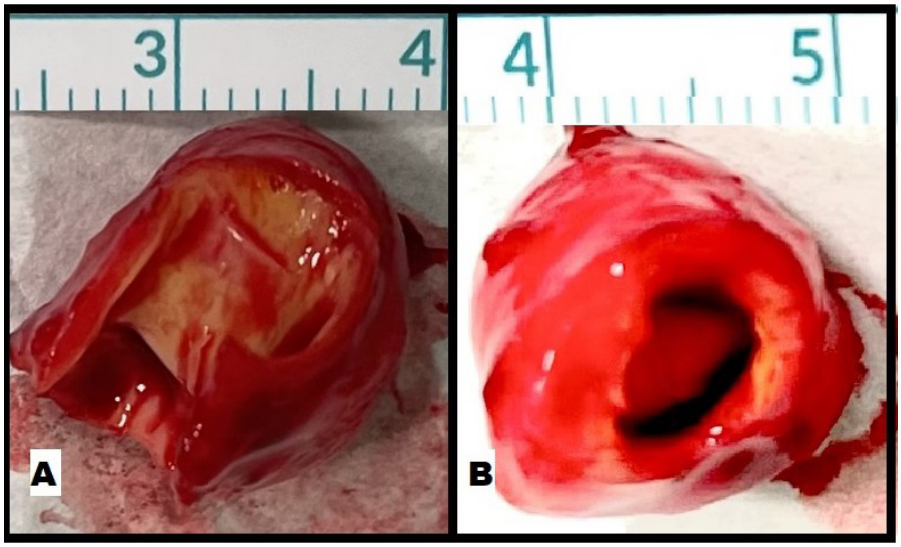

Figure 3. Intraoperative view: **A.** Double lumen appearance was approximately 12 millimetres in length; **B.** Intimal flab easily noticed

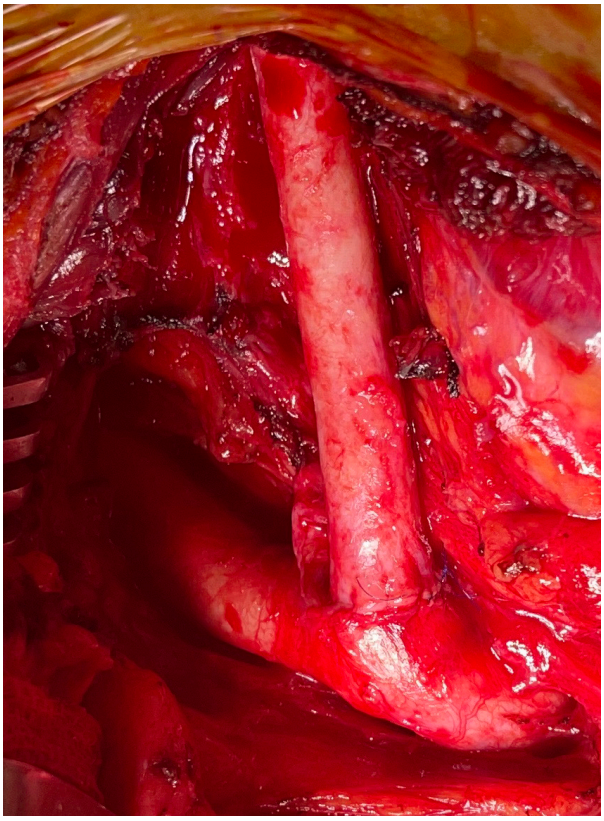

Figure 4. Intraoperative view: Right common carotid artery was totally resected and then proximal part of Right common carotid artery was anastomosed to original place of bifurcation in end-to-side fashion without stretching

DISCUSSION

Intramural hematomas may be asymptomatic but can present with pain. If they rupture, they can be a source of embolism and cause neurological deficits. Isolated CCA dissections are rare, with only a few described in the current literature [1-4]. CCA dissection is frequently due to iatrogenic trauma [5]. Intramural hematomas usually develop after a focal hemorrhage of vasa vasorum. Such kind of injury of the CCA is infrequent and may be undiagnosed. Neck pain is the single symptom of CCA hematoma and dissection. Our patient also complained of right-

side neck pain. Dissection of the internal carotid artery (ICA) and vertebral artery may present more complex symptoms. ICA dissection and intramural hematoma may cause Harlequin syndrome (which is characterized by hemifacial sweating and flushing), Horner syndrome, Transient or permanent stroke, and coldness/numbness of the affected side of the face [3]. Standard carotid artery dissection and intramural hematoma rarely cause neurological deficits because of their larger diameter than ICA. Whiplash injuries or even minor direct trauma to the head and neck may cause traumatic arterial dissection. Coughing, chiropractic manipulation, bronchoscopy, scuba diving, and excessive rotational exercise may cause neck artery dissection. ICA and CCA dissections have been reported in migraine patients [6]. Thyroid fine-needle biopsy (FNAB) rarely causes cervical arterial dissection and intramural hematoma [1,5]. Despite the use of direct US needle visualization, accidental CCA puncture cannot be excluded. The needle may have punctured the adventitial vasa vasorum externa and inducing injury may lead to an intramural subadventitial hematoma [1,5]. Differential diagnosis of common carotid artery injuries after FNAB is essential. Intramural hematoma, false aneurysm, and dissection must be distinguished from each other. Intramural hematoma mostly resolves spontaneously. But if intimal disruption develops (dissection), it can lead to very serious complications. Dissection may progress to the head vessels especially in patients with Marfan-like genetic disease. Our patient has localized dissection at the proximal part of RCCA. Surgical or endovascular treatment should be performed for common carotid artery dissection to avoid neurological complications.

CONCLUSION

Carotid artery dissection after thyroid fine needle biobsy is extremely rare complication. Neck pain, pulsatile mass, and cerebrovascular accedent just after fine needle biopsy may denote carotid artery dissection. dissection of carotid artery after FNB should be treated surgically or endovascular procedures.

Patient Consent for Publication: Informed consents were obtained both surgical approach and publication

Data Sharing Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Author Contributions: All authors contributed equally to the article.

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REFERENCES

1. Polyzos SA, Anastasilakis AD. Clinical complications following thyroid fine-needle biopsy: a systematic review. Clin Endocrinol (Oxf). 2009;71:157-65.
2. Celik H, Yücel C, Oktar S, Karadag Z, Ozdemir H. Iatrogenic pseudoaneurysm of the superior thyroid artery: color Doppler ultrasonographic diagnosis and treatment approach. J Ultrasound Med. 2004;23:1675-8.
3. Tsang K. Duggan MA. Vascular proliferation of the thyroid. A complication of fine-needle aspiration. Arch Pathol Lab Med. 1992;116:1040-2.
4. Axiotis CA, Merino MJ, Ain K, Norton JA. Papillary endothelial hyperplasia in the thyroid following fine-needle aspiration. Arch Pathol Lab Med. 1991;115:240-2
5. Anastasilakis AD, Polyzos SA, Nikolopoulos P. Sub-endothelial carotid hematoma after fine needle aspiration biopsy of a solitary thyroid nodule. J Ultrasound Med. 2008:27;1517-20.
6. Tsakountakis A, Detoraki A, Karatzanis A, Ioannou CV, Drakonaki EE. Common carotid artery hematoma following parathyroid adenoma FNA. J Ultrason. 2022;22:e245-8.