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THE NECK – A PANDORA'S BOX ?

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Abstract:

This article is an attempt to justify its title. Why do we compare the neck to a Pandora's box is what we intend to explain and prove. It is a description of the series of surprises that presented to us in a patient who came to our OPD with complaints of a neck swelling.

Introduction:

Pandora's box is an artifact in Greek Mythology. Pandora is supposed to be the 1st

woman created on this earth. She was gifted a large beautiful box (jar) by Zeus (who is considered to be the Father of the Gods in Greek Mythology) with strict orders not to open it under any circumstance. However, apparently, curiosity got the better of her and she sneeked a peek inside, when a wonderful fragrance wafted out! Now compelled by excitement and curiosity, she opened the jar fully, and with that, apparently, released all the evils of the world out!
Today, the phrase "to open Pandora's box" means to perform an action that may seem small or innocuous, but that turns out to have severe and far-reaching consequences.
So, why do we compare the human neck to a Pandora's box. This is exactly what we intend to explain over the course of this article.

Case Report:

A 55 year old female patient came to our OPD with complaints of a swelling in the lower anterior aspect of her neck for the past 1 year.

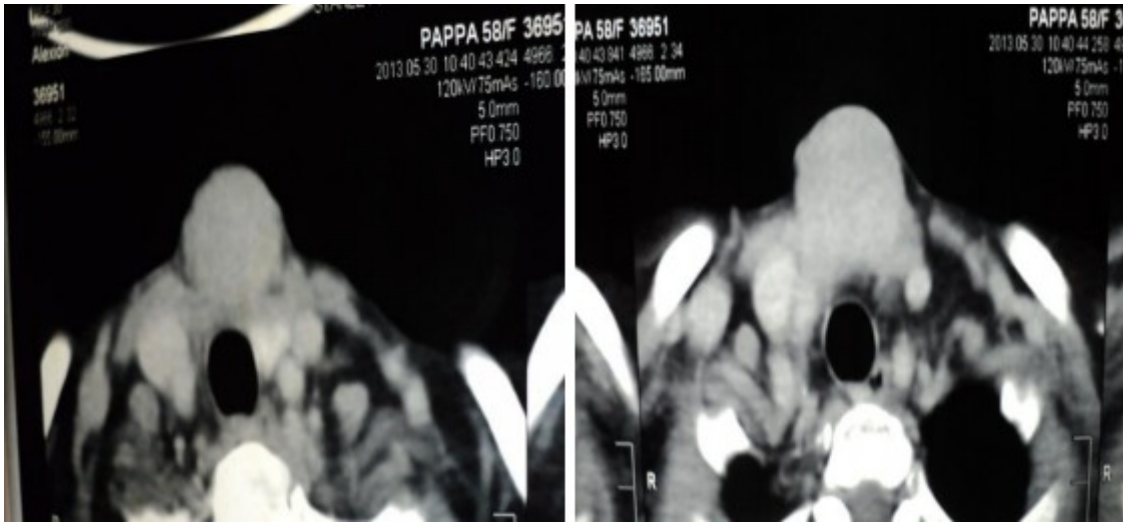
Clinical photograph of the patient

The swelling was apparently initially small in size and slowly increased in size to attain the current size. There was no history of pain over the swelling, no history of voice change and no history of any pressure symptoms (dyspnoea/dysphagia). There was no history of similar swellings elsewhere in the body. She gave history of having undergone some thyroid surgery (records were unavailable) 20 years back. She also gave a history of developing left sided hemiplegia suddenly 10 years back, from which there had been partial recovery. There were no symptoms suggestive of hypo/hyper thyroidism.

She was not on any thyroid medication. There was no history of any other surgical procedure/medical illness/co-morbidities. She had 2 living children and had attained menopause 5 years back. She did not have any addictions. On examination, a 5x5 cm swelling was seen on the suprasternal notch just extending onto the anterior surface of the sternum. It was globular in shape with well defined margins and edges. The skin over the swelling had dilated vessels over it and the mass appeared to be pulsatile.

The scar of right hemi-thyroidectomy could be made out on the anterior aspect of the neck about 2cm above the supra-sternal notch. On palpation, inspectory findings were confirmed. The swelling was not warm, not tender. It was firm in consistency with a few hard nodular spots over it. The skin was pinchable over the swelling and there was no palpable thrill. There was no significant cervical lymphadenopathy. The trachea was in the midline and the carotids were palpable equally on both sides.

No bruit was heard on auscultation. No significant abnormality was noted on examination of the ears, nose and throat. Vocal cords were found to be normal in structure and mobile bilaterally on Indirect Laryngoscopy. CECT Neck revealed a non-contrast enhancing mass in the suprasternal region, in the subcutaneous plane which appeared to be contiguous with the remains of the thyroid gland lying underneath. It was noted that there were remains of the thyroid on both the left and right sides (keep in mind the previous history of thyroid surgery).



Contrast CT neck showing non enhancing mass in the suprasternal region

USG Neck also revealed similar findings with no evidence of any significant cervical lymphadenopathy. FNAC from the mass was reported as “Possible Papillary Carcinoma”. Her thyroid function tests were within normal limits. FNAC from the region of the remaining thyroid gland also produced a picture suggestive of papillary carcinoma. Hence it was decided to proceed with completion thyroidectomy along with resection of the neck mass under GA.

Infiltration and incision

The mass found in the sub-platysmal plane superficial to the strap muscles

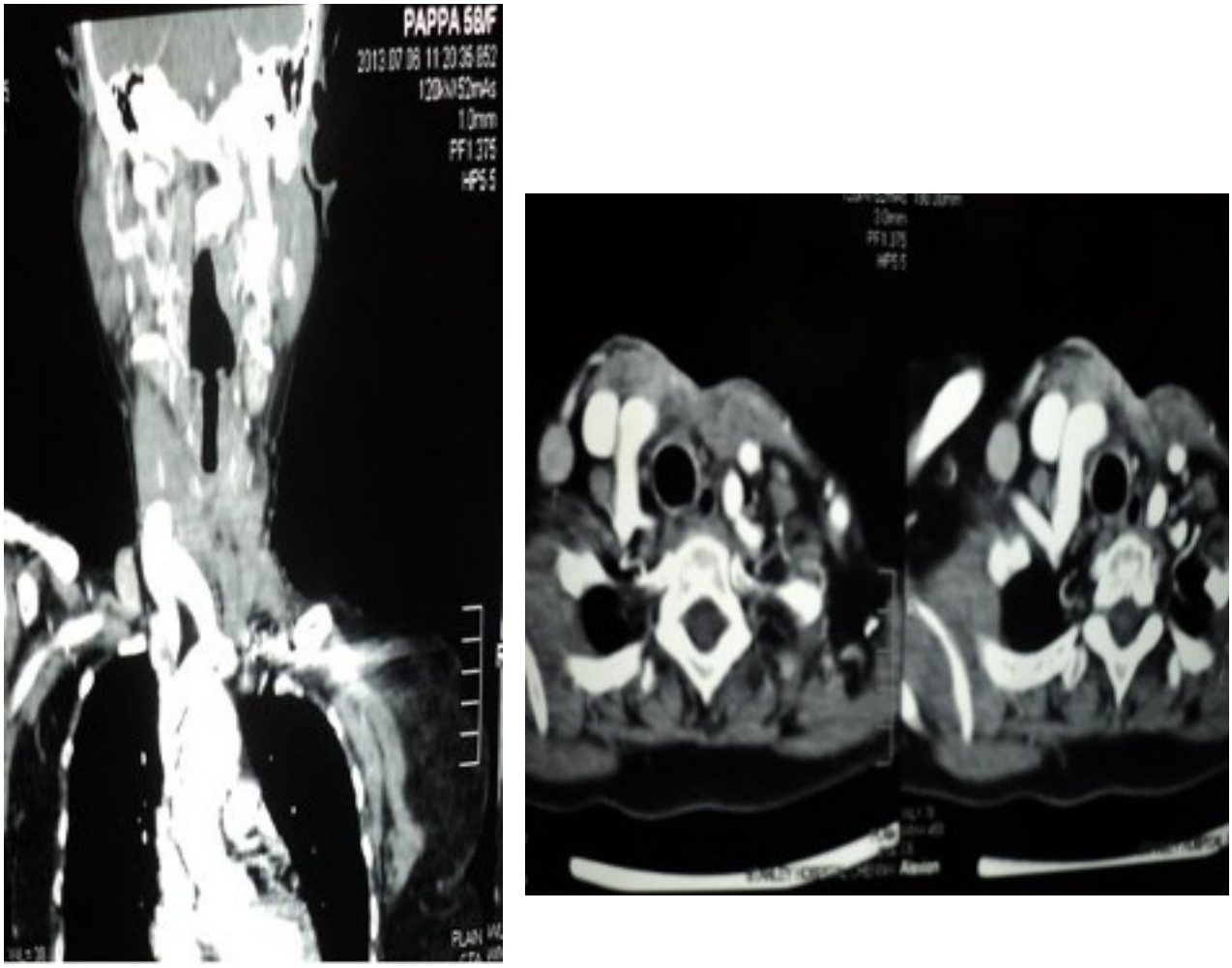
The left lobe of thyroid being dissected out after securing the vascular pedicles.
On the right side, on inspection for completion's sake, a fleshy pulsatile mass was seen, running across the anterior surface of the trachea.

Closure after placing a drain and enforcing the support over the mass.

Surgical Procedure:

The surgery was undertaken under General Anaesthesia after reserving adequate blood and getting consent for emergency tracheostomy on the table if the need arises. The patient was put in supine position with a sand bag under the shoulder blades to extend the neck. The parts were painted and draped. Infiltration was given all over the anterior aspect of the neck including over the mass with Tumescent Solution prepared by mixing Ringer Lactate, epinephrine and sodium bicarbonate.
A curvilinear incision was marked and made extending from the right edge of the swelling, curving below it, encircling it, upto the medial border of the left Sternocleidomastoid muscle. Subplatysmal flaps were elevated taking care to dissect and free the swelling from the soft tissues around it. It was found to be a firm mass with some calcific deposits, superficial to the strap muscles. However as we followed the course of the mass, it was found to be arising from the isthmus of the thyroid gland. The isthmus and the entirely remaining left lobe of the thyroid gland were removed from the field after securing the middle, superior and inferior thyroid arteries on the left side in that order, also taking care to preserve the parathyroids. The mass was quite friable and had to be removed piece-meal only. Next we turned our attention to the right side, to explore and see if any remnant on the right side was there to be removed. This was when we met with a surprise. A dilated tortuous pulsatile vessel was seen running across the anterior surface of the trachea (approximately the 5 th tracheal ring) apparently extending between the carotid arteries on the two sides. (Cautiously probing around the vessel, we tried to identify it and also any residual right lobe of thyroid, but in vain. Finally deciding to be safe rather than sorry, we closed the wound in layers after placing a drain and enforcing the support and closure over the same pulsatile vessel.)

The patient recovered well from the surgery and anaesthesia. She was started on thyroxine supplementation and calcium supplementations the next day. She had no voice change or difficulty in breathing. But it was noticed that the pulsations continued at the very same spot where the mass had been previously.



Contrast CT showing vascular anomaly

The pulsating vessel that we had seen running across the face of the trachea was the right brachio-cephalic artery. It was seen on the CT-Angiogram that though the origin of the artery seemed normal, the vessel was dilated and tortuous, and it branched into the right subclavian and right common carotid arteries at a much higher level than normal. Usually, this vessel steps on the trachea slightly, at the level of the 9 th tracheal ring, and branches into the right subclavian and right common carotid behind the right sterno-clavicular articulation. In our case, the vessel was seen over the trachea at the level of the 4 th tracheal ring. It was suggested, angiogram-wise that the most probable cause for this unusual dilatation and tortuosity was atherosclerosis, which was consistent with the clinical history of the patient of having suffered from an episode of stroke.

Discussion:

RELEVANT CLINICAL ANATOMY:

- The right brachiocephalic artery is the 1 st branch of the arch of aorta.
- It supplies the right arm, head and neck regions.
- It is a short stub of an artery, measuring only about 3 cm length.
- It originates from the arch of aorta to the right of the trachea, ascends up, and behind the right sternoclavicular articulation divides into right subclavian and common carotid arteries.
- It appears over the anterior surface of the trachea at the level of the 9 th -10 th tracheal ring in its course.

ANATOMICAL VARIATIONS OF THE RIGHT BRACHIO-CEPHALIC ARTERY THAT ARE SIGNIFICANT:

- Absent right brachiocephalic artery, wherein the right subclavian and right common carotid braches arise as separate arteries from the arch of the aorta.
- Aberrant (retro-oesophageal) Right Subclavian Artery which is otherwise known as Arteria Lusoria. (responsible for Dysphagia Lusoria)
- Origin of the right brachio-cephalic artery in front of or to the left of the trachea, instead of to the right of the trachea.
- High location in the neck- the vessel might rise high up into the neck, even upto the level of the 2 nd or 4 th tracheal ring, or it might be entwining around the thyroid gland.
- Variations in dimensions : the normal radiological dimensions of this vessel is said to range from 8mm to 13mm, and any measurement over 14mm is considered to be abnormal (dilated).

RELEVANT PATHOLOGY:

- Differentiated Thyroid Cancer (Papillary and Follicular types) metastasize predominantly to the lymph nodes/lungs/bone.
- Spread to skin/subcutuaneous tissue is usually seen in the vicinity of a locally invasive primary tumour.
- It heralds/is a marker of aggressive disease.
- It is more common with the follicular type and follicular variant of papillary carcinoma.
- It usually presents over the scalp, neck and parts of the face (nose, side-burn skin, cheeks).
- Has also been documented to spread to the subcutaneous tissues of the breasts, abdominal wall, thighs,buttocks.

HENCE..PEARLS OF WISDOM :

- Such subcutaneous metastases should also be borne in mind as part of the Differential Diagnosis on encountering such masses in the head and neck region, especially when the patient gives a h/o of thyroid disease/surgery and appropriate management should be accordingly planned.
- Any abnormal pulsations in the neck should not be dismissied without further evaluation especially when a surgical procedure is planned in the neck (tracheostomy, thyroidectomy, resection of tumours/lymph node dissection in the neck).

Conclusion:

The fact and understanding that we are trying to drive home through this article is that any pathology in the neck (even the apparently normal neck) should never be taken lightly even if only a regular routine procedure has been planned. There will always be surprises (and even shocks!) to reckon with, both in the OPD and OT. Hence it would be wise to always be well prepared and acknowledged with the particular case's findings by going the extra mile while working up the case, especially when you smell something fishy in the initial clinical presentation. For as the saying goes, it is always better to be safe than (very) sorry later!

References:

1. Funami Y et al. A case of anomalous courses of brachiocephalic artery, trachea and oesophagus. Kaibogakku zasshi, Journal of Anatomy. 1992 Feb ; 67(1):53-55.
2. MM Loureiro et al. An unusual case of papillary carcinoma of the thyroid with cutaneous and breast metastases only. European Journal of Endocrinology. September 1,1997; 137;267-269.Int. J.Morphol., 27(2):601-603, 2009 .
3. Arthur David Somazo et al. Cutaneous metastasis as the presenting sign of papillary thyroid carcinoma. Journal of cutaneous pathology. February 2013; Vol 40; Issue2 : pages 274-278.
4. Pierre D MD. High Brachiocephalic artery – CT Appearance and Clinical Implications. J of Thoracic Imaging. May 2007; Vol 22; Issue 2: pages 192-194.
5. Shogo Shinohara et al. Implantation metastasis in head and neck cancer after fine needle aspiration biopsy. Auris Nasus Larynx. Nov 2001; Vol 28; Issue 4; Pages 377-380.
6. Elizabeth A Koller et al. Papillary and Follicular Thyroid Carcinoma metastatic to the skin: A case report and review of the literature. Mary Ann Liebert Inc. Publishers. Feb 3, 2009; Vol 8; Issue 11.
7. Oona A Khan, MD et al. Papillary thyroid carcinoma metastatic to skin may herald aggressive disease.J of Endocrine Practice. May-June 2010; Vol 16, Number 3: pages 446-448.
8. Patrick R Dahl et al. Thyroid carcinoma metastatic to the skin : A cutaneous manisfestation of a widespread disseminated malignancy. J of the American Academy of Dermatology. April 1997; Vol 36, Issue 4: pages 531-537.
9. Marco Capezzone et al. Skin metastases from anaplastic thyroid carcinoma. Mary Ann Liebert Inc. Publishers. 2006; Vol 16; Number 5