

## **Subtotal Thyroidectomy with Anomalous Innominate Artery**

Pankaj kumar<sup>1</sup>, Guzailinuer<sup>1</sup>, Harish singh<sup>1</sup>, Savita<sup>1</sup>, Feng Shu<sup>1</sup>, Qu Jian-guo<sup>1</sup>,  
Cui Lei<sup>1</sup>, Huang Run-sheng<sup>1</sup>, Zhang Jian-Xin<sup>1</sup>, Zhang Li-Rong<sup>2</sup>,  
Dang Sheng-chun<sup>1</sup>

*1. Department of General Surgery, the Affiliated Hospital of Jiangsu University, Zhenjiang 212001, Jiangsu Province, China; 2. Department of MRI, the Affiliated Hospital of Jiangsu University, Zhenjiang 212001, Jiangsu Province, China*

**Correspondence: Dang Shengchun, E-mail: dscgu@163.com**

### **I. Background**

The clinical entity of an anomalous innominate artery constricting the trachea and causing respiratory symptoms stayed first recognized through Gross and Neuhauser in 1948<sup>[1]</sup>. In clinical its always find this anomaly, as it can be an incidental finding in asymptomatic. Vascular rings be present uncommon congenital anomalies from an embryological disorder of the combined aortic arches or branching pulmonary arteries. Uncommon congenital anomalies that present with upper airway obstruction<sup>[2]</sup>. The physical findings and symptoms formed by vascular rings are correlated to the structure(s) they circumscribe both trachea, esophagus, for the confirm diagnosis computed tomography (CT), X-ray, angiography or magnetic resonance imaging (MRI) are used and also for surgical planning. The diagnostic modalities, surgical treatment as well as outcome surely discussed. We report a case of a innominate artery extends to the level of the thyroid. This anomaly is relatively rare, understanding of this anomaly can avoid catastrophic bleeding or other complications of potential, is very necessary<sup>[3]</sup>.

### **II. Case report**

We report a case of general anesthesia for subtotal thyroidectomy in a woman 73-year-old. patients 18 years ago on physical examination revealed bilateral neck mass, peanut size, had no symptoms, without treatment, regular examination, nearly two months are mass increased significantly, with pain and discomfort. and a history of hypertension 15 years, but it control by oral drugs, 20 years before the appendectomy, cerebral infarction history for over a year, in October 20th this year recurrence time, denied the "diabetes", "heart disease" and other chronic disease history, denied the "B", "TB" and other infectious disease, denied food and the history of drug allergy.

On examining the patient, a temperature of 36.5 °C pulse 72 beats / min, respiratory rate of 19, blood pressure 145/86mmHg, weight was 68 Kg, and heart rate was about 100 /min.

Routine blood examination was found within normal limits. After final blood test report it shown a free T4, a free T3 of, and TSH is normal. There were no abnormal features found and after further investigation cardio vascular examination was found normal. Lucid, spirit, normal development, nutrient medium, into the ward, the automatic position, check cooperation. Systemic skin mucous membrane without yellow dye and bleeding, less liver palms and spider angioma. Bilateral supraclavicular, bilateral superficial inguinal lymph node not palpable. The head is not abnormal, no conjunctiva hyperemia, sclera without yellow dye, pupil big circle, acute to reflection. No abnormal secretion of external auditory canal. Smooth ventilation, no deviation of nasal septum. No blood, no swelling of tonsil. Neck examination to see specialist case. Bilateral internal thoracic deformity, normal breast development. Bilateral respiratory motion, fremitus equivalence, double lung sound is voiced, breath sounds clear, no dry and wet roles. Free zone up lift before the heart, did not touch the tremor,. No shot sound and water hammer pulse. The abdomen is smooth, no abdominal varicose veins, no intestinal type, peristaltic wave. The abdomen is soft, complete abdomen without tenderness and rebounding pain, no muscle health, not unusual package piece, liver, spleen and unexpected, negative Murphy's sign. Whole abdominal percussion a drum sound, liver, kidney area without percussion pain, shifting dullness, and bowel sounds about 4 beats per minute. External genital organs without deformity. The rectum and anus without deformity. There is no spinal physiological curvature, percussion pain, activity of. Joint activities freely, no deformity. Physiology reflexes existence, pathology reflex is not derivative. A mild tracheal deviation was noted. The electro cardiogram (ECG) was typically normal.

**Spiral computed tomography (CT) and three-dimensional (3D) reconstruction aided in the diagnosis of external compression on the trachea by an innominate artery.**

For the conform diagnosis of external compression on trachea by an innominate artery we used somatom plus 4 scanner (Siemens Medical Systems, Erlangen, Germany) and Helical CT angiography. Under this procedure the patient was put on supine position. For conclude the sequence of reading and to differentiate the position of the lesion, after that we can start doing consecutive scan of patient. In that

without using any contrast material sequential CT angiography was performed on patient's chest on 5 mm section, and helical scanning was done with contrast material with 512 x 512 matrix for 30 sec, thickness of slice was set at 2 mm and table speed was at 2-4 mm to find axial images. With the help of 360° linear interpolation algorithm to modified the image with 10 to 50 % intersection of slice thickness. Using mechanical power injector IV contrast material, iopromide (Ultravist 370; Schering, Berlin, Germany), was injected in body.

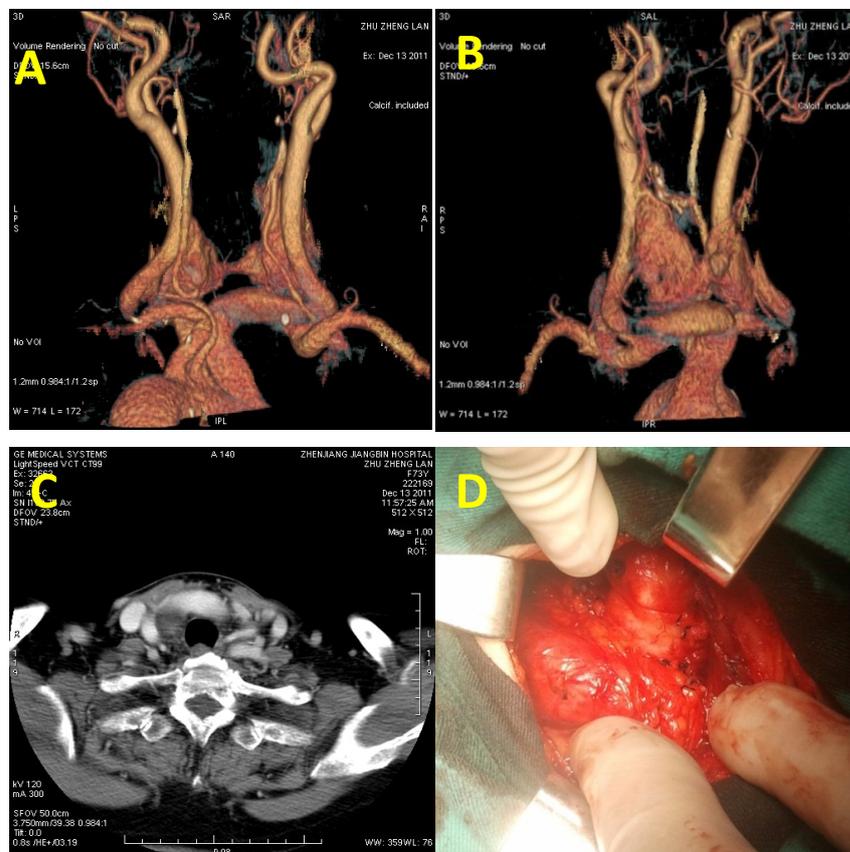


Figure1. A woman 73-year-old. Patient 18 years ago on physical examination revealed bilateral neck mass, peanut size in the neck A: Axial image at as indications the right brachiocephalic artery overpass anterior to the right lobe of the thyroid gland and lightly superior level. B: Axial image at a additional cranial level displays that the right common artery is posterior to the thyroid gland. C: Axial image right brachiocephalic artery just anterior to the trachea was shows with the help of CT scan at the level of the first thoracic vertebral body. The right subclavian artery proximal portion also seen at this level. D: In the front of thyroid we were find pulsating brachiocephalic artery is about 1.0 cm.

### III. Discussion

The largest branch of the aortic arch is brachiocephalic artery. This artery originates from the most convex point of the aortic arch in the midline, then ascends posterolaterally to the right of the trachea, and splits into the right common carotid artery and the right subclavian artery posterior to the right sternoclavicular joint. The innominate artery normally arises from the aortic arch directly over the trachea, about 1 cm above the carina. If it arises too far to the left or too posteriorly, it has to pass the anterior surface of the trachea as it comes upwards to the apex of the right hemithorax. A long and flabby vessel may not cause symptoms, but compression of the anterior trachea will occur if the vessel is short and tight. In a review of 104 cases of vascular anomalies causing tracheal compression, Mustard et al[4] found that 66 % of them were due to an anomalous innominate artery. An self-effacing of innominate artery from a normal left-sided aortic arch is a uncommon phenomenon seen in tracheal compression. It was chiefly demonstrated by Gross and Neuhauser in 1948 in an infant suffering from cough, stridor and occasionally apnea.

Other authors described anomalous origin and development of the innominate artery cause of airway

compression, which were relief of symptoms succeeding decompressive surgery. Elisa Gil-Carcedo, present two cases of innominate artery (IA) in a cervical position. In the first case, surgery was not performed because there was no indication. In the second, it was possible to obtain surgical images of the IA and its branches located in front of the laryngotracheal axis. A warning about the serious risk involved in cervical surgery in these cases is indicated. [5] Asthmatic symptoms was not seen in slight compression of the trachea. [6]

In the some cases it is seen that trans position of great vessel also took place and this was first described by keshner about 100 years back .normally left brachiocephalic vein joint right brachiocephalic vein to have superior vena cava on the right upper chest border ,going through anterior to the aortic arch and its major branch the percentage of these condition is about 0.2-1 %. Right subclavian and right carotid arteries are found due to division of brachiocephalic trunk at arch of aorta.

So due to these anomalies a surgeon can see a big problem during the subtotal thyroidectomy. Because with some normal investigation we are not able to find out the major anomaly, which is already present there. In this case we also find the same problem during surgery. Mean during the surgery when we had do not know about their anomaly in that patient that's was decided to go for 3d CT image and we found the trans position of brachiocephalic artery .

The typical symptoms were described due to innominate artery compression are, and reflex apnea. Vertigo, Blurred vision, Faintness, strider Transitory ischemic attacks, or "mini-strokes" Rapid alterations in blood pressure and Reduced pulse Arm numbness or fatigue with, occlusion of the innominate artery [7]

In very few cases it is seen that high brachiocephalic artery approaching superiorly at the level of the thyroid gland. The diagnostic equipment comprises a collection of radiological tests. On barium swallow may appearance a persistent depression involving stable obstruction. During fluoroscopic investigation might uncover a lot. In Lateral fluoroscopy might demonstration an anterior depression of the tracheal air column. And in the Bronchoscopy were saw the appearance of anterior tracheal compression 1–2 cm proximal to the carina. The part of solidity is pulsatile and, when opened anteriorly by the tip of the endoscope, indications to attenuation of the consistent radial pulse. In the key case, bronchoscopy was performed as a primary test and “ruled out” a vascular ring. Aortogram may be supportive if double aortic arch is suspected. MRI imaging has been used in late modality to confirm the diagnosis. Cine MRI has been informed to be beneficial for dynamic imaging of tracheal compression by the innominate artery.

In summary, by the physical exams we can be suspected innominate artery injury, and CT scan or chest X-ray and diagnosed by angiogram. Primary repair or aorto-innominate bypass is the treatment of choice. CT findings also accessible in a case of an abnormally high brachiocephalic artery. Increase chances of this anomaly are necessary to avoid hemorrhage or other complications during aggressive procedures on the neck. A lateral X-ray to begin with may show indentation or hyperinflation and tracheal deviation. Doppler ultrasound or CT should be used for evaluation in cases where such a vascular abnormality is suspected [8].

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