

ARTERIOVENOUS FISTULA OF THE SUPERIOR THYROID ARTERY: POST THYROID OPERATION

SAMANI ABD. GHANI
RAZALLI HASHIM

SUMMARY

A case of A.V. fistula of the superior thyroid vessels following thyroidectomy is reported. Though the standard treatment of such a fistula is ligation and excision, a more simple ligation and division of the superior thyroid artery is adequate for reasons mentioned. The demonstration of the feeding vessel by angiogram has to be accurate.

INTRODUCTION

One of the less known complications in thyroid surgery is the development of an arteriovenous (A.V.) fistula. Reports of this unusual condition have appeared only six times in English literature. In each of the reported cases, the A.V. fistula appeared after thyroidectomy. A patient is presented here that illustrates the clinical presentation and the simpler mode of surgical treatment performed in contrast to the previous reported cases.

Samani Abd. Ghani
Registrar, Department of Surgery

Razalli Hashim
Cardiothoracic Surgeon and Lecturer

Department of Surgery
Faculty of Medicine
University of Malaya
Kuala Lumpur, Malaysia

Despite the frequency of thyroid surgery, the development of a fistula of the superior thyroid artery and vein following thyroid surgery is a rare complication of the operation. With the advent of better anaesthesia and surgical technique, this complication should not arise in a good set-up. The aetiology is recognised as essentially a penetrating trauma presumably due to transfixion suture passed through both vessels. It is interesting to note that in most of the case reports published, the symptoms occur early after the operation whereas our patient presented 13 years after the thyroid surgery.

CASE REPORT

A 34-year-old Chinese female was admitted to the General Hospital Ipoh in 1971, for a large euthyroid multinodular goitre. A subtotal thyroidectomy was performed. No further information regarding events during the operation was obtained. Her post-operative course was apparently uneventful.

She was admitted to University Hospital Kuala Lumpur on 23 February 1984, with a history of a small pulsatile mass on the left side of her neck, with a vibrating sensation in relation to the upper part of the scar. It was not increasing in size and no associated pain noted.

On examination, the vital parameters were within normal limits. Her trachea was central, no cervical glands were palpable and jugular venous pressure

not raised. No obvious goitre noted. There was a pulsatile non-tender swelling on the left side of her neck lateral to the thyroid cartilage, measuring 3 x 2 cm, soft with a palpable thrill. On auscultation there was a continuous murmur with a systolic accentuation. Thyroidectomy scar was noted and underlying skin appeared normal. The rest of the physical examination was not significant.

Investigations included a haemoglobin, ECG and chest X-ray, all of which were normal.

A left carotid angiogram was performed.

A common carotid injection revealed a wide calibre superior thyroid artery arising from common carotid artery 2-3 cm inferior to the bifurcation. This feeds a 4-5 cm long bulbous space which drains briskly into the internal jugular vein although the venous connection was not demonstrated. The whole resembles a gallbladder and cystic duct.

The patient was taken to the operating theatre on 21 March 1984, and at operation an arteriovenous fistula with an aneurysmal sac was demonstrated.

The origin of the (L) superior thyroid artery was defined and with a trial of ligation with strong silk suture, thrill disappeared and sac collapsed. As such, the (L) superior thyroid artery was electively divided between three strong silk sutures. Post-operatively, recovery was uneventful and patient was discharged well without evidence of recurrence.

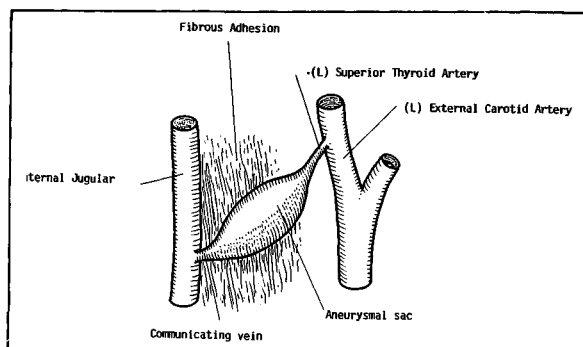


Fig. 1 Arterio-venous fistula.

DISCUSSION

The first clear description on arteriovenous (A.V.) fistula was presented by William Hunter in 1757. He gave an account of such a communication occurring between the basilic vein and the brachial artery following the surgical procedure of venesection.

Since then many reports of A.V. fistula secondary to operative procedure were noted. Mass ligation of artery and vein has been used in most of these cases and the basic aetiology is said to be due to penetrating objects such as needle or ligature.

The first reported case of A.V. fistula of the superior thyroid vessel was made by Downes in 1914.² His patient had a thyroidectomy seven years previously for exophthalmic goitre. Following such reports more cases appeared in English literature, the last was presented by Peter Grossberg and Nicholas T. Hamilton from Prince Alfred Hospital, Melbourne in December 1982.³ They presented two cases with typical history and physical finding of A.V. aneurysm following thyroid surgery.

In all these cases, the diagnosis were confirmed by arteriogram and non-developed cardiovascular complication as a result of such an abnormal communication. Excision of the aneurysm after ligation of feeding and draining vessels were the standard surgical treatment.

In our patient, it was shown that by ligating and dividing the only feeding vessel as confirmed by angiogram studies, is as adequate as excision of the sac. The reason for us to resort to such a simple procedure is that in all of the cases reported the aneurysm were not inherently dangerous, never rupture and usually were too small to produce cardiovascular complication.

Control of the superior pedicle is a major consideration in order to avoid haemorrhage during and following operation, stressing on careful demonstration and accurate control of the superior thyroid vessels prior to ligation. Occasionally however, in spite of careful ligation, haemorrhage

may ensue following division of the vessel. In such instances, it is important to obtain wide and adequate exposure by enlarging the incision laterally and retracting the superior skin flap upward. In some cases, it may be necessary to expose the origin of the superior thyroid artery from the external carotid for adequate control.

Blind clamping and ligature should be avoided. It is further advised that, a suture ligation should be applied distal to a simple ligation.

REFERENCES

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