

Successful conservative management of the spontaneous rupture of a superior thyroid artery aneurysm

We describe the first case report, to our knowledge, of successful conservative management of the spontaneous rupture of a superior thyroid artery (STA) aneurysm. This type of rupture is rare, where spontaneous cervico-mediastinal haemorrhage presents a real threat to life, because of potential cerebral hypoxia and airway compromise.¹ The decision for conservative management was only after several attempts at radiological arterial coil embolization were unsuccessful, in the unsuitable surgical candidate. Institutional Review Board approval was obtained from the Western Health Low Risk Ethics Panel.

An 80-year-old man presented with sudden onset painful midline neck swelling, associated voice hoarseness and odynophagia. He denied trauma, new medications or previous goitre. The patient was on aspirin and had multiple medical co-morbidities including hypertension, primary hypothyroidism and chronic heart failure.

Examination showed neck mass with extensive bruising over anterior chest (Fig. 1), with no movement on swallowing or tongue protrusion. Bilateral vocal cord movement was normal on nasendoscopy; however, the entire anatomy appeared displaced posteriorly. There was no stridor, stertor or dyspnoea and oxygen saturation was 97% on room air. Biochemical investigations revealed a haemoglobin drop from 111 g/L to 93 g/L with no coagulopathy identified.



Fig. 1. Clinical photography of patient day 3 of conservative management.

Computed tomography with angiogram contrast (CTA) revealed a large bi-lobed haematoma in the thyroid region measuring 8.0 × 5.0 × 6.9 cm (Fig. 2). The right STA was aneurysmal with likely arterio-venous malformation (Fig. 3). There was 20% tracheal narrowing over the C7 vertebral body with moderate tracheal deviation to the right.

Emergency angiography was performed. Initial canalization of the right external carotid artery (ECA) identified a tiny right STA. A small amount of contrast extravasation was noted. Subsequent attempts of right ECA re-canalization were unsuccessful, however, for super-selective study of the STA. No coils were deployed.

Anaesthetics, intensive care unit (ICU) and vascular surgery input were sought. Though surgical exploration was considered, conservative management was recommended given patient's age, co-morbidities and risk of surgery. He did not require intubation, tracheotomy or ICU stay.

Repeat CTA on day 3 showed interval reduction in haematoma, to 7.5 cm × 4.0 cm × 6.6 cm, with no evidence of ongoing bleeding or false aneurysm. The right STA remained visible; however, there was no evidence of further extravasation or aneurysm of this vessel. The patient was clinically stable and transferred to rehabilitation with head and neck outpatient clinic review.



Fig. 2. Axial computed tomography with angiogram contrast (CTA) demonstrating cervical haematoma (arrow) and right tracheal deviation.

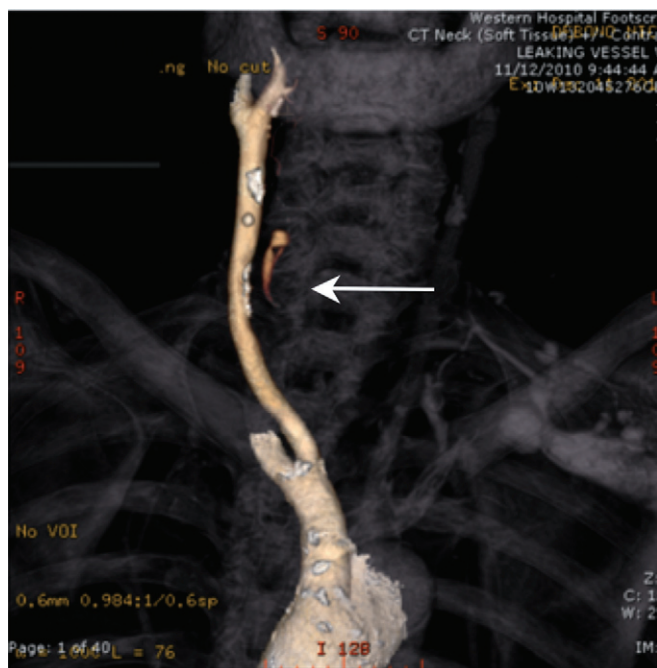


Fig. 3. Three-dimensional reconstruction of the right superior thyroid artery (STA) aneurysm (arrow) on computed tomography with angiogram contrast (CTA) coronal view.

The clinical triad of cervico-mediastinal haematoma was first reported in 1934, comprising of tracheo-oesophageal compression, lateral tracheal displacement and subsequent swelling in the lateral neck.² The aetiology of spontaneous cervical haemorrhage remains diverse, including ruptured arteries, ruptured arterial aneurysms and artery dissection.¹ Intervention, by means of either coil embolization or surgical excision has previously been recommended in all patients,³ as failure to intervene has been uniformly fatal.⁴

Aneurysm of the inferior thyroid artery (ITA), although rare, is the most common site for aneurysm of the thyrocervical system.⁴ Among 15 cases of ITA aneurysm reported, nine patients presented with spontaneous rupture and three died as a consequence.⁴ Only one other case of STA rupture has been reported. It was described as an idiopathic rupture with no aneurysm seen, which was managed by coil embolization and surgery for haematoma evacuation.¹

Selective angiography is the diagnostic modality of choice,⁴ particularly in an urgent setting, because it can be promptly transformed into a therapeutic procedure involving coil embolization. CTA allows non-invasive and accurate anatomic assessment of both right and left thyrocervical trunks.⁵

A report of bilateral ITA aneurysms suggests favourable anatomic characteristics for the development of pathologic dilatation; hence the status of the contralateral thyrocervical trunk should carefully be investigated.⁵ Surgical exploration may be warranted without a diagnosis in the setting of a large or expanding mass.⁴ Surgical resection remains the definitive solution, especially in emergent conditions.⁴

We postulate that success in this case may be due to a small site of extravasation, consequential tamponade effect and clot formation. There may also have been benefits derived from the diagnostic angiogram.

While we believe that this is the first case reported in the literature of survival of STA aneurysm rupture managed conservatively, we do not advocate this as first-line treatment. This case was uniquely managed conservatively as there was no airway compromise, appropriate medical back up was available, haemorrhage appeared tamponaded, embolization has failed and the patient was deemed a poor surgical candidate though a joint decision by the otolaryngology, vascular, ICU and anaesthetics teams. The gold standard has been and remains radiological and surgical intervention because of the real risk of airway compromise and resultant mortality.

References

1. Stenner M, Helmstaedter V, Spuentrup E, Quante G, Huettnerbrink KB. Cervical hemorrhage due to spontaneous rupture of the superior thyroid artery: case report and review of the literature. *Head Neck* 2010; **32**: 1277–81.
2. Capps RB. Multiple parathyroid tumors with massive mediastinal and subcutaneous hemorrhage. *Am. J. Med. Sci.* 1934; **88**: 800–5.
3. Heckenkamp J, Aleksic M, Gawenda M, Krueger K, Reichert V, Brunkwall JS. Endovascular treatment of a ruptured aneurysm of the inferior thyroid artery. Case report and literature review. *J. Cardiovasc. Surg. (Torino)* 2007; **48**: 193–6.
4. Garrett HE Jr, Heidepriem RW III, Broadbent LP. Ruptured aneurysm of the inferior thyroid artery: repair with coil embolization. *J. Vasc. Surg.* 2005; **42**: 1226–9.
5. Marrocco-Trischitta MM, Kahlberg A, Calliari F, Chiesa R. Bilateral aneurysm of the inferior thyroid artery. *J. Vasc. Surg.* 2007; **45**: 614.

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