LETTER

Tracheo-innominate artery fistula: surgical primary closure of the artery defect, a successful treatment of a potential catastrophe

Dear Editor,

An 18-year-old patient underwent total removal of a fourth ventricle ependymoma. Postoperatively, severe lower cranial nerves palsy occurred, necessitating tracheostomy. Five weeks after the tracheostomy, a herald bleeding around the tracheostomy cannula was noticed. Inflation of the tracheostomy cuff arrested the bleeding temporarily. Emergent flexible bronchoscopy showed no abnormality in the bronchial tree, while several clots were aspirated. An enhanced computed tomography scan revealed close contact between the trachea and the innominate artery (IA) at the level of the tracheostomy cuff, suggestive of tracheo-innominate artery fistula (TIF). The patient was transferred immediately to the operating room (OR), where a total sternotomy was performed. The thymus was dissected and the IA visualized. An orotracheal airway was secured whilst removing the tracheostomy cannula, which resulted in abundant hemorrhage from the IA, controlled with clamping. Careful dissection and debridement of TIF exposed a IA defect measuring less than 5 mm, which was repaired with polydioxanone (PDS) USP 5-0 suture. The tracheal defect was left open for granulation tissue to develop. A pedicled subcutaneous adipose flap was placed between the trachea and the innominate artery to avoid healing structures being in close proximity to each other. After 48 hours, the patient was extubated and a Montgomery tracheal stent was placed at the site of the previous tracheostomy to prevent potential tracheal stenosis. Two weeks later, the patient was discharged home in stable condition.

Although rare, TIF is a life-threatening complication of tracheostomy, with an incidence of 0.1-1 % and survival rate of 14.3 %. It occurs at the seventh to ninth tracheal ring, with a peak incidence between the first and second week after tracheostomy[1]. Once TIF is suspected, the patient must be transferred to the OR to perform flexible bronchoscopy while slowly deflating the tracheostomy cuff and then gradually withdrawing the tracheostomy tube[2]. IA bleeding might be controlled by direct repair of the defect or by interposition grafting, alternatively, by simple ligation or resection of the IA[3]. The effectiveness of endovascular stent placement has been recognized in many vascular diseases. Nonetheless, there is a possibility of graft contamination from the trachea through the fistula[4].

In the presented case, because fistula dimensions were small, repairing directly the IA and leaving open the tracheal defect, followed by the postoperative placement of a Montgomery tracheal stent, resulted in a successful management of an otherwise catastrophic condition.

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Conflict of interest

None.

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