

Internal Thoracic Artery Encircled by an Unusual Phrenic Nerve Loop

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We report an anatomic variation of the phrenic nerve. During a routine gross anatomical dissection course at our medical university, we found an unusual loop of the left phrenic nerve around the internal thoracic artery, about 1 cm from the take-off of the left subclavian artery. The phrenic nerve is close to the internal thoracic artery and is easily injured when dissecting the internal thoracic artery for coronary artery bypass conduit. Therefore, we suggest that the anatomic relationship of the phrenic nerve and internal thoracic artery is important in preventing incidental injury of the phrenic nerve. [*J Formos Med Assoc* 2007;106(12):1069–1070]

Key Words: coronary artery bypass graft, internal thoracic artery, phrenic nerve

Sir,

We report a phrenic nerve (PN) anatomic variation found during routine anatomy dissection. We believe it to be of clinical significance.

We found an unusual left PN around the internal thoracic artery (ITA), 1 cm from the take-off of the left subclavian artery (Figure). The nerve fibers divided into two parts, forming a 15-mm wide loop. The nerve then descended on the left of the left subclavian and left common carotid arteries above the aortic arch, and caudally past over the pleural cupula. No accessory PN or variation in the right PN were identified.

Direct surgical PN injury could occur during ITA dissection,¹ especially when the extra length of the ITA is needed for dissection of the artery to its origin from the subclavian artery. Two main

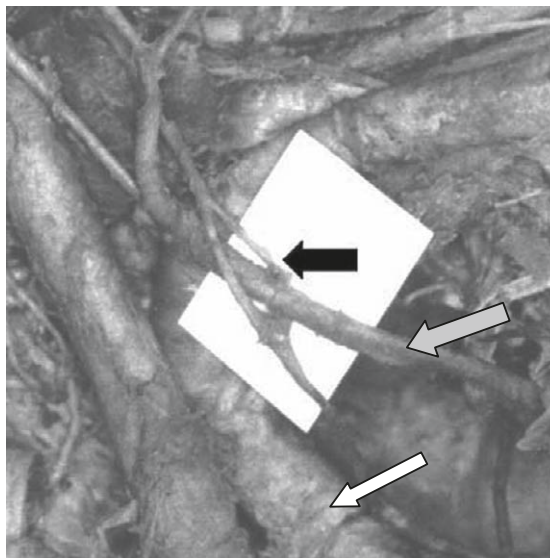


Figure. Close-up view of the unusual looping of the phrenic nerve (black arrow) encircling the internal thoracic artery (gray arrow), which is originating from the left subclavian artery (white arrow).

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causes of PN injury are ice/slush topical cardiac hypothermia² and direct nerve injury during ITA dissection. The latter can have a permanent detrimental effect.³

Most patients with unilateral PN injury have few respiratory symptoms and can be extubated easily after coronary artery bypass surgery. However, difficulty in ventilator weaning and re-intubation may be seen in patients with chronic obstructive lung disease. The incidence of postoperative pulmonary insufficiency is higher in patients with bilateral PN injury.⁴

When dissecting for a coronary artery bypass surgery conduit, we suggest that surgeons take care not to damage any PN fibers interposed around the ITA. We also suggest that the anatomic relationship

between the PN and ITA is important in preventing incidental injury of the PN.

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