

## **A Reminder of a Rare Anatomical Variant of the Spinal Accessory Nerve Encountered During Routine Neck Dissection: A Case Report and Updated Review of the Literature**

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**Abstract :** Objectives: Historical studies of the anatomy of the spinal accessory nerve (SAN) have reported conflicting results regarding its relationship with the internal jugular vein (IJV). A literature review was undertaken to establish the prevalence of anatomical variations of the SAN encountered during routine neck dissection surgery in order to increase awareness and reduce morbidity associated with iatrogenic SAN injury. Materials and Methods: The largest systematic review to date was performed using PRISMA-ScR guidelines, which yielded nine articles following the application of inclusion and exclusion criteria. A case report is also included, which demonstrates the rare anatomical relationship of the SAN traversing a fenestrated IJV, seen for the first time in the senior author's career. Results: The mean number of dissections per study was 119, of which 55.6% (n=5) studies were performed on cadaver subjects, and 44.4% (n=4) were surgical dissections. Incidences of the SAN lateral to the IJV and medial to the IJV ranged from 38.9%-95.7% and 2.8%-57.4%, respectively. Over half of the studies reported incidences of the SAN traversing the IJV in 0.9%-2.8% of dissections. One study reported an isolated variant of the SAN dividing around the IJV with a prevalence of 0.5%. Conclusion: At the level of the posterior belly of the digastric muscle, the surgeon can anticipate the identification of the SAN lateral to the IJV in approximately three-quarters of cases, whilst around one-quarter are estimated to be medial. A mean of 1.6% of SANs traverses a fenestration of the vein. It is essential for surgeons to be aware of these anatomical variations and their prevalence to prevent injury to vital structures during surgery.

**Keywords :** anatomical variant, internal jugular vein, neck dissection, spinal accessory nerve

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