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Faciomaxillary Trunk: A Rare Carotid Variation with Translational Implications in South African Trauma Care

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Background and Objectives: Trauma involving the cervical and faciomaxillary regions remains a major contributor to morbidity and mortality in South Africa, largely due to interpersonal violence and motor vehicle accidents. These injuries frequently involve the carotid arterial system, where vascular compromise may result in life-threatening haemorrhage, stroke, or death. The external carotid artery demonstrates anatomical variability, including rare trunk formations such as the faciomaxillary trunk (FMT), defined as a common origin of the facial artery (FA) and maxillary artery (MA). Despite the clinical burden of trauma, there is limited population-specific data on such variations. This study aimed to describe the morphometry and variations of the carotid arterial system in a South African population, with emphasis on rare trunk formations such as the FMT and their translational relevance.

Methods: A cross-sectional descriptive study was conducted on 60 carotid arteries from 30 adult South African cadavers. Bilateral dissections of the cervical region were performed to expose the carotid arterial system. The branching patterns of the external carotid artery were examined, and trunk formations were identified, with emphasis on the FMT.

Results: The FMT was identified as a rare unilateral variation within the sample (1,67%), representing a deviation from the conventional branching pattern in which the FA and MA arise independently from the ECA.

Conclusion: The FMT likely reflects altered embryological development of third aortic arch derivatives. Clinically, this variation may modify vascular landmarks and increase the risk of iatrogenic injury during surgical and interventional procedures. In trauma settings in South Africa, it may complicate haemorrhage control and surgical access. Recognition of such variations supports translational application, enhancing surgical precision, improving preoperative planning, and contributing to better patient outcomes.