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**VARIANTS OF ANATOMY AND TOPOGRAPHY OF THE MIDDLE MENINGEAL  
ARTERY IN HUMANS**

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Middle meningeal artery is a clinically significant artery. Many pathological that has been identified to be lethal in the twenty first century in over 50% cases such as Recurrent chronic subdural hematoma, traumatic arteriovenous fistula, Moya-Moya disease and meningioma to the very common condition such as migraine can involve this artery.

The development of the middle meningeal artery also occurs via angiogenesis. During development, a series of aortic arches arise; the dorsal remnant of the second aortic arch gives rise to the embryonic hyoid artery when the embryo is about 4 to 5mm. When the embryo is around 7mm to 14mm this embryonic artery grows into the cranium and when it passes over the crus of stapes, it is named as stapedia artery. The stapedia artery will then branch into two, out of which, the upper or supra orbital division gives rise to the middle meningeal artery. By the 10th week of development, the stapedia artery will normally degenerate. In rare cases the persistence of stapedia artery is observed. The embryological origin of Internal Carotid Artery and Basilar artery are adjacent to that of the embryological origin of middle meningeal artery. Both the above characteristics paved path to variants in the origin of middle meningeal artery.

In around 75-80% of cases, middle meningeal artery originates from the mandibular segment of maxillary artery, in around 5- 10% of cases it has originated from the basilar artery, 0.5-2 % originated from ophthalmic artery and in less than 5 % of cases has originated from partial or persistent Stapedial artery and cavernous, pseudo petrous, distal petrous, cervical Internal Carotid Artery. In very rare cases of about less than 2% it originates from occipital artery. According to the origin the course of the artery changes drastically.

In usual cases, the middle meningeal artery originates from the mandibular segment of the maxillary artery which enters the infratemporal fossa, just medially and behind the condylar process of the mandible and enters the cranium through foramen spinosum. When the mandibular segment of the maxillary artery passes superficially to the external pterygoid muscle (in above 75% of cases), the middle meningeal artery and accessory meningeal artery have a common origin from the maxillary artery, and the inferior dental and posterior deep temporal arteries have a separate origin. On the contrary, when the mandibular segment of the maxillary artery passes deep to the external pterygoid muscle, they all share a common trunk.

Three main segments can be distinguished in the middle meningeal artery based on their location: extracranial, intracranial and intraosseous.

Extracranially, it gives rise to petrosal branch of the middle meningeal artery and cavernous branch (It is present very rarely). The intraosseous segment extends to the outer and inner orifices of the foramen spinosum of the greater wing of the sphenoid bone. Not much information is present about it and still research is being conducted on it. After that middle meningeal artery extend through the foramen spinosum, where it bifurcates into two branches: medial cavernous branch and basal tentorial branch. There are three possible ways in which we can witness the bifurcation at foramen spinosum in humans. Intracranially at the pterion region it divides into two terminal branches: Frontal branch of middle meningeal artery and Parietal branch of the middle meningeal artery. Anterior branch further gives rise to falcrine and contralateral branches whereas posterior branches further give rise to petrosquamous and parietooccipital branches.

In conclusion, this research will provide the insight to, all the most discussed and least discussed branches of the middle meningeal artery; their topography, location, anatomical variations and their importance. Understanding the basic anatomy of the Middle meningeal artery is vital for neurosurgeons, traumatologists and even general practitioners. There are still things need to be discovered about this artery knowing its clinical importance.