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Superior Articular Facets of Atlas Vertebra - Amorphological Study

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Abstract: ***Superior Articular Facets (SAF) are present on atlas vertebra facing superomedially & they occupy most of the upper surface of the lateral mass and lie obliquely, their anterior ends being always nearer to the midline than the posterior ends. This study was carried using 100 adult dry atlas vertebrae of unknown ages and sexes. The importance of such morphological studies lies in the field of kinesiology. Any variation in the articulating surfaces also affects the movements occurring at that particular joint***

Keywords: Articular, Atlas, Facets, Kinesiology, Morphological

1. Introduction

Superior Articular Facets (SAF) are present on atlas vertebra facing superomedially & they occupy most of the upper surface of the lateral mass and lie obliquely, their anterior ends being always nearer to the midline than the posterior ends. Facets are usually concave, with concavity in both longitudinal and transverse directions. The facets form an atlanto-occipital joint with occipital condyles and this joint is responsible for nodding movements. Injuries of the upper cervical spine which cause severe disabilities following trauma, have always been an interesting focus for anatomists [1]. The Atlas is the first cervical vertebra which supports the "globe" of the head [2]. The description of the SAF of the atlas vertebra, as has been found in the most of the text books of anatomy, makes no mention of its variations. Literature has revealed marked variations in the shape, symmetry, partial or complete separations of the facets and constrictions of SAF of the atlas [3,4,5].

2. Materials and Methods

This study was carried out on 100 adult dry atlas vertebrae of unknown ages and sexes in the Department of Anatomy, DM- Wayanad Institute of Medical Sciences, Meppadi. Damaged and pathologically abnormal bones were excluded from the study. Morphological parameters like shapes, constrictions and partial or complete separations of facets were noted.

3. Observation and Results

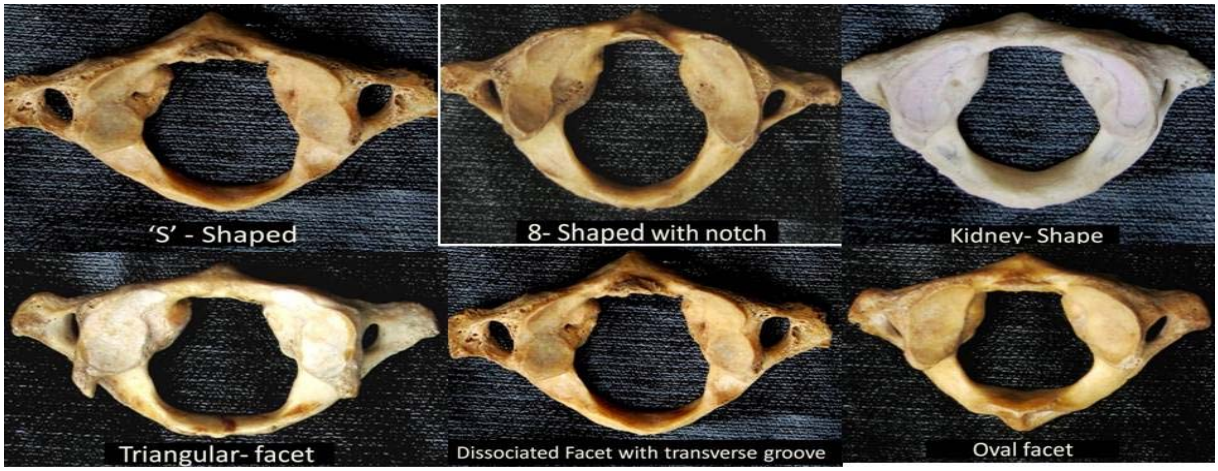

Figure 1: Different shapes of the superior articular facet

Table 1: Describing the frequency of different shapes of the superior articular facet

Year of Study	Population Studied	Total Population Studied	Shape Of the Articulating Facet	Right Superior Articulating Facet	Left Superior Articulating Facet	Total
2014	South Indian	100	Oval	29	24	63
			Reniform (Kidney shape)	7	12	19
			Dumb-bell (S shape & dissociated facet)	44	41	95
			F8	10	10	20
			Triangular	10	13	23

4. Discussion

When our study was compared with the following study the following differences and similarities were noted.

Table 2: Describing the comparison of the study with the previous studies

Worker	*Year*	*Population*	*No*	*Shape*	*Right Superior Articulating Facet*	*Left Superior Articulating Facet*	*Total*
Singh[6]	1965	Varanasi	200	Oval	53	42	95
				Reniform	13	20	38
				Dumb-bell	134	138	272
				F8			
Gupta and Goel[8]	2000	Maharastrian	50	Oval			74
				Reniform			24
Lalit M[5]	2009	North Indian	30	Oval	10	7	17
				Reniform	6	6	12
				Dumb-bell	11	10	21
				F8	3	7	10
Present study	2014	South Indian	100	Oval	29	24	63
				Reniform (Kidney shape)	7	12	19
				Dumb-bell (S shape & dissociated facet)	44	41	95
				F8	10	10	20
				Triangular	10	13	23

The present study thus reported the shape of the SAF in a majority of the cases as a dumb-bell shape followed by an oval shape, Triangular, figure of eight (F8) and reniform. Francis[7] (1955) gave no comparative data but defined only the shapes, whereas Singh[6] (1965) reported a combined dumbbell and 8 shaped facet as the commonest shape and Gupta[8] (2000) defined only two shapes and found the oval as the commonest. The difference between the percentages of the types of shapes on the right and left sides of the superior articulating facet was found to be statistically insignificant (p=0.536). None of the earlier authors have compared the parameters of both the sides in the available accessible literature. The occurrence of osteophytes in the vertebral column is well known to anatomists, clinicians and anthropologists. Osteophytes may appear on the atlas characteristically in the region of the superior articular facets. Vertebrobasilar ischaemia due to the compression of the vertebral arteries, which is caused by the osteophytes, may also occur.

5. Conclusion

The importance of such morphological studies lies in the field of kinesiology. Any variation in the articulating surfaces also affects the movements occurring at that particular joint. Future scope lies in its applications in the field of kinesiology. Also the fact that whether it's a developmental or extrinsic movement causes these variations remains the most important topic of discussion.

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