

# JAS



*Journal of*  
**Anatomical Sciences**

PUBLISHED BY : UP CHAPTER OF ANATOMICAL SOCIETY OF INDIA

*Editor-in-Chief*

*Dr. Archana Sharma*

Raipur Institute Of Medical Sciences

Dean

Volume : 23 (2), Dec. 2015

[www.asiup.in](http://www.asiup.in)

Original Article

# MORPHOLOGICAL VARIATIONS OF PAPILLARY MUSCLES IN NORTH INDIANS: A CADAVERIC STUDY

Prasenjit Bose\*, Royana Singh\*, Raghunath More\*, S. K. Pandey\*, Dharmendra Jain\*

\* Department of Anatomy IMS, BHU, Varanasi, UP .

## ABSTRACT :

**Background:** Aim of the present study was to observe the morphology, number, shape, position and pattern of papillary muscles. Morphological study of papillary muscles of the right and the left ventricle is important for the surgeon in reparative procedures, papillary muscle dysfunction, mitral valve replacement and use of mitral valve homograft for mitral/tricuspid replacement due to its anatomical variability. **Material and Methods:** - 60 formalin preserved hearts of human cadavers were used for the study. Dissection was performed according to standard techniques. The number, shape, position and pattern of papillary muscles were observed, photographed and documented. **Results:** - Classical papillary muscles in the left ventricle were observed in only 23.33% specimens. Two groups (multi - segmental) of papillary muscles were observed in 53.33% specimens, three groups in 18.33% specimens and four groups in 1.67% specimens. While 3.33% of specimens were found to be having multi-apical papillary muscle. Conical shaped papillary muscles were observed in 45% specimens, broad-apexed were observed in 51.67% specimens and pyramidal in 3.33% specimens. The patterns of papillary muscles were also observed. Separate bases and fused apex in 36.66% specimens, single base and divided apex in 1.66% specimens. Small projections of papillary muscles in 14.17% specimens. Long papillary muscles in 30.83% specimens. Perforated papillary muscles in 9.17% specimens and papillary muscles with base attached to a large bridge in 7.5% specimens.

**Conclusion :** Morphological study of papillary muscles may help cardiac surgeons during surgical procedures conducted for correction of their defects as well as anatomists to help in understanding the development and variations.

**INTRODUCTION :** As a requirement for the pumping function, the heart must have a determined arrangement of the ventricular muscle fibers[1]. The structure of left atrioventricular valve apparatus is composed by the mitral annulus, mitral valve leaflets, chordae tendineae and papillary muscles[2]. Mechanical properties of mitral valve apparatus depend to large extent on the link between papillary muscle and valve that transmit contractions of the muscle to the valve leaflets[3]. Rupture and dysfunction of papillary muscles and chordae are very much responsible for this by causing mitral valve prolapse. Various operative procedures such as resection, repositioning and realignment are routinely done to maintain its normal anatomy and

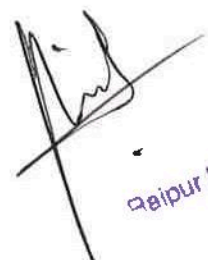
physiology. Hence it is very important to have clear cut knowledge about the normal anatomy of papillary muscles as well as its variations.

The objective of this research work is to study the gross architecture of papillary muscles and its variations.

**Material and Methods :** 60 formalin preserved hearts of human cadavers were used for the study. Heart samples were procured from Department of Forensic Medicine, Department of Anatomy, Institute of Medical Sciences, BHU, Varanasi (U.P). All necessary consents were taken prior to the commencement of our study. Hearts with morphological variations and those with diseased, fibrosed valves were excluded

## Address for Correspondence :

Dr. PRASENJIT BOSE  
Junior Resident Department of Anatomy IMS, BHU  
Varanasi, UP

  
Deputy Institute Of Medical Sciences  
Dean