



Myocardial Bridges Over Interventricular Branches Of Coronary Arteries

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ABSTRACT

INTRODUCTION: *According to Gray's anatomy 39th edition the coronary arteries may dip into the myocardium for various lengths and reappear on heart surface*

AIM: *The presence of myocardium over the coronary artery of heart made us to collect the data from coronary angiogram too.*

MATERIALS AND METHODS: *50 Hearts were removed from the cadavers and at post-mortem and 648 angiograms of MI patients of Cardiology Department Billroth Hospitals, Chennai were taken into study.*

OBSERVATION: *Of the 50 hearts observed six hearts showed the presence of the myocardium over the anterior interventricular branch of left coronary artery and three hearts showed the presence of myocardial bridge over the posterior interventricular branch of right coronary artery. In angiograms also the myocardial bridges were seen over the anterior interventricular branch.*

DISCUSSION: *The myocardial bridges were described by Geiringer (1951). In our study angiograms and specimens showed the presence of myocardial bridge over the anterior interventricular branch of left coronary artery predominantly*

KEY WORDS: *Left coronary artery, Anterior interventricular branch, Myocardial bridge, Right coronary artery, Posterior interventricular branch.*

ABBREVIATIONS: *CA- Coronary artery; LAD- Left Anterior Descending; MI – Myocardial Infarction; Br – Branch*

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INTRODUCTION:

Coronary arteries usually course on the epicardial surface of the heart. Myocardial bridges are the condition in which an arterial segment of the CA takes an intra myocardial course. The LAD is the most commonly affected CA

No of Heart specimens	Myocardial bridges seen over				
	LAD	%	Posterior interventricular Br	%	TOTAL%
50	06	12	03	06	18%

Table - 1

AIM:

The Presence of Myocardium over the coronary artery in one specimen of heart during dissection prompted as to study about this in detail in other specimens and to collect the coronary angiogram of patients with MI for the same purpose

MATERIALS AND METHODS:

50 Hearts were removed from the cadavers and at post-mortem and 648 angiograms of MI patients (2008 to 2009) of Cardiology Department Billroth Hospitals, Chennai were taken into study

OBSERVATION:

In 35 Hearts the Right coronary artery continued as posterior interventricular branch and in 15 hearts the circumflex branch of the Left coronary artery continued as the posterior interventricular artery.

We observed Right coronary dominance.the findings in the present study are similar to those of Kahn (1995) and Cavalcanti(2011) [1, 7] .Of the 50

hearts observed six hearts showed the presence of the myocardium over the anterior interventricular branch of left coronary artery (Plate 1) and three hearts showed the presence of myocardial bridge over the posterior interventricular branch of right coronary artery (Plate 2).

Four of the Angiograms showed myocardial bridges over the anterior descending branch of left coronary artery and its branches (Plate 3) showing their compressive effects

DISCUSSION:

E R Schwarz in 2008 reported the myocardial bridges due to Malformation [2]. Polacek, (1961) Studied in 70 hearts and found myocardial bridges to be 85.7% [12]. Geiringer(1951) reported the presence of myocardial bridges by dissection and incidence was 23% [4]. In our study the presence of myocardial bridges was observed in 18% (Table - 1). According to Ferriera AG et al (1991) in a necropsy study of 90 hearts found myocardial bridging in 55.6%. The left anterior descending branch was the most commonly affected artery [3]. Our finding also coincides with the above author in that, the anterior descending branch of the left coronary being the commonly affected artery forming 12% (Table -1).

- Pracowina Badan et al reported a case of old male suffering from episodes of unstable angina due to presence of myocardial bridging observed in angiogram on the left descending branch [13].
- Stefan Mohlenkamp et al (2002) observed myocardial bridges on one third of adult and in angiographic series it was about 5%. The use of provocation tests enhanced systolic myocardial compression and thereby revealed myocardial bridges in 40% of cases. Most of the bridges were observed on the anterior Interventricular artery [15].
- In a study using cine angiogram, Harikrishnan S et al (1999) studied 3200 cases and found myocardial bridges in 21 (0.65%)cases mostly on the proximal or mid anterior interventricular branch [5].

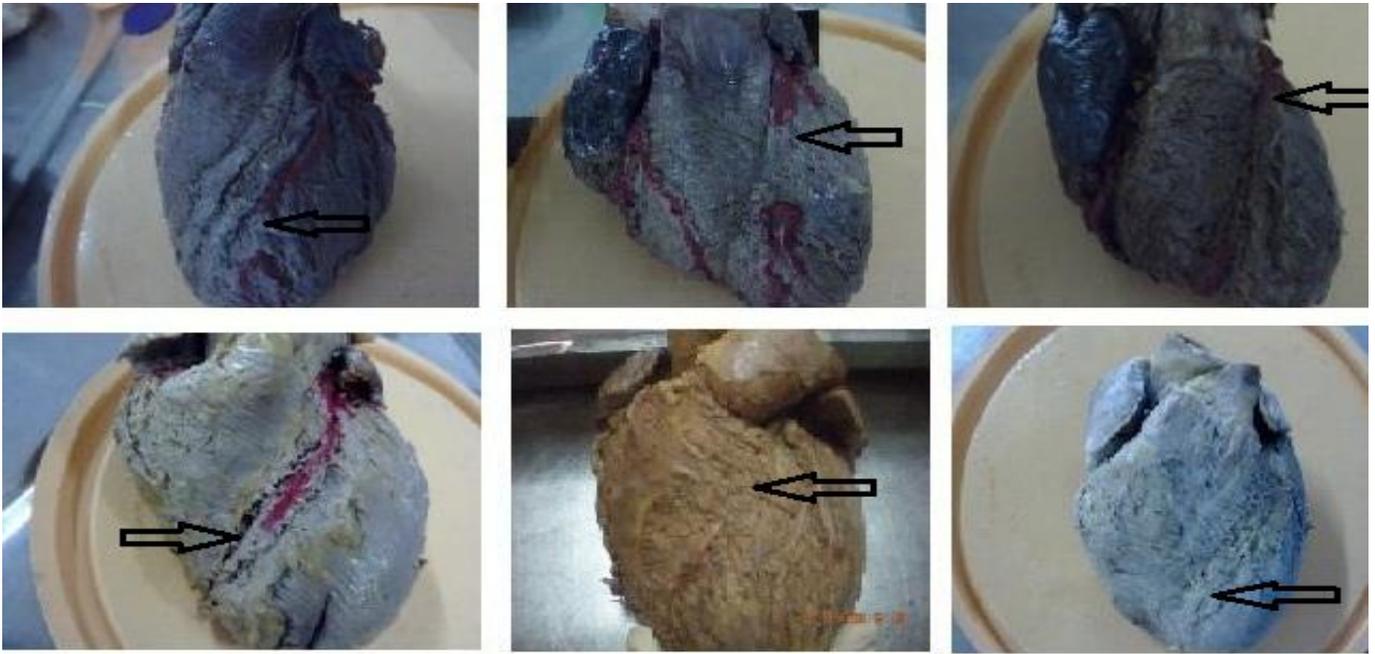


Plate- 1 Arrows showing Myocardial bridges over the Anterior interventricular branch of Left coronary artery in six heart specimens

- Marios Loukas et al reported presence of multiple bridges (double and triple). Bridges were also found over the diagonal branch of left coronary artery, over the left marginal artery, over the right coronary artery, right marginal artery and posterior interventricular artery [11]. In case study of 69 cases, 46 (66.6%) of hearts were left dominance with bridges and 17(24.6%) were left dominant. The mean length was 31mm and the mean depth was 12mm. In our angiographic study myocardial bridges were present in the septal, diagonal and main trunk of left anterior interventricular branch. In four cases and formed a percentage of 0.61(Table - 2)

CONCLUSION:

Coronary perfusion is primarily diastolic, while contraction of the musculature is systolic thus creating doubts regarding the ability of myocardial bridges to cause ischemia by vessel compression. Angiograms of patients having myocardial bridges have demonstrated that some effect of vessel compression persists in diastole and could account for the coronary ischemia. It can also be associated with unstable angina, myocardial infarction, ventricular arrhythmias and sudden cardiac death.

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Table - 2 Myocardial bridges seen over		
No of Angiograms	Posterior interventricuar Br	%
648	04	0.61

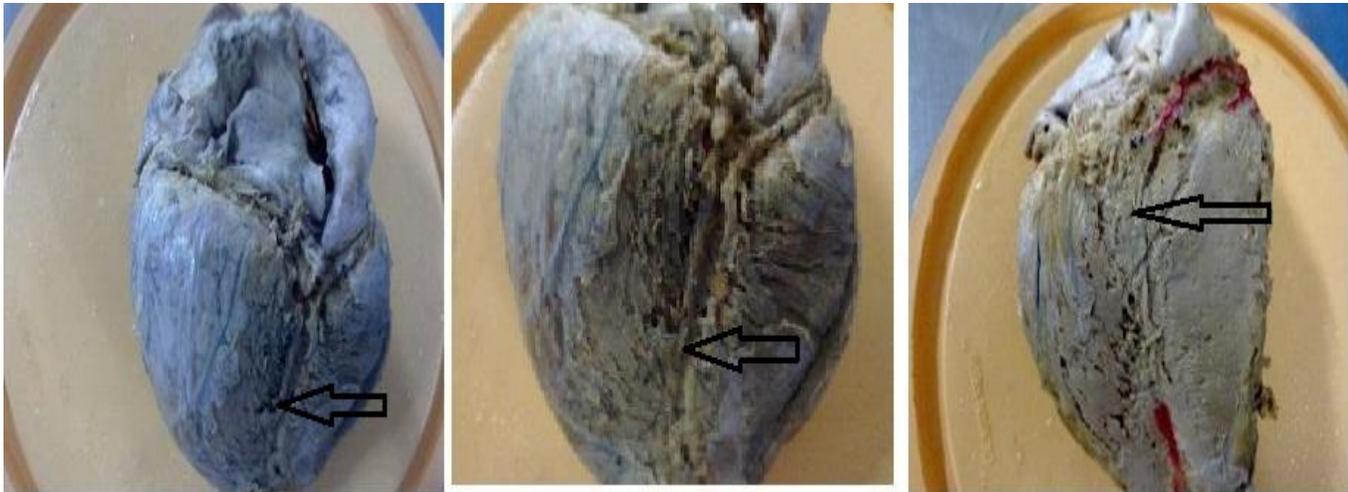
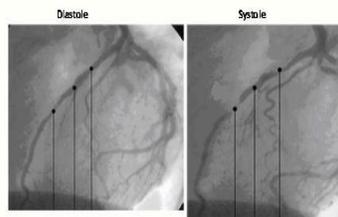


Plate 2: Posterior interventricular branch of right coronary artery showed myocardial bridges which are pointed by the arrows in three of the specimens

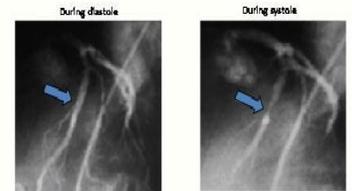
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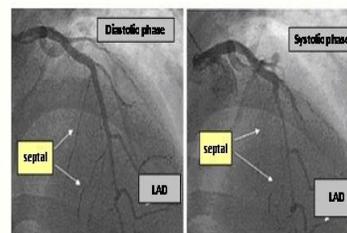
Myocardial bridges over the LAD



Myocardial bridge over the MID LAD



Myocardial bridges involving the septal branches of the LAD



Myocardial bridges involving the diagonal branch of the LAD

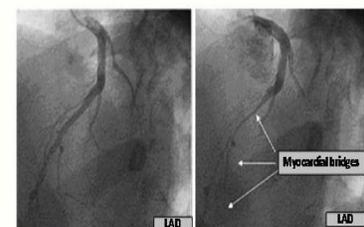


Plate 3: Angiograms showing narrowing of the LAD and its branches- shown with pointers. (Seen in the four of the angiograms.)