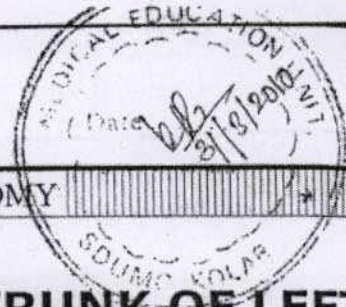


PUB: 22/2007

CLINICAL ANATOMY



BRANCHING OF MAIN TRUNK OF LEFT CORONARY ARTERY

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Abstract : *The problem of Myocardial infarction is more common in the society; along with chronic heart failure. The degree of the severity of Myocardial infarction and chronic heart failure varies from individual to individual because of variations in branching of left coronary artery. Hence the study taken, observed bifurcation, trifurcation and tetrafurcation in 30 human hearts by dissection method. The incidence of trifurcation is more than that of bifurcation. The tetrafucation incidence was minimal.*

Introduction : Proficiency in the anatomy of coronary artery and their variations is significant for proper interpretation of the coronary anigiographies, assessment of the complexity and result of the coronary insufficiency as well as surgical myocardial revascularization. The existence of diagonal branch, its variations in branching pattern prove its importance in coronary insufficiency, hence the study is taken.

Material and Method : 30-Hearts were collected from the

male and female cadavers which were given to the students for strudy purpose and from the Mortuary also.

From the collected hearts left coronary artery was identified the anterior inter ventricular, left circumflex artery and diagonal artery were traced by dissection method, painted with red color for contrast and then photography was taken.

Observation : Bifurcation was formed by anterior inter ventricular and left circumflex artery. In some hearts in addition to anterior inter

ventricular and left circumflex artery, the diagonal artery was arising from the main trunk of left coronary artery forming trifurcation.



Left Coronary Artery Showing bifurcation



Left Coronary Artery Showing trifurcation



Left Coronary Artery Showing tetrafurcation

Table showing incidences of bifurcation, trifurcation, tetrafurcation

	Male	Female	Percentage
Bifurcation	9	1	33.5
Trifurcation	13	4	56.6
Tetrafurcation	1	2	9.9

The duplication of diagonal artery was also noted-forming tetrafurcation. The incidence of trifurcation is more than that of bifurcation and tetrafurcation.

Discussion :

The branching pattern at left coronary artery has its own significance in collateral circulation, myocardial infarction and in chronic heart failure. The degree of severity in myocardial infarction, chronic heart failure depends on the site of obstruction and diameter of artery with variable incidences.

Lujinovic A, Ovcina F et al in 2005 observed 100 angiographies and 20 human dissected hearts for the variations of branching of main trunk of left coronary artery. They found the bifurcation in 71% of cases in angiography method while 65% cases were found by dissection method. Trifurcation was

discovered in 29% of cases of analyzed angiographies and 35% cases of dissected hearts. It was opined that the diagonal artery including its anastomoses, presents important pattern of the collateral blood flow, which has special meaning under conditions of coronary insufficiency.

Lee B H, Kin W et al 2002 studied about the development of chronic heart failure in rabbit on the basis of the new concept of the bifurcation/trifurcation classification system by ligating the postero lateral division of bifurcation and lateral division of trifurcation. He analyzed the infarct size and ECG changes, and also determined the water content in liver and lung. Bifurcation group showed higher mortality than trifurcation group. The incidence of development of chronic heart failure is more in ligating the branch of trifurcation than bifurcation.

GRAY'S ANATOMY - 37th edition mentioned that the left coronary artery divides to form anterior inter ventricular and left circumflex artery. One is often large and may arise separately from the left coronary trunk called diagonal artery and forms trifurcation. This diagonal artery was reported in 33-50% or more cases. The diagonal artery was occasionally duplicated (tetrafurcation) in 20%.

In the present study 56.6% of hearts showed trifurcation, 33.5% of hearts were having bifurcation with more incidence in males than females Tetrafurcation (duplication) was found in 9.9% of hearts.

Conclusion : Obstruction of bigger size arteries like main trunk of left coronary artery, anterior inter ventricular artery was responsible for severe degree of myocardial infarction with immediate manifestation is more common in bifurcation.

Obstruction of small sized arteries like branch of diagonal artery may be responsible for chronic heart failure.

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