

# Coronary Artery Dominance

**Dr. K.V. Venkateshu**

Professor of Anatomy Sri Devaraj Urs Medical College Tamaka, Kolar, Karnataka, India.

**Abstract :** The incidence of myocardial infarction is more because of arteriosclerosis and the obstruction of coronary artery usually seen in left coronary artery because it also has more transverse diameter than right coronary artery. It is also observed that among the right and left coronary arteries, the left coronary artery supplies mainly more myocardium resulting into severe degree of myocardial infarction because of left dominance. Hence the study of Dominance of coronary arteries taken. Bahattin Balci, Ozcan Yilmaz- 2004, C.E. Kahan-2002, Ilia, Reuben etal-2001, Charles E. Kahn 1995, B. K., Omar 1977 etc observations showed the right coronary artery was dominant and Ayer & Rao (1957) observed higher incidence of left coronary artery dominance in Indian subjects. In the present study of south Indian population (Karnataka) observed the highest incidence of right coronary dominance i.e., 68.75%. In case of right coronary artery dominance, the incidence of severe degree of myocardial infarction may be less due to less transverse diameter of right coronary artery.

**Key Words :** Coronary artery, Dominance, Crux, Balanced Circulation.

## Introduction

Observation of coronary artery predominance by various procedures determined the different types of coronary dominance. The original concept of coronary artery predominance was based on the sole criterion as to which particular artery crossed the crux and thus supplied the chambers situated on the opposite side. If none of the artery is crossing the crux is called as balanced circulation. Crux is the point where the posterior inter ventricular

and atrio ventricular sulci meet each other. Thus the global population has different types of coronary predominance & having different degree of myocardial infarction and different percentage of incidence. The myocardial infarction is seen usually due to obstruction of left coronary artery because it is having more transverse diameter than right. The degree of severity of myocardial infarction is more if it is left coronary artery dominance. Hence the study is taken to correlate in respect with dominance.

## Materials & Method

The heart is taken out after inscising the fibrous pericardium and great vessels like aorta, pulmonary trunk, superior vana-cava, inferior venacava & pulmonary veins from human body at Hubli and Kolar -Medical colleges. Earlier removed hearts were also studied The age group ranges from 30 to 60 years. The courses of right and left coronary arteries were traced by cleaning the epicardium and fat by dissection method. Then noted which coronary artery has crossed the crux, or none of the arteries crossed the crux and tabulated to determine the incidence of dominance.

## Observation

Studied totally 144 hearts for dominance of coronary arteries & tabulated as mentioned below.

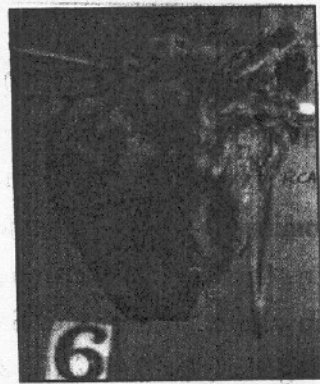
Side of artery	LCAD	RCAD	Balanced
No. of hearts	24	99	21
Percentage	16.66	68.75	14.58

*LCAD - Left coronary artery dominance*

*RCAD - Right coronary artery dominance*



*RCA - Right coronary artery*



*LCA - Left coronary artery*



*Balanced Circulation*

## Discussion

The classical radiographic method for determination of coronary predominance shows that majority of hearts are RCA predominant.

B.K.Omer (1977) observed coronary artery predominance determined by arteriographic (Radiological) method showed lowest incidence of LCAD-16.7%, intermediate for balanced circulation-30% and highest incidence for RCAD dominance -53.3%. By perfusion method showed that the lowest incidence for RCAD-16.7%

intermediate incidence for balance circulation 20% & highest incidence for LCAD-63.3%. He also quoted Ayer & Rao (1957) observation - stating that higher incidence LCA pre dominance in Indian subjects. In addition to this also mentioned the observation about Gutelins & Sabiston (1961) stating that 46.9%-RCAD, 21.9% - LCAD & 13.2%-balanced by arteriographic procedure and by perfusion method showed 15.67%-RCAD, 71.9%-LCAD & balanced-12.5%.

Ahmed, El Rekhaway & Harrison 1972 - According to them majority of heart were 70%-RCAD.

Ilia, Reuben.etal 2001 also observed the dominance by angiographic investigations & it was found 87% were of LCAD.

It is also observed by Charles E.Kahn 2004 & concluded as 70% RCAD, 20% balanced & 10% LCAD.

Angiographic investigations of Bahattin Balci, Ozcan Yilmaz 2004 also showed that 7% were of LCAD, 8% were of balanced & highest incidence 85% were of RCAD.

Gray's Anatomy 38<sup>th</sup> edition also mentioned as in 60% of subjects the right coronary artery reaches crux.

In the present study the lowest incidence 14.58% of balanced type, intermediate were of LCAD 16.66% & the

highest incidence 68.75% of RCAD.

## Conclusion

1. The observation of almost all the authors showed highest incidence of right coronary artery dominance
2. Incidence of left coronary artery dominance is less.
3. If there is a obstruction in left coronary artery dominant subjects, the degree of severity of myocardial infarction is more & may lead to death in single attack also.
4. The incidence of severe degree of myocardial infarction is less incase of right coronary artery dominance.

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Address for Correspondence

**Dr. K.V. Venkateshu**

Professor of Anatomy

Sri Devaraj Urs Medical College Tamaka, Kolar, Karnataka, India.