Original Article

Transradial Approach with PCI

Determine the Complications of Transradial Approach in Patients Undergoing Percutaneous Coronary Interventions

Abdul Ghaffar[1], Riaz-ud-Din[1], Fazal-ur-Rehman[1], Farida Khudaidad[2], Dost Muhammad[3] and Farhan Faisal[1]

ABSTRACT

Objective: To examine the prevalence of complications related with transradial approach in patients undergoing elective percutaneous coronary interventions.

Study Design: Cross-sectional/observational

Place and Duration of study: This study was conducted at the Department of Cardiology, Bolan Medical Complex Hospital Quetta from January 2019 to December 2019.

Materials and Methods: One hundred and ten patients of both genders with ages 20 to 75 years undergoing percutaneous coronary interventions were included. Patients detailed demographic including age, sex, body mass index and com-morbidities were recorded after taking informed written consent from all the patients. All the patients were received transradial approach and periprocedural complications were examined.

Results: There were 82 (74.55%) males while remaining 28 (25.45%) were females with mean age 57.85±8.54 years. Mean BMI was 27.12±3.45. Hypertension was the most common morbidity found in 50% patients followed by diabetes mellitus and smoking. Minor bleeding was the commonest complication found in 25 (22.73%) patients followed by radial artery occlusion, excessive bleeding, radial nerve injury and hematoma in 7 (6.36%), 6 (5.45%), 4 (3.64%) and 2 (1.82%) patients respectively.

Conclusion: Transradial approach for coronary interventions is safe and effective with fewer rates of complications.

Key Words: Coronary intervention, Angiography, Transradial approach, Complications

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INTRODUCTION

Coronary angiography (CAG) is the gold standard for detection of arterial narrowing related to atherosclerotic coronary artery disease (CAD). This procedure provides the most reliable information for determining the effectiveness of medical therapy as well as interventional procedures such as percutaneous coronary intervention (PCI) or coronary artery bypass graft (CABG) in patients with CAD.[1]

Coronary angiography is performed through percutaneous approach to arteries; therefore, selecting the best vascular access is one of the first decisions for any percutaneous cardiovascular procedure. For the first time this approach was applied in 1953[2], and brachial artery was the first access to use.[3] Then cardiovascular interventionists began to use of femoral access for CAG and PCI due to some complications of brachial access in 1967.[4] However, this new access site has shown to have several complications as well.[5-7]

Initially reported in 2001, transradial approach was considered as an alternative for coronary interventions in candidates who were not suitable for trans ulnar interventions.[8] Multiple factors including vasospasm, access site failure, variation in size and anatomy, poor collateral support can make trans ulnar approach a less suitable choice. Transradial angiographic interventions showed minor bleed was 5.9% and asymptomatic radial artery occlusion was 5.1% with no radial injury, major bleed, pseudoanneurysm and atrioventricular fistula formation.[9,10]

The present study was conducted aimed to examine the complications associated with transradial approach in patients undergoing percutaneous coronary interventions.

MATERIALS AND METHODS

This cross-sectional/observational study was conducted at Department of Cardiology, Bolan Medical Complex

[1.] Department of Cardiology / Community Medicine[2], Bolan University of Medical and Health Sciences Quetta.
[3.] Department of Cardiology, Postgraduate Medical Institute Quetta.

Correspondence: Dr. Abdul Ghaffar, Associate Professor of Cardiology, Bolan University of Medical and Health Sciences Quetta.
Contact No: 0300-3833074
Email: agk_75@yahoo.com

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Hospital Quetta from 1st January 2019 to 31st December 2019. A total 110 patients of both genders presented with ischemic heart disease were undergoing percutaneous coronary interventions were included in this study. Patients detailed demographic including, age, sex, BMI, co-morbidities such as smoking, hypertension, diabetes mellitus, family history of CAD, and dyslipidemia were recorded after taking informed written consent from all the patients. Patients with primary PCI, patients with previous CABG were excluded from the study. All patients had received percutaneous coronary interventions by transradial approach. All patients were evaluated by clinical assessment of the forearm vessels before procedure by reverse Allens test to determine the patency of radial artery. Complications associated with procedure such as bleeding, radial nerve injury, radial artery occlusion and hematoma formation were examined and recorded. Data was analyzed by SPSS 24.

RESULTS

There were 82 (74.55%) males while remaining 28 (25.45%) females with mean age 57.85±8.54 years. Mean BMI was 27.12±3.45. Hypertension was the most common morbidity found in 50% patients followed by smoking, diabetes mellitus, dyslipidemia and family history of CAD in 52 (47.27%), 22 (20%), 13 (11.82%) and 10 (9.10%) patients respectively. Seventy three (66.36%) patients had stable angina, 22 (20%) patients had unstable angina and 15 (13.64%) patients had STEMI (Table 1).

According to the periprocedural complications we found minor bleeding in 25 (22.73%) patients followed by radial artery occlusion, excessive bleeding, radial nerve injury and hematoma in 7 (6.36%), 6 (5.45%), 4 (3.64%) and 2 (1.82%) patients respectively. No major complications were recorded (Table 2)

Table No.1: Baseline details of all the patients

Variable	No.	%
Gender		
Male	82	74.55
Female	28	25.45
Body mass index	27.12±3.45	
Co-morbidities		
Hypertension	55	50.0
Smoking	52	47.27
Diabetes Mellitus	22	20.0
Dyslipidemia	13	11.82
Family History of CAD	10	9.10
Stable Angina	73	66.36
Unstable Angina	22	20.0
STEMI	15	13.64

Table No.2: Complications related to procedure

Complication	No.	%
Minor bleeding	25	22.73
Radial artery occlusion	7	6.36
Excess Bleeding	6	5.45
Radial nerve injury	4	3.64
Hematoma	2	1.82

DISCUSSION

Ischemic heart disease is one of the most common cardiac problems in all over the world with high rate of morbidity and mortality.[11] Percutaneous coronary interventions are the most performing successful procedure due to their safety and efficacy.[12] Transradial approach for coronary interventions considered as procedure of choice with very low rate of complications and higher success rate.[13] The present study was conducted to examine the frequency of periprocedural complications related with transradial approach for patients undergoing PCI. In this regard 110 patients were enrolled and received transradial approach for PCI. Majority of patients 74.55% were males while 25.45% patients were females and majority of patients were ages above 45 years. These results were similar to many of previous studies in which PCI were performed and these studies illustrated male patients were predominant 65% to 80% as compared to females with average age 58.5 years.[14,15]

In present study hypertension was the most common morbidity found in 50% patients followed by smoking, diabetes mellitus, dyslipidemia and family history of CAD in 52 (47.27%), 22 (20%), 13 (11.82%) and 10 (9.10%) patients respectively. A study conducted by Malik et al[16] regarding frequency of myocardial infarction in patients undergoing elective PCI and they reported hypertension was the most frequent comorbidity in 72% patients, DM found in 20% and 54% patients had smoking history.

In our study we found that 73 (66.36%) patients had stable angina, 22 (20%) patients had unstable angina and 15 (13.64%) patients had STEMI. These results were comparable to the study conducted by Lashari et al.[17] In this study we found no major complications associated to transradial approach. We found minor bleeding in 25 (22.73%) patients followed by radial artery occlusion, excessive bleeding, radial nerve injury and hematoma in 7 (6.36%), 6 (5.45%), 4 (3.64%) and 2 (1.82%) patients respectively. These results were comparable to some previous studies.[18-20]

CONCLUSION

Transradial approach in patients undergoing PCI is safe and effective with no major complications. We found fewer minor complications such as minor bleeding, radial artery occlusion and nerve injury. Thus,

transradial approach is a better for percutaneous coronary interventions.

Author's Contribution:

Concept & Design of Study:	Abdul Ghaffar
Drafting:	Riaz-ud-Din, Fazal-ur-Rehman
Data Analysis:	Farida Khudaidad, Dost Muhammad, Farhan Faisal
Revisiting Critically:	Abdul Ghaffar, Riaz-ud-Din
Final Approval of version:	Abdul Ghaffar

Conflict of Interest: The study has no conflict of interest to declare by any author.

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