ORIGINAL ARTICLE

Compare Outcomes in Patients undergoing PCI with Transradial and Transfemoral Approaches

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ABSTRACT

Background: Percutaneous interventions in the coronary arteries have become even more important due to increasing prevalence of coronary heart disease. Current study compared the transradial approach with the transfemoral artery approach for coronary procedures.
Aims: To compare the outcomes percutaneous coronary intervention (PCI) with respect Transradial approach (TRA) and Transfemoral approach (TFA).
Methods: A Systematic Random Sample of 75 patients was registered from Angiography department of selected institutions who underwent percutaneous coronary artery procedures, were divided into two groups depending upon transradial and transfemoral artery approach and compared for the various demographic and clinical characteristics.
Results: A total of 75 patients were enrolled in study for coronary invasive procedures. 42(57%) patients underwent through transfemoral approach while 33(43%) had transradial access for these procedures. There were total of 52 males and 23 females in both groups with P-value 0.867. The transradial access group consisted of males 24(72%) than females 9(28**%)**, whereas the transfemoral group was comprised of 14 (34.%) females and 28 (66%) males. The mean age of the patients with transfemoral and transradial approach were 50.86 ±8.9 and 52.06 ±8.093 years.
Conclusion: There was insignificant difference in terms of mean age, gender distribution, BMI, cardiovascular risk profile of the patients between the two diagnostic group.
Key words: CAD Coronary Artery Diseases PCI Percutaneous Coronary Intervention , BMI Body Mass Index, TFA Transfemoral approach, TRA Transradial approach

INTRODUCTION

World widely people of Indo-Asian have one of the highest susceptibility to coronary artery disease (CAD). It is therefore unsurprising that CHD is the leading cause of death in the Indo-Pakistan subcontinent population today. Pakistani[1]. CAD is not just the problem of the West, 80% of deaths from CAD and 86% of the worldwide burden from CAD is in developing countries [2]. Improvements in cardiologist technology and technology have offered patients with coronary artery disease (CHD) several treatment options.

These are effective approaches to coronary angiography (CA) and percutaneous coronary intervention (PCI), which enable direct visualization of the anatomy of the coronary arteries and to measure cardiac function[3]. Coronary catheterization is usually performed by using the transfemoral approach. The transradial approach offers advantages in omparison with the transfemoral approach[4].

CA and PCI invasive coronary procedures are performed on people who may have CAD for diagnostic and therapeutic purposes. To perform these procedures, a catheter is inserted into a peripheral artery (femoral / radial), which is then placed under an angiography device (X-ray-guided fluoroscopy) to visualize the heart and coronary arteries and to obtain a detailed picture[5].

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According to the National Cardiovascular Data Register (NCDR), the vascular access site (radial or femoral) is defined as the successful vascular entry site. Failed attempts are not recorded (2008). Since the advent of angiography, the femoral artery has been the preferred vascular path to perform these invasive procedures [6]. However, the radial approach has been changed more recently. It is due to the beneficial effects of access point comfort, short bed rest and free walking to use the bathroom. Healthcare professionals who perform the procedures can take on the stress or anxiety of patients because the procedure is minimally invasive [7]. They mainly focus on patient comfort after coronary catheterization in relation to the length of bed rest in the supine position, without taking into account the factor that contributes to pressure pain at the access point in the femoral approach. Chair SY. et al. (2008) describes the effects of 3 methods for immobilizing the femur site (sandbag, sheet and oral instruction) on bleeding and patient comfort. Ronald P. et. al (2011) say that almost all patients who undergo vaginal extraction experience pain and discomfort [9]. However, the extent of the stress experienced is generally low. Health care providers do not take the assessment of pain and its measurement in connection with the Post procedure in both approaches (radial / femoral) very much, as they can influence the behavior of patients and compliance with the treatment process.

MATERIALS AND METHODS

The study was approved a priori by the University of Health Sciences, Lahore and conducted at Punjab Institute of Cardiology (PIC) and Sheikh Zayed Hospital (SZH), Lahore. A Systematic Random Sample of 70 patients was registered from Angiography department of selected Institutions. Male and female with age > 30 and < 65 years and positive Allen's Test for radial access were included and patient of Negative Allen's Test were exclude.

RESULTS

The demographic and baseline characteristics of the patients who underwent diagnostic coronary procedure are summarized in Table 1. There was insignificant difference in terms of mean age, gender distribution, BMI, cardiovascular risk profile of the patients between the two diagnostic groups.

Data showed that double the number of both male and female patients who underwent coronary invasive procedures were transfemoral than transradial approach, showed statistically insignificant difference of gender with respect to both groups p-values > 0.05.. The mean age of the patients with transfemoral and transradial approach was 50.86 ±8.9 and 52.06 ±8.093 years, showed statistically insignificant difference of age with respect to both groups p-values > 0.05. The mean BMI of the patients with transfemoral and transradial approach were 26.74±3.89 and 27.81±5.33, showed statistically insignificant difference of BMI as p-values > 0.05.

Different variables were used to assess the risk factors for cardiac disease and analyzed in SPSS. Out of 70 patients, diabetes found in 35 patients where 20 (47.6 %) patients were from the transfemoral and 15 (45.4%) were in the transradial group. History of hypertension noted in 50 with a p-value of 0.622 and 32 (83.0 %) patients found smokers.

22 patients included in the study were presented with hyperlipidemia. Of the 22, 14 (33.3 %) were from the transfemoral and 8 (24.4%) comprising the transradial group participants. History of heart disease was reported by total 37 patients in both the radial and femoral groups. Femoral group patients were 18 (42.8%) and 19 patients in radial group with relatively high percentage. Thirty (77.9 %) of the total sample were obese (BMI > 30) included 20 (47.6%) from the femoral group and 10 (30.3%) were from the radial group. There was insignificant difference between transluminal coronary invasive procedures and their risk factors (p > 0.05).

Table-1: Study Characteristics with Respect to Transradial versus Transfemoral Approach

Variables	Femoral	Radial	p-value
Male	28 (66%)	24 (72%)	0.867
Female	14 (34%)	9 (28%)	
Age	50.86±8.9 (32 – 65)	52.06±8.093 (34 – 63)	0.865
Height	1.66±6.0	1. 64±5.79	0.064
Weight	72.70±10.78	74.97±15.23	0.087
BMI	26.74±3.89	27.81± 5.33	0.299

Among the risk factors for coronary artery disease, hypertension was found to be most prevalent risk factor, closely followed by the presence of family history. Over half of the participants from sample had a diabetes disease. 42 % and 40 % patients were obese and smokers of the total sample population.

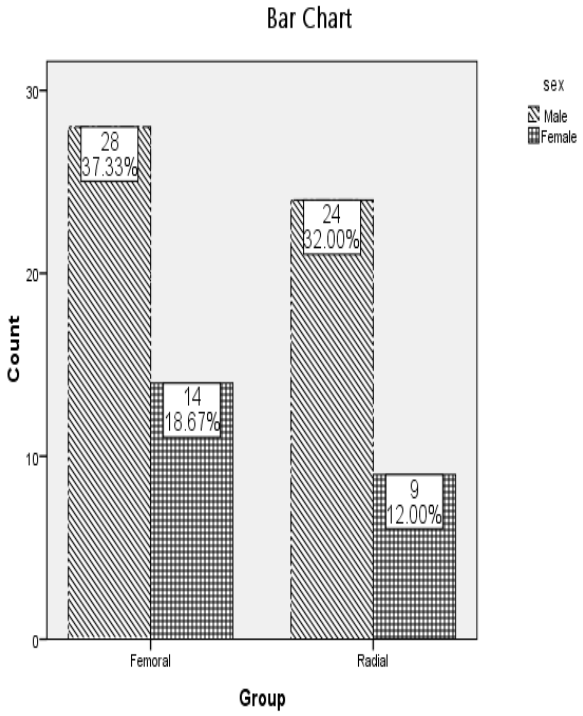

Table-2: Cardiac Risk Factors with Respect to Transradial Versus Transfemoral Approach

Variables	Femoral	Radial	P-value
Diabetes	20(47.6%)	15(45.4%)	0.572
Hypertension	29(69.0%)	21(63.6%)	0.622
Smoking	19(45.0%)	13(39.3%)	0.611
Hyperlipidemia	14(33.3%)	8(24.4%)	0.391
Family history of Heart Disease	18(42.8%)	19(57.5%)	0.206
Obesity	20(47.6%)	10(30.3%)	0.38

DISCUSSION

This cross sectional analytical study was utilized to explore the experiences of pain at puncture site (femoral / radial) after coronary invasive procedures and findings are compared and contrasted in relation to current literature. Many studies have been conducted on complication of coronary angiography or angioplasty in both the transradial approach versus the tranfemoral approach.

The current study, total 75 patients were enrolled for coronary invasive procedures,. 40(56%) patients underwent through transfemoral approach while 30(44%) had transradial access for these procedures. There were total of 50 males and 20 females in both groups with P-value 0.572.

The transradial access group consisted of males 24 (72%) than females 9 (28%), whereas the transfemoral group was comprised of 14 (34%) females and 28 (66%)

males. The mean age of the patients with transfemoral and transradial approach were 50.86 ±8.9 and 52.06 ±8.093 years

Bhat, F.A et. al, (2017) observed therapeutic procedures like primary percutaneous coronary intervention (PCI) for Coronary artery diseases (CAD). Transradial approach was performed in 200 patients (148 males and 52 females) likewise transfemoral approach via right femoral artery was used in 200 patients (134 males and 66 females). The mean age of the patients in the transradial approach group was 61.8 ± 6.6 years and 60.6 ± 10 years was in transfemoral approach. Most of the patients in both the studied arms were in the age group of 51 to 70 years. This reiterates the fact that age is an important risk factor for CAD [10].

The current study showed mean height of the patients in transfemoral and transradial approach was 1.66 ±6.0 and 1.64±5.79 respectively, showed statistically insignificant difference of height with respect to both groups p-values > 0.05.. The mean weight of the patients in transfemoral was 72.70 Kg with ± 10.08 compared to the 74.97 Kg ± 15.23 of the transradial group, showed statistically insignificant difference of weight with respect to both groups p-values > 0.05.. The mean BMI of the patients with transfemoral and transradial approach were 26.74±3.89 and 27.81±5.33, showed statistically insignificant difference of BMI with respect to both groups p-values > 0.05

It was observed that overall highest number of patients i-e 33 (44 %) were from the overweight group which measured the statistically significant level of association with pain resulting p -value 0.299 > 0.05.

The study conducted by Bhat FA et. al (201) , the purpose to undertake this study was to assess and compare the feasibility, safety and success between the two approaches. The end result was to look for the access time, total procedure and total fluoroscopic time, procedure failure rate, complications associated with the procedures and total hospital stay in days in either of the procedures. In our study we found that the access time was more with the transradial approach compared to transfemoral approach (6.0 ± 1.8 min versus 4.2 ± 0.70 min, *p* value of <0.0001). The total procedure time was also more in transradial approach group compared to transfemoral approach group (29 ± 11.3 min versus 27.3 ± 12.4 min, *p* value of 0.03).

CONCLUSION

The demographic and baseline characteristics of the patients who underwent diagnostic coronary procedure are summarized. There was no significant difference in terms of mean age, gender distribution, BMI, cardiovascular risk profile of the patients between the two diagnostic group.

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