Transradial approach: Do we have gain without excessive pain?

Transradial approach (TRA) was described over 60 years back, but it was not gained much attention due to equipment and technical limitations (1). Then it received new interest after the work of Campeau et al. (2) some 25 years back. After him, Kiemeneij et al. (3) introduced successful interventional procedures via radial approach. Since then, TRA has become popular in many parts of the world and many centers across the world has been adopting and developing transradial catheterization training programmes (4, 5).

Although TRA is being used more commonly due to increased convenience for the patient, early mobilization and decreased access site bleeding complications. However, concerns have been raised about increased radiation exposure and prolonged procedure time (6, 7). It is due to the fact that TRA is technically more demanding and bearing specific challenges in comparison with the transfemoral approach (TFA) (8). These include radial and subclavian artery anomalies, access failure, and radial artery spasm (RAS) (9). Among them RAS is the most common complication (9). This spasm often makes the procedure painful for the patient. Moreover, it results in difficulty in catheter manipulation and thus makes the procedure complexed, time consuming and sometimes may end up with procedure failure or crossover to TFA. The SPASM study shows that young and female are the independent predictors of RAS (10). Other studies show that the diameter of radial artery and diabetes mellitus are the predictors of RAS (11, 12).

In this March issue of Anatolian Journal of Cardiology published Aktürk et al. (13) reported the problem of RAS in the perspective of pain levels. Author compared the pain levels of transradial and transfemoral coronary catheterization in a reasonably good number of patients. He assessed pain levels in a very well defined manner by using visual analogue scale (VAS). Aktürk et al. (13) reported that TRA group showed higher VAS scores than those in TFA group. It was further reported in his study that patients having BMI <24 kg/m^2 and/or wrist circumference <16.7 cm predicted unacceptable pain.

It is indeed an interesting piece of information not only for interventional cardiologist but those who prefer to choose radial approach for various other interventions. In the above mentioned study highly skilled operators approach radial artery under good sedation (Diazepam 7.5 mg PO) in addition to intravenous dose of nitroglycerine and verapamil. Even then they encountered the problem of RAS in more than 21% of patents. This shows that with the current practice we cannot completely abolish this problem and until new techniques/equipments are freely available to avoid RAS we should be more selective while intervene the patients. This should not be the matter of ego for radialists. Being selective for radial or femoral approach keeping consideration various factors is a good and sensible strategy for patients as well as for operators. This selectivity is highly recommended especially if someone is going to do complex interventions where he may need unusual catheter manipulation. Selective approach saves the precious time of operators by decreasing procedure time. It also saves the time of busy catheterization laboratories by reducing occupancy and hence increases the number of procedures. It also helps reducing the radiation exposure that often considered trivial but in fact a worrisome problem (14, 15).

Nature believes in diversity and hence in this way it maintains the beauty and continuity in life. Variety is a blessing and it often gives us a way out from a trapped situation. Therefore better selection among the various options on the basis of scientific data is a wise approach and hampers us from various complications.

Tariq Farman
Department of Cardiology Jinnah Medical College Hospital; Karachi-*Pakistan*

References

1. Radner S. Thoracal aortography by catheterization from the radial artery. Acta Radiol 1948; 29: 178-80. [CrossRef]
2. Campeau L. Percutaneous radial artery approach for coronary angiography. Cathet Cardiovasc Diagn 1989; 16: 3-7. [CrossRef]
3. Kiemeneij F, Laarman GJ, de Melker E. Transradial artery coronary angioplasty. Am Heart J 1995; 129: 1-7. [CrossRef]
4. Chase AJ, Fretz EB, Warburton WP, Klinke WP, Carere RG, Pi D, et al. Association of arterial access site at angioplasty with transfusion and mortality (The MORTAL study: MORTAL benefit of reduced transfusion after percutaneous coronary intervention via the arm or leg). Heart 2008; 94: 1019-25. [CrossRef]
5. Balwanz CR, Javed U, Singh GD, Armstrong EJ, Southard JA, Wong GB, et al. Transradial and transfemoral coronary angiography and interventions: 1-year outcomes after initiating the transradial approach in a cardiology training program. Am Heart J 2013; 165: 310-6. [CrossRef]

Address for Correspondence: Muhammad Tariq Farman, Jinnah Medical College Hospital C-45, Block-2, KAECHS; Karachi-*Pakistan* Phone: 0092-21-34545957 E-mail: tariqfarman@yahoo.com
Accepted Date: 15.11.2013 **Available Online Date:** 14.01.2014

DOI:10.5152/akd.2014.112014

6. Goldberg SL, Renslo R, Sinow R, French WJ. Learning curve in the use of the radial artery as vascular access in the performance of percutaneous transluminal coronary angioplasty. Cathet Cardiovasc Diagn 1998; 44: 147-52. [CrossRef]
7. Neill J, Douglas H, Richardson G, Chew EW, Walsh S, Hanratty C, et al. Comparison of radiation dose and the effect of operator experience in femoral and radial arterial access for coronary procedures. Am J Cardiol 2010; 106: 936-40. [CrossRef]
8. Louvard Y, Lefevre T, Allain A, Morice M. Coronary Angiography through the radial or femoral approach: the CARAFE study. Cath Cardiovasc Intervent 2001; 52: 181-7. [CrossRef]
9. Hildick-Smith DJ, Lowe MD, Walsh JT, Ludman PF, Stephens NG, Schofield PM, et al. Coronary angiography from the radial artery-experience, complications, and limitations. Int J Cardiol 1998; 64: 231-9. [CrossRef]
10. Varenne O, Jegou A, Cohen R, Empana JP, Salengro E, Ohanessian A, et al. Prevention of arterial spasm during percutaneous coronary intervention through radial artery: the SPASM study. Catheter Cardiovasc Interv 2006; 68: 231-5. [CrossRef]
11. Saito S, Ikei H, Hosokawa G, Tanaka S. Influence of the ratio between radial artery inner diameter and sheath outer diameter on radial artery flow after transradial coronary intervention. Catheter Cardiovasc Interv 1999; 46: 173-8. [CrossRef]
12. Choudhary BP Antoniades C, Brading AF, Galione A, Channon K, Taggart DP. Diabetes mellitus as a predictor for radial artery vasoreactivity in patients undergoing coronary artery bypass grafting. J Am Coll Cardiol 2007; 50: 1047-53. [CrossRef]
13. Aktürk E, Kurtoğlu E, Ermiş N, Açıkgöz N, Yağmur J, Altuntaş MS, et al. Comparision of pain levels of transradial versus transfemoral coronary catheterization: A prospective and randomized study. Anadolu Kardiyol Derg 2014; 14: 140-6.
14. Lange HW, Von Boetticher H. Randomized comparison of operator radiation exposure during coronary angiography and intervention by radial or angiography and intervention by radial or femoral approach. Catheter Cardiovasc Intervent 2006; 67: 12-6. [CrossRef]
15. Farman MT, Khan NU, Sial JA, Saghir T, Rizvi SNH, Zaman KS. Comparison of fluoroscopy time during coronary angiography and interventions by radial and femoral routes-can we decrease the fluoroscopy time with increased experience? An observational study. Anadolu Kardiyol Derg 2011; 11: 607-12.