

Importance of Radial Artery Access in Coronary Angiography

Marcelo Alberto Oliva*

Hospital de San Roque, Cordoba Argentina

Received: March 19, 2018; Accepted: July 23, 2018; Published: August 05, 2018

*Corresponding author:

Marcelo Alberto Oliva

✉ marceloliva@gmail.com

Hospital de San Roque, Cordoba, Argentina.

Citation: Oliva MA (2018) Importance of Radial Artery Access in Coronary Angiography. J Clin Epigenet Vol.4 No.3:14

Commentary

Coronary angiography is the standard study in the anatomical diagnosis of the coronary arteries and it's introduced by Mason Sones in 1958, who proposed the technique for the brachial artery requiring experience for the manipulation of a single catheter and needed a surgical training to perform arteriotomia. At the same time, Dr. Melvin Judkins designs preformed catheters, which bear his name, for coronary angiography by using the femoral artery approach simplifying the procedure so it had a rapid adoption, a method that was Extends to the present day [1,2]. Only in the 90 Dr. Campeau looking for alternatives to previous methods for complications such as bleeding, begins with the approach through the radial artery, which has increased in recent years. Many of the interventional cardiologists around the world who use the radial approach prefer the use of the traditional preformed catheters, Judkins being the most used, because the learning curve was performed with this type of catheter as in daily practice. Remember that they were designed for the femoral approach; Pathway different than radial due to its technique of approaching and anatomy of the artery [3].

Coronary angiography through the radial artery has increased its popularity due to patient comfort, early ambulation and decreased risk of bleeding in the Access. So much so, that although before in the catheterization rooms when the nurse prepared the patient for the procedure, she asked "a Femoral or Radial approach? Today when the patient is prepared for coronary angiography, it is almost only question Radial?" [4-6].

But the learning period essential to this technique is (more delicate manipulation of the catheters) limited the use of the radial approach, as learning curve is needed even in experienced operators [7]. Currently, the changes in the technology of the materials have allowed designing new catheters finer multipurpose, offering as advantage to be single catheter that allows studying both coronary arteries [8].

The consensus published by the EAPCI and the ESC4 on radial approach in percutaneous cardiovascular interventionism manifested itself in favor of the combined use of the catheter Conventional left Judkins for left coronary artery and right Judkins or Amplatz for right coronary artery and suggests as an option the use of special multipurpose catheters like the Tiger.

This catheter as an alternative had not been sufficiently studied until the present [9-11]. Other catheters used are the new multipurpose catheters such as Barbeau, Kimny whose curved design is oriented to selectively catheterize both arteries.

With the 5Fr Tiger catheter, coronary angiography can be completed by selectively catheterizing the right and left coronary artery, maintaining satisfactory image quality.

This is achieved due to catheter curves that adequately adapt to brachial anatomy in the radial approach and performing a mild contrast medium injection during image acquisition.

The procedure time is less than that observed by Kim et al. [5] compared the Tiger (1, 55 min) vs Judkins (2, 3 min) throwing a p of 0.001 [6]. Statistical significance Tiger (13 min) vs Judkins (15 min P 0.007) showed no statistical significance but was in favor of the Tiger vs Judkins [7].

The importance of fluoroscopy time is because interventional cardiologists are considered workers exposed to the risk of X-rays for Tiger (93 seg vs 138 seg, P 0.001) and a record low time in favor of the tiger (184 seg vs 238 seg, P 0.015), also showed for Tiger (2.5 min vs 3.1 min p 0.0009) [8].

A lower use is also observed in the volume of contrast medium. Chen O et al. [8] record difference not significant in favor of the Tiger 48 ml vs Judkins 53 ml P0.114 and using a multipurpose catheter Barbeau showed a record with significant difference (Barbeau 96 ml vs Judkins 125 ml, p<0.0001). Others showed a significant difference in favor of Judkins. A low volume used in the coronary study causes the frequency of presentation of undesirable effects as allergy or toxic to the kidney to be low [9,10].

In relation to the most frequent complication of this Trans radial technique that is the development of spasm of the radial artery during the procedure, it lies in the impact with the well-being of the patient as the pain. The radial artery is a glass with a thick wall composed primarily of smooth muscle cells arranged in concentric layers with a high density of α_1 receptors explaining their proclivity to spasms as well as anatomical variants. The size of the radial artery (diameter 1.8 to 2.5 mm) relative to the diameter of the catheter is associated independently with the spasm; the diameter of the 5Fr catheter has a better relationship with the radial artery allowing its manipulation (rotation and displacement movements) with better tolerance due to decreased arterial friction with less encouragement of the wall. The predictors of spasm are: aged patients, short stature with small diameter of the radial artery, female sex, diabetes, failure in the first attempt at radial access and pain. Although the incidence of this complication has decreased, its frequency of appearance is 10% and can reach 30% if prevention measures are not taken [11]. An effective spasmolytic cocktail has not been found yet. Spasmolytic cocktails are used at the operator's choice according to their experience. The most frequently used are nitroglycerin and calcium blocking, which reduce the incidence of spasm to less than 5% with 6Fr catheters and less than 1% with 5Fr catheters.

We must clarify that there is no uniformity of criterion to measure

the spasm or there is no objective method to quantify the degree of spasm, so some manifest from the discomfort of the patient, the pain, the difficulty of maneuvering with the catheter by Entrapment or difficulty of removing the introducer from 23 cm long.

Conclusion

- Coronary angiography with a single special multipurpose catheter is feasible accompanied in positive form with good image quality.
- The decrease in fluoroscopy time is important even if it is not significant in comparison, its implications for operators working every day and a decrease in fluoroscopy is very important.
- The decrease in procedural time is important not only for the operator as explained above, but for the stress of the patient.
- The importance in the decrease in the use of half contrast on the one hand for the patient that decreases the possibility of complication such as acute renal failure or allergy due to contrast. And on the other hand, it is directly related to the economic because it decreases by 40% the use of contrast medium.

References

1. Sones FM Jr (1959) Acquired heart disease: symposium on present and future of cineangiocardiology. *Am J Cardiol* 3: 710.
2. Judkins MP (1967) A percutaneous transfemoral technic *Radiology* 89: 815-824.
3. Campeau L. Percutaneous radial artery approach for coronary angiography. *Cathet Cardiovasc Diagn* 16:3-7. 1989
4. Hamon M, Pristipino C, Di Mario C (2013) Consensus document on the radial approach in percutaneous cardiovascular interventions: position paper by the European Association of Percutaneous Cardiovascular Interventions and Working Groups on Acute Cardiac Care and Thrombosis of the European Society of Cardiology. *Euro Intervention* 8: 1242-1251,.
5. Kim SM, Kim DK, Kim DI, Kim DS, Joo SJ et al (2006) Novel diagnostic catheter specifically designed for both coronary arteries via the right transradial approach. A prospective, randomized trial of Tiger II vs. Judkins catheters. *Int J Cardiovasc Imag* 22: 295-303.
6. Tebet MA, Andrade PB, Andrade MVA, Mattos LA, Labrunie A (2010) Comparação entre um Cateter Único Dedicado e Cateteres de Judkins na Realização da Cineangiocoronariografia pela Via Radial," *Revista Brasileira de Cardiologia Invasiva*. 18: 294-299.
7. Langer C, Riehle J, Frey N, Wiemer M (2015) Catheter stability in transradial coronary angiography: the one-catheter-concept and the impact of performance level in 1,419 patients. *Int J Cardiol* 187: 680-682.
8. Chen O, Goel S, Acholonu M, Kulbak G (2016) Comparison of Standard Catheters Versus Radial Artery- Specific Catheter in Patients Who Underwent Coronary Angiography Through Transradial Access. *Am J Cardiol* 118: 357-361.
9. Curtis J, Zeballos G, Dimitroff M (2015). Security and Edicacia to use a single Catheter Multi-purpose for Angiografica Coronary by Via Transradi. *To Rev Fed Arg Cardiol* 44: 82-86.
10. Vorpahl M, Koehler T, Foerst J, Panagiotopoulos S (2015) Single Center Retrospective Analysis of Conventional and Radial TIG Catheters for Transradial Diagnostic Coronary Angiography. *Cardiol Res Pract* 862156: 6.
11. He G (2003) Arterial grafts for coronary surgery vasospasm and potency rate *J Thorac Cardiovasc Surg* 125: S68-70.