# Radial Access: New Method to Reduce Bleeding and Vascular Complications

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## Hypothesis
- **Percutaneous Coronary Intervention (PCI)** is a non-surgical technique for treating obstructive coronary disease.
- The traditional way to access the heart is through the femoral artery, but it causes the cardiologists problems.
- Radial access procedure is the safest and efficient way to approach a PCI.
- Less bleeding and vascular complications.
- Interventionalists must be highly skilled to perform this procedure.

## Methodology
- There were many different types of procedures that go on in a Cardiac Catheterization Lab and one of them is a PCI.
- I gathered information through the staff members of J2-1 and observed the procedures myself.
- Next, my mentor, Scott Hantz, reached out to Theresa Kline, Cleveland Clinic Main Campus Librarian.
- She was able to gather 14 Institutional Review Board (IRB) clinical trials relating to Femoral vs. Radial Access Site.
- I also researched my own set of documents from PubMed and electronic journals from Cleveland Clinic Main Campus Library.

## Research
- PubMed is a service of the US National Library of Medicine.
- IRB approved clinical trials means that the Institutional Review Board reviewed and approved the research involving human subjects.
- Through these two sources, I was able to understand the background of basic Cardiac Catheterization as well as a PCI.
- The five clinical trials I thoroughly reviewed are:
  - Effect of Access Site, Gender, and Indication on Clinical Outcomes after Percutaneous Coronary Intervention: Insights from the British Cardiovascular Intervention Society.
  - Perceptions of Advantages and Barriers to Radial-Access Percutaneous Coronary Intervention in VA Cardiac Catheterization Laboratory.
  - Radial Access Reduces Mortality in Patient with Acute Coronary Syndromes: Results from an Updated Trial Sequential Analysis of Randomized Trials.
  - Radial Versus Femoral Access for Percutaneous Coronary Intervention: Implications for Vascular Complications and Bleeding.
- Transitioning to the Radial Artery as the Preferred Access Site for Cardiac Catheterization: An Academic Medical Center Experience.

## Results
- From the 14 clinical trials, all of them proved that radial access is the best procedure to use for a PCI, but there were two that stood out the most:
  - The first one is from the Department of Cardiology, Dunedin Hospital from Dunedin, New Zealand.
  - Objective: Evaluate safety and feasibility of all operators at a single center changing from femoral to radial access.
  - Result: There was a 4.55% difference in favor for the radial access due to less complications during the procedures.
  - The second one is from the Department of Clinical and Experimental Medicine, University of Messina from Messina, Italy.
  - Objective: Consider radial access as a bleeding avoidance strategy that reduces mortality and ischemic endpoints in patients with acute coronary syndromes.
  - Results: From 19,328 patients, researchers learned that there was a 95% chance of less likely for radial access to cause death, cardiovascular events and bleeding.

## Conclusions
- Interventional cardiologists recognized that radial access is better for patient comfort and patient safety.
- Based on 78 completed surveys from the 244 patients who underwent the procedure, specialists from Washington state, Illinois, North Carolina, and Colorado, all came together and recognized that radial access is the best choice for patient comfort and safety.
- Radial access will be an increasing method throughout the nation.
- British Cardiovascular Intervention Society believes that the benefits of the radial access site could possibly be the new default strategy in the Cardiac CATH lab.

## Recommendations
- Cardiologists should have a lot of experience with femoral artery before moving onto radial procedures.
- During my own research, several specialists in cardiology suggested that upcoming interventionalists should have successfully completed at least 100 femoral procedures before attempting radial access.
- Cardiologists should also be well versed.
- This means that they should be skilled with all the equipment and anatomy of the body, especially the heart.
- Be open to new techniques that might develop over the years.