

Comparison of Recovery Time in Patients Undergoing Transradial Versus Transfemoral Access for Coronary Angiography and Intervention

Naveen Kumar Gupta¹, Bharat Bhushan Dagur², Bhavana Singhal³, Shadab Khan Chauhan⁴, Sneha Gupta⁵, Ram Naresh Saini⁶

¹Tutor, Department of Cath lab technology, Mahatma Gandhi institute of Allied health sciences, Jaipur, Rajasthan, India.

²Ph.D. Scholar, Department of Radiodiagnosis, SMC, Santosh Deemed to be University, Ghaziabad, Uttar Pradesh, India.

³Principal, Mahatma Gandhi Institute of Allied Health Sciences, Jaipur, Rajasthan, India.

⁴Ph.D. Scholar in Medical Laboratory Technology, School of Medical and Allied Sciences, Galgotias University, Greater Noida, UP, India.

⁵Assistant Professor, Department of Anaesthesia and Operation theatre technology, Mahatma Gandhi institute of Allied health sciences, Jaipur, Rajasthan, India.

⁶Cath Lab Technician, Department of Cath Lab, Mahatma Gandhi Medical College & Hospital, Jaipur, Rajasthan, India.

Abstract

Background: Transradial access (TRA) and transfemoral access (TFA) are commonly used vascular access routes for coronary angiography. Differences in post-procedural pain, comfort, and access-site complications may influence patient recovery. **Subjects and Methods:** A prospective comparative observational study was conducted in the Cath Lab, Department of Cardiology, Mahatma Gandhi Hospital, Jaipur, from March 2026 to July 2026. The study included 40 adult patients undergoing elective coronary angiography, with 20 patients in the TRA group and 20 in the TFA group. Data regarding demographic characteristics, access-site bleeding, hematoma, post-procedural pain, and patient comfort were collected using a structured case record form. Pain was assessed using the Visual Analog Scale (VAS; 0–10), and comfort was assessed using a 5-point Likert scale. **Results:** The TRA group demonstrated lower post-procedural pain than the TFA group (4.90 ± 1.65 vs. 7.85 ± 0.59 ; $p < 0.001$). Patient comfort was significantly higher in the TRA group (3.40 ± 0.82 vs. 2.30 ± 0.66 ; $p < 0.001$). Access-site bleeding occurred in 5.0% of TRA patients compared with 15.0% of TFA patients, while hematoma occurred in 0% and 10.0%, respectively. These differences in complications were not statistically significant. **Conclusion:** In this study, TRA was associated with significantly lower post-procedural pain and greater patient comfort, with a lower observed frequency of access-site bleeding and hematoma than TFA. TRA may therefore provide a more favorable post-procedural recovery experience following elective coronary angiography.

Keywords: Coronary Angiography, Radial Artery, Femoral Artery, Patient Comfort, Pain Measurement.

Corresponding Author: Dr. Bharat Bhushan Dagur, Ph.D. Scholar, Department of Radiodiagnosis, SMC, Santosh Deemed to be University, Ghaziabad, Uttar Pradesh, India.
Email: bharatdagur9413@gmail.com

Received: 04-06-2026

Revised: 30-06-2026

Accepted: 14-07-2026

Published: 30-09-2026

Introduction

Burden of Coronary Artery Disease (CAD)

Cardiovascular diseases (CVDs) remain the leading cause of morbidity and mortality worldwide, accounting for a substantial proportion of deaths each year. Among these conditions, coronary artery disease (CAD) is the most common manifestation and results from the progressive narrowing or obstruction of the coronary arteries due to atherosclerosis. CAD is responsible for a large number of hospital admissions and significantly impacts healthcare resources, quality of life, and economic productivity. The increasing prevalence of risk factors such as diabetes mellitus, hypertension, obesity, dyslipidemia, smoking, sedentary lifestyle, and aging populations has contributed to the growing burden of CAD across both developed and developing countries. Consequently, early diagnosis and timely management of CAD are essential to reduce

complications and improve patient survival.^[1]

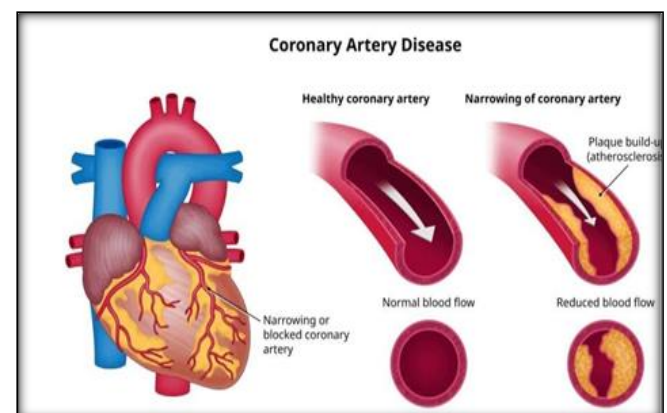


Figure 1: Coronary Artery Disease (CAD) and Coronary Artery Narrowing

Role of Coronary Angiography and Percutaneous Coronary Intervention

Coronary angiography (CAG) is considered the gold standard for evaluating coronary artery anatomy and identifying the location and severity of coronary artery stenosis. It provides detailed visualization of the coronary circulation and guides therapeutic decision-making in patients with suspected or established CAD. When significant stenosis is identified, percutaneous coronary intervention (PCI) can be performed during the same procedure to restore coronary blood flow through balloon angioplasty and stent implantation. Advances in catheterization techniques, imaging technology, and interventional devices have made CAG and PCI safer and more effective, leading to improved procedural success and better clinical outcomes. As the number of coronary interventions continues to rise, optimizing procedural efficiency and post-procedure recovery has become increasingly important.^[2,3]



Figure 2: Cardiac Catheterization Laboratory (Cath Lab) Setup

Vascular Access Routes: Transradial and Transfemoral Access

Successful coronary angiography and PCI require reliable vascular access. Traditionally, the transfemoral approach (TFA), which involves catheter insertion through the common femoral artery, has been the standard technique because of its familiarity, ease of catheter manipulation, and ability to accommodate larger interventional devices. However, over the past two decades, the transradial approach (TRA), performed through the radial artery at the wrist, has gained widespread acceptance due to technological advancements and increasing operator experience. Both access routes provide effective coronary visualization and intervention; however, they differ considerably in terms of patient comfort, recovery profile, complication rates, and resource utilization.^[3,5]

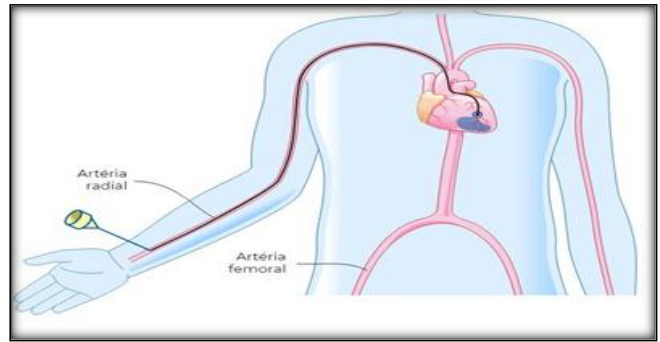


Figure 3: Comparison of Transradial and Transfemoral Vascular Access Routes for Coronary Angiography

Recovery Time and Patient Outcomes

Recovery time following coronary angiography or PCI is an important indicator of procedural efficiency and patient-centred care. It includes the duration required to achieve hemostasis, complete bed rest, when necessary, regain mobility, and become fit for hospital discharge. Shorter recovery times are associated with improved patient satisfaction, earlier ambulation, reduced nursing workload, lower healthcare costs, and increased hospital bed availability. In contrast, prolonged immobilization may increase patient discomfort, delay discharge, and contribute to additional complications. Therefore, selecting the most appropriate vascular access route may significantly influence the overall recovery experience.^[4,5]

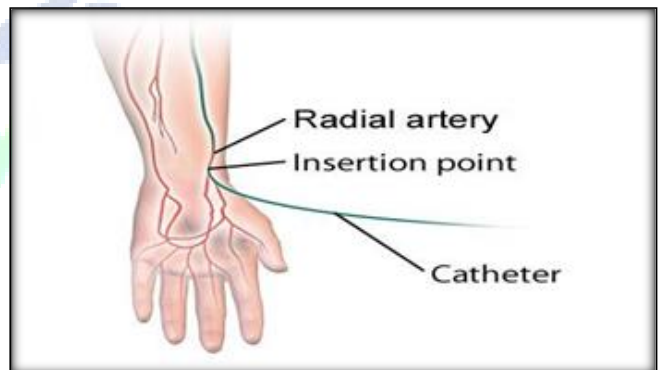


Figure 4: Transradial Access Technique – Radial Artery Catheter Insertion Site

Advantages and Limitations of Transradial and Transfemoral Access

A growing body of evidence suggests that transradial access offers several clinical advantages compared with transfemoral access. Patients undergoing radial procedures generally experience earlier ambulation, improved comfort, lower rates of access-site bleeding, fewer vascular complications, and shorter hospital stay. These benefits are particularly valuable in modern healthcare systems that emphasize rapid recovery and cost-effective patient management.^[1,5]

Despite these advantages, transradial access is not without limitations. The smaller caliber of the radial artery, anatomical variations, arterial spasm, and a longer learning

curve for operators may increase procedural complexity in certain patients. Conversely, transfemoral access remains indispensable for complex coronary interventions requiring larger catheter sizes or specialized devices. Thus, the selection of vascular access should be individualized based on patient characteristics, procedural requirements, and operator expertise.^[3,5]

Current Evidence and Research Gap

Several international clinical trials and observational studies have compared transradial and transfemoral access with respect to procedural success, bleeding complications, mortality, and patient outcomes. Most studies consistently demonstrate lower vascular complications and earlier mobilization with transradial access. Nevertheless, variations in patient populations, institutional protocols, operator experience, and discharge practices have resulted in inconsistent findings regarding recovery time and post-procedural rehabilitation.^[1,5] Furthermore, evidence from Indian tertiary care centers remains relatively limited, highlighting the need for locally generated data that reflect routine clinical practice and healthcare delivery.

Need for the Present Study

The choice of vascular access directly influences recovery time, patient comfort, hospital stay, and healthcare resource utilization. As coronary angiography and PCI are increasingly performed in high-volume catheterization laboratories, identifying the access strategy that promotes faster recovery without compromising procedural safety has become clinically important. Comparative evaluation of transradial and transfemoral access in terms of recovery outcomes can provide valuable evidence to guide clinicians in selecting the most appropriate approach and contribute to improved patient-centered cardiac care.^[4,5]

Aim

To compare the recovery time in patients undergoing coronary angiography through transradial and transfemoral vascular access at Mahatma Gandhi Hospital, Jaipur.

Objective

To compare the recovery time between transradial and transfemoral access in patients undergoing coronary angiography.

Subjects and Methods

Study Design

Prospective comparative observational study.

Study Setting

Cath Lab, Department of Cardiology, Mahatma Gandhi Hospital, Jaipur.

Study Duration

March 2026 to July 2026 (5 months).

Study Population

Adult patients undergoing elective coronary angiography through either transradial or transfemoral vascular access at Mahatma Gandhi Hospital, Jaipur.

Sample Size

A total of 40 patients.

- Group A (Transradial Access): 20 patients
- Group B (Transfemoral Access): 20 patients

Sampling Technique

Consecutive non-probability sampling.

Eligible patients fulfilling the inclusion criteria during the study period will be recruited consecutively until the desired sample size is achieved.

Inclusion Criteria

- Patients aged 18 years or above.
- Patients undergoing elective coronary angiography.
- Hemodynamically stable patients.
- Patients willing to participate and provide written informed consent.

Exclusion Criteria

- Hemodynamically unstable or emergency patients.
- Patients with bleeding disorders.
- Patients with severe peripheral vascular disease.
- Patients with previous vascular surgery at the access site.
- Patients requiring crossover from one vascular access route to another.
- Patients refusing informed consent.
- Data Collection Tool

A structured Case Record Form (CRF)/proforma will be used to collect demographic, clinical, procedural, and recovery-related information for each participant. Data will be recorded manually on a printed proforma by the investigator during routine clinical observation.

Data Collection Procedure

Eligible patients undergoing elective coronary angiography at the Cath Lab, Department of Cardiology, Mahatma Gandhi Hospital, Jaipur, will be enrolled consecutively during the study period. Patients will be categorized into the transradial or transfemoral access group based on the vascular access route selected by the treating cardiologist as part of routine clinical practice. A structured case record form (CRF) will be used to prospectively record the study variables, including Patient ID, age, sex, access route, hemostasis time (minutes), bed rest time (hours), ambulation time (hours), discharge time (hours), access-site bleeding (Yes/No), hematoma (Yes/No), pain score assessed using the Visual Analog Scale (VAS, 0–10), comfort score assessed using a 5-point Likert scale, and length of hospital stay (hours/days). All observations will be documented on a printed data collection proforma for subsequent statistical analysis.

Outcome Measures

The primary outcome measure of the study will be recovery time, defined as the time from completion of coronary angiography to patient recovery according to the vascular access route. Recovery-related outcomes will include hemostasis time, bed rest time, ambulation time, discharge time, access-site bleeding, hematoma formation, pain score (measured using the Visual Analog Scale [VAS] 0–10), patient comfort score (measured using a 5-point Likert scale), and length of hospital stay. These parameters will be compared between the transradial and transfemoral access groups to evaluate differences in post-procedural recovery following coronary angiography.

Results

Table 1: Age Group Distribution of Study Participants

Age Group (Years)	Transradial (n = 20)	Transfemoral (n = 20)	Total (N = 40)
30–39	1	0	1
40–49	4	2	6
50–59	3	8	11
60–69	7	6	13
70–79	3	2	5
≥80	2	2	4
Total	20	20	40

A total of 40 patients were included in the study, with 20 patients in the Transradial group and 20 patients in the Transfemoral group. The majority of patients belonged to the 60–69 years age group (13 patients, 32.5%), comprising 7 (35.0%) patients in the Transradial group and 6 (30.0%) patients in the Transfemoral group. This was followed by the 50–59 years age group, which included 11 patients (27.5%), with 3 (15.0%) patients in the Transradial group and 8 (40.0%) patients in the Transfemoral group. The 40–49 years age group consisted of 6 patients (15.0%),

including 4 (20.0%) in the Transradial group and 2 (10.0%) in the Transfemoral group. The 70–79 years age group included 5 patients (12.5%), with 3 (15.0%) and 2 (10.0%) patients in the Transradial and Transfemoral groups, respectively. Patients aged 80 years or above accounted for 4 (10.0%) of the study population, with 2 (10.0%) patients in each group. Only one patient (2.5%) belonged to the 30–39 years age group, and this patient was from the Transradial group.

Table 2: Sex Distribution

Sex	Transradial (n=20)	Transfemoral (n=20)	Total (N=40)
Male	14 (70.0%)	10 (50.0%)	24 (60.0%)
Female	6 (30.0%)	10 (50.0%)	16 (40.0%)
Total	20 (100%)	20 (100%)	40 (100%)

A total of 40 patients were enrolled in the study, with 20 patients each in the Transradial and Transfemoral groups. Overall, 24 patients (60.0%) were male and 16 patients (40.0%) were female. In the Transradial group, 14 patients (70.0%) were male, while 6 patients (30.0%) were female. In the Transfemoral group, 10 patients (50.0%) were male and

10 patients (50.0%) were female. Overall, male patients constituted the majority of the study population. However, the Transradial group had a higher proportion of male patients, whereas the Transfemoral group showed an equal distribution of male and female participants.

Table 3: Comparison of Access-Site Bleeding Between the Transradial and Transfemoral Groups

Bleeding	Transradial (n=20)	Transfemoral (n=20)	Total (N=40)
Yes	1 (5.0%)	3 (15.0%)	4 (10.0%)
No	19 (95.0%)	17 (85.0%)	36 (90.0%)
Total	20 (100%)	20 (100%)	40 (100%)

[Table 3] presents the comparison of access-site bleeding between the Transradial and Transfemoral groups. Access-site bleeding was observed in 4 patients (10.0%) of the total study population. Among these, 1 patient (5.0%) belonged to the Transradial group, whereas 3 patients (15.0%) belonged to the Transfemoral group. The remaining 36 patients

(90.0%) did not experience access-site bleeding, including 19 patients (95.0%) in the Transradial group and 17 patients (85.0%) in the Transfemoral group. Overall, access-site bleeding was numerically more frequent among patients who underwent the transfemoral approach compared with those who underwent the transradial approach.

Table 4: Comparison of Access-Site Hematoma Between the Transradial and Transfemoral Groups

Hematoma	Transradial (n=20)	Transfemoral (n=20)	Total (N=40)
Yes	0 (0.0%)	2 (10.0%)	2 (5.0%)
No	20 (100.0%)	18 (90.0%)	38 (95.0%)
Total	20 (100%)	20 (100%)	40 (100%)

[Table 4] presents the comparison of access-site hematoma between the Transradial and Transfemoral groups. Overall, 2 patients (5.0%) developed an access-site hematoma during the study. No cases of hematoma were observed in the Transradial group, whereas 2 patients (10.0%) in the

Transfemoral group developed hematoma. The remaining 38 patients (95.0%) did not experience hematoma, including 20 patients (100.0%) in the Transradial group and 18 patients (90.0%) in the Transfemoral group.

Table 5: Comparison of Pain Score (VAS Scale 0–10) Between the Study Groups

Variable	Transradial Group (n = 20)	Transfemoral Group (n = 20)	Statistical Test	p-value
Pain Score (VAS 0–10)	4.90 ± 1.65	7.85 ± 0.59	Independent Student's t-test	<0.001*

[Table 5] compares the post-procedural pain scores between patients undergoing transradial and transfemoral access for coronary angiography. The mean pain score in the Transradial group was 4.90 ± 1.65 , whereas the Transfemoral group had a significantly higher mean pain score of 7.85 ± 0.59 . The difference in mean pain scores between the two groups was found to be statistically significant using the

Independent Student's t-test ($p < 0.001$).

These findings indicate that patients who underwent the transradial approach experienced significantly less post-procedural pain than those who underwent the transfemoral approach, suggesting better patient tolerance and comfort with the transradial access technique.

Table 6: Comparison of Comfort Score Between the Study Groups

Variable	Transradial Group (n = 20)	Transfemoral Group (n = 20)	p-value
Comfort Score (Likert Scale 1–5)	3.40 ± 0.82	2.30 ± 0.66	<0.001*

[Table 6] compares the post-procedural comfort scores between patients who underwent transradial and transfemoral access for coronary angiography. The mean comfort score in the Transradial group was 3.40 ± 0.82 , whereas the Transfemoral group had a lower mean comfort score of 2.30 ± 0.66 . The difference in mean comfort scores between the two groups was found to be statistically significant using the Independent Student's t-test ($p < 0.001$). These findings indicate that patients undergoing the transradial approach experienced significantly greater post-procedural comfort than those undergoing the transfemoral approach, suggesting that transradial access provides a more comfortable recovery experience following coronary angiography.

Result

A total of 40 patients undergoing coronary angiography were included in the present study, with 20 patients in the transradial group and 20 patients in the transfemoral group. The age distribution showed that the majority of patients belonged to the 60–69 years age group, accounting for 13 patients (32.5%), followed by the 50–59 years age group with 11 patients (27.5%). The 40–49 years age group included 6 patients (15.0%), while 5 patients (12.5%) belonged to the 70–79 years age group. Patients aged ≥ 80 years accounted for 4 patients (10.0%), and only one patient (2.5%) belonged to the 30–39 years age group. The distribution of age groups was comparable between the transradial and transfemoral groups. Regarding gender distribution, 24 patients (60.0%) were male and 16 patients (40.0%) were female. The transradial group included 14 male patients (70.0%) and 6 female patients (30.0%), whereas the transfemoral group consisted of 10 male patients (50.0%) and 10 female patients (50.0%). Overall, males constituted the majority of the study population. Access-site bleeding was observed in 4 patients (10.0%) of the total study population. Among these, 1 patient (5.0%) in the transradial group and 3 patients (15.0%) in the transfemoral group developed bleeding complications. Although the difference was not statistically significant, the incidence of bleeding was lower among patients undergoing transradial access, indicating a favorable trend toward reduced vascular complications.

Access-site hematoma was observed in 2 patients (5.0%) overall. No patient in the transradial group developed hematoma, whereas 2 patients (10.0%) in the transfemoral group experienced hematoma formation. The findings demonstrated a lower occurrence of access-site hematoma with transradial access compared with transfemoral access.

The assessment of post-procedural pain demonstrated a statistically significant difference between the two groups. The mean pain score measured using the Visual Analog Scale (VAS 0–10) was 4.90 ± 1.65 in the transradial group, whereas patients in the transfemoral group reported a significantly higher mean pain score of 7.85 ± 0.59 ($p < 0.001$). These findings indicate that patients undergoing transradial access experienced significantly less pain following coronary angiography. Patient comfort assessment using the 5-point Likert scale showed significantly higher comfort levels among patients undergoing transradial access. The mean comfort score was 3.40 ± 0.82 in the transradial group compared with 2.30 ± 0.66 in the transfemoral group ($p < 0.001$). This indicates that transradial access provides a more comfortable recovery experience following coronary angiography. Overall, the results demonstrated that transradial access was associated with reduced post-procedural pain, improved patient comfort, and a lower incidence of access-site complications compared with transfemoral access, suggesting better recovery outcomes following coronary angiography.

Discussion

The present prospective comparative observational study evaluated recovery outcomes and access-site complications in 40 patients undergoing coronary angiography through transradial and transfemoral approaches, with 20 patients in each group. The study assessed demographic characteristics, vascular complications, pain score, and patient comfort following the procedure. In the present study, the majority of patients belonged to the 60–69 years age group (32.5%), followed by the 50–59 years age group (27.5%), and males constituted 60.0% of the study population. Similar

demographic characteristics were reported by Bhat et al,^[1] where middle-aged to elderly patients and males represented the predominant population undergoing coronary angiography and intervention. These findings are consistent with the higher prevalence of coronary artery disease among older adults and men.^[6] Access-site bleeding was lower in the transradial group compared with the transfemoral group (5.0% vs 15.0%), although the difference was not statistically significant ($p=0.605$). Similar findings were reported by Bhat et al., who observed fewer bleeding events in the transradial group (3%) compared with the transfemoral group (7%, $p=0.039$). The results of the present study support the evidence that transradial access is associated with reduced bleeding complications.^[7] Regarding access-site hematoma, no patient in the transradial group developed hematoma, whereas 10.0% of patients in the transfemoral group experienced hematoma formation. Although this difference was not statistically significant ($p=0.487$), the findings are comparable with Bhat et al., who reported hematoma occurrence in 0% of transradial cases and 14.5% of transfemoral cases ($p=0.005$). This similarity suggests that transradial access reduces the risk of access-site hematoma.^[8] Pain assessment showed a significant difference between the groups, with lower pain scores in the transradial group compared with the transfemoral group (4.90 ± 1.65 vs 7.85 ± 0.59 ; $p<0.001$). Although Bhat et al. mainly evaluated vascular complications and procedural outcomes rather than pain assessment, their findings supporting transradial access due to reduced complications indirectly correlate with improved patient recovery observed in the present study. Patient comfort was significantly higher in the transradial group compared with the transfemoral group (3.40 ± 0.82 vs 2.30 ± 0.66 ; $p<0.001$). Similar advantages of transradial access have been reported in previous studies, where early ambulation, reduced immobilization, and fewer access-site problems contributed to better patient satisfaction.^[9] Overall, the findings of the present study are consistent with previous evidence, including the study by Bhat et al., demonstrating that transradial access provides improved recovery outcomes, reduced vascular complications, and better patient comfort compared with transfemoral access. Although some complications did not reach statistical significance due to the smaller sample size, the observed trends favor the transradial approach and support its use as a safer and more patient-friendly technique for coronary angiography.^[10-12]

Conclusion

The present prospective comparative observational study concludes that transradial access provides superior recovery outcomes compared with transfemoral access in patients undergoing elective coronary angiography. The study demonstrated that patients undergoing transradial access experienced significantly lower post-procedural pain scores and higher patient comfort scores compared with those undergoing transfemoral access, indicating improved tolerance and a better recovery experience following the

procedure. The assessment of access-site complications showed a lower incidence of bleeding and hematoma formation in the transradial group compared with the transfemoral group. Although these differences did not achieve statistical significance due to the limited sample size, the observed trends favored the transradial approach and supported its potential advantage in reducing vascular complications. The findings of the present study highlight the importance of vascular access selection in determining post-procedural recovery following coronary angiography. The transradial approach allows early mobilization, reduces discomfort associated with prolonged bed rest, and contributes to improved patient satisfaction compared with transfemoral access. The present results are consistent with previous studies, including Bhat et al., which reported lower access-site complications and better clinical outcomes with transradial access. Similar evidence from large randomized trials has also demonstrated the safety and effectiveness of radial access in reducing vascular complications and improving patient-centered outcomes. Therefore, transradial access can be considered a safe, effective, and patient-friendly alternative to transfemoral access for coronary angiography whenever clinically appropriate. It offers advantages in terms of reduced pain, improved comfort, fewer access-site complications, and potentially faster post-procedural recovery. Further studies with larger sample sizes are recommended to evaluate its impact on complete recovery time, ambulation time, discharge time, and long-term clinical outcomes.

References

1. Bhat FA, Chandal KH, Raina H, Trambou NA, Rather HA. Transradial versus transfemoral approach for coronary angiography and angioplasty: a prospective, randomized comparison. *BMC Cardiovasc Disord.* 2017;17(1):23. doi:10.1186/s12872-016-0457-2.
2. Andò G, Capodanno D. Radial artery access reduces mortality and bleeding in patients undergoing coronary intervention: an updated review of evidence. *JACC Cardiovasc Interv.* 2020;13(21):2556-2571.
3. Mason PJ, Shah B, Tamis-Holland JE, et al. An update on radial artery access and best practices for coronary angiography and intervention. *JACC Cardiovasc Interv.* 2020;13(21):2290-2301.
4. Bangalore S, Radford MJ, et al. Transradial versus transfemoral access for coronary angiography and intervention: outcomes and contemporary practice patterns. *Catheter Cardiovasc Interv.* 2021;97(4):E469-E478.
5. Choudhury T, Khattab AA, et al. Transradial versus transfemoral approach for coronary angiography and percutaneous coronary intervention: a contemporary systematic review. *Cardiovasc Revasc Med.* 2021;29:1-8.
6. Lee MS, Chen CH, et al. Comparison of transradial and transfemoral approaches for coronary procedures in contemporary practice. *J Invasive Cardiol.* 2021;33(8):E600-E608.
7. Xanthopoulos I, Davlouros P, et al. Radial versus femoral access for coronary intervention: impact on bleeding, vascular complications, and clinical outcomes. *J Clin Med.* 2022;11(12):3448.
8. Wang Y, Li J, et al. Comparison of transradial and transfemoral access in patients undergoing percutaneous coronary intervention: a meta-analysis. *Front Cardiovasc Med.* 2022;9:1002761.
9. Al-Lamee R, Thompson D, et al. Contemporary outcomes of radial and femoral access for coronary angiography and intervention. *Heart.* 2023;109(4):285-292.
10. Yasmin F, Umar M, Moeed A, et al. Radiation exposure with

transradial versus transfemoral access for diagnostic coronary angiography and intervention. J Am Coll Cardiol. 2024;83(13 Suppl):67.

11. Tahir F, Ahmed N, et al. Transradial versus transfemoral access for coronary angiography and intervention: effect on vascular complications and hospital stay. Cureus. 2024;16(2):e54321.
12. Valgimigli M, Frigoli E, Leonardi S, et al. Radial versus femoral access and outcomes in patients undergoing coronary angiography and intervention: updated clinical evidence. Eur Heart J. 2024;45(6):512-522.

Copyright: © The author(s), 2026. It is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY-NC 4.0), Creative Commons license that lets people share, remix, and build upon a work, but only for non-commercial purposes and as long as they give credit to the original creator.

How to cite this article: Gupta N K, Dagur B B, Singhal B, Chauhan S K, Gupta S, Saini R N. Comparison of Recovery Time in Patients Undergoing Transradial Versus Transfemoral Access for Coronary Angiography and Intervention. Asian J. Med. Res. 2026;15(3): 1-7.

Source of Support: Nil, **Conflict of Interest:** None declared.

