

Trans Ulnar Approach for Unprotected Left Main Coronary Artery Disease

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Introduction

Significant unprotected left main coronary artery (ULMCA) disease occurs in 5-7% of patients undergoing coronary angiography [1,2] and patients with ULMCA disease treated medically have a three years mortality rate of 50% [3,4]. Advances in percutaneous intervention techniques and stent technology have allowed evolution of the role of percutaneous coronary intervention (PCI) for left main disease. Left main angioplasty is usually preferred through femoral route because of the larger diameter of the vessel and ease of maneuverability. In recent studies radial route has also been used consistently with better results. Left main coronary angioplasty through ulnar artery route is unheard off. In this case report ulnar access has been used to opine that it is also an alternative, safe, feasible and an additive access to femoral route.

Case

A 65 year old male presented with chest pain, sweating and uneasiness for four hours and diagnosed as unstable angina. There was no history of hypertension diabetes mellitus or dyslipidemia.

On general physical examination, pulse rate was 102 per minute, BP 140/86 mm of Hg, respiratory rate 18 per minute jugular venous pulse was normal.

Auscultation of the heart and lung was unremarkable. Electrocardiogram showed ST segment depression of 2 mm in leads I, II, aVL, aVF and V3 to V6 with ST segment elevation in lead aVR. Two dimensional echocardiography revealed concentric left ventricular hypertrophy, normal left ventricular function, no regional wall motion abnormality, mild mitral and tricuspid regurgitation and normal chamber dimension. Hematological investigation and routine biochemistry were also normal.

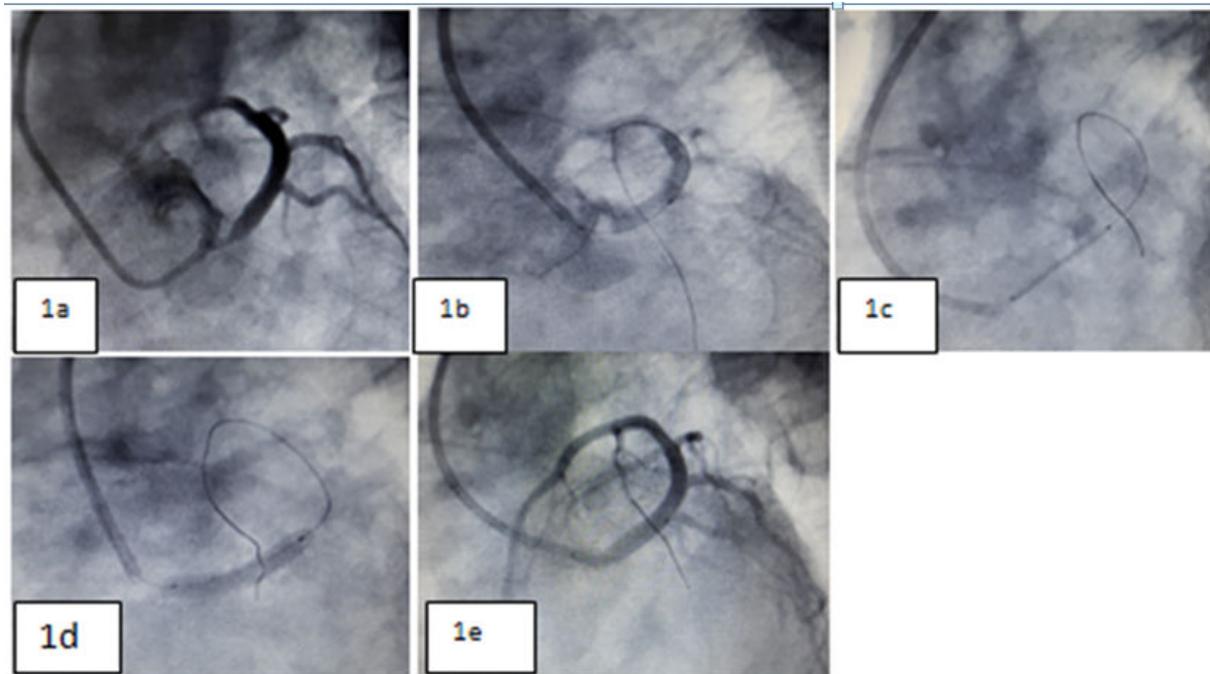


Figure 1: LAO caudal view depicting 70% proximal left main lesion. 1b: lesion being crossed by a PTCA wire. 1c: stent is implanted across the lesion. 1d: after.

Coronary angiography was done through right ulnar artery route which revealed ostial left main stenosis of 70%. Elective angioplasty was planned after two days via same ulnar access. Extra backup 3.0-6F

guiding catheter through a .014 inch guide wire was passed across the ostial lesion. After stabilizing the guide wire in the correct position, a balloon of size 2.5 × 20 mm (Boston Scientific Maverick) was

introduced over it and the lesion was predilated thrice at 9 atmospheric pressure for 10 seconds each time. A bare metal stent of 3.5 × 20 mm (Boston Scientific REBEL) was implanted in the ostial left main coronary artery with 2-3 mm of stent protruding in the aorta. Subsequently ostial flaring was done. Post dilatation was done twice at 9 atmospheric pressure for 20 and 15 seconds respectively (Figure 1).

The final result was satisfactory with TIMI III flow, total pain relief and normalization of ST segment. Total procedure time was 30 minute with fluoroscopy time being 14 minutes. As there was a very short procedure time, there was no spasm in the ulnar artery. After the procedure ended, the introducer sheath was left in situ for four hours initially and it was later removed and hemostasis achieved by using a compressive dressing with a porous elastic adhesive bandage (dynaplast).

Forty eight hours after the procedure, examination of the wrist revealed a 3+/4+ ulnar artery pulse, positive modified and reverse Allen's test, and absence of hematoma, murmur, or thrill (Figure 2).



Figure 2: TIMI III flow achieved after stent deployment.

Discussion

Compared to radial artery, ulnar artery is relatively large, less tortuous and less prone to spasm [5]. However, it is deeper and therefore less palpable than the radial artery. In addition, since the ulnar artery runs parallel to the corresponding nerve and vein, its use has been very rare for percutaneous interventions. As the feasibility of ulnar artery for cardiac catheterization has already been stabilized by AJmer ULnar ARtery (AJULAR) catheterization study which concluded that for an experienced operator, trans ulnar access is a safe

and effective alternative to trans radial access in terms of feasibility and safety, institutions that perform radial access left main angioplasty routinely, when faced with the need to switch the transfemoral approach, may also switch ulnar access safely and effectively.

Case series with varying number of patients [6-9] followed up with ultrasound examinations, the largest of which involved 172 patients [10] have shown that the Trans ulnar approach is an additional option when the radial artery access is not available. This technique is associated with low incidence of major vascular complications. Hematomas are usually minor, affecting only subcutaneous tissue, the ulnar nerve is not injured, and asymptomatic occlusion of the ulnar artery is less than 5%. There is no hand ischemia, and caeses of arteriovenous fistula and pseudo aneurysm are rare. Similar findings were reported for transulnar primary angioplasty [11]. In a randomized study comparing both routes in patients undergoing coronary angioplasty, no differences were found regarding access related complications, success rate, procedure time, and fluoroscopy time [12]. Although most published studies are not randomized trials but rather case report, the available evidence suggests that trans ulnar approach is feasible, effective and probably as a safe the Trans radial approach for coronary interventions.

Conclusion

The use of the Trans ulnar approach emerges as a safe and feasible alternative for coronary intervention even in ULMCA interventions.

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