Short communication

Inadvertent left aorto-coronary dissection following percutaneous coronary intervention treated successfully by bail-out left main coronary artery stenting

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ABSTRACT

Left main coronary artery (LMCA) dissection occurs very rarely following percutaneous coronary intervention (PCI). It caused major consequences with no flow in coronary artery and requires immediate surgical or percutaneous intervention. We are reporting a case of 42-year-old male patient who presented with effort angina. Coronary angiogram revealed significant stenosis in left anterior descending (LAD) and left circumflex (LCX) coronary artery. During removal of angioplasty balloon and guide wire after successfully stenting in LAD and balloon angioplasty in LCX, guiding catheter induced dissection of LMCA was happened. Subsequently, LMCA was stented; kissing balloon dilatation was done at carina & TIMI III flow re-established.

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1. Introduction

Acute subintimal dissection of the left main coronary artery (LMCA) is a rare but devastating complication of percutaneous transluminal coronary angioplasty. This compromises coronary blood flow to an extensive area of myocardium which becomes clinically evident in most patients soon after the injury.¹ Though the optimal treatment of patients with LMCA dissection during catheter-based procedure still remains unclear, but in cases with significant LMCA dissection occurring during catheter-based procedure, prompt stent implantation may be safe and associated with favorable clinical outcome.² We describe a case of guiding catheter induced aorto-coronary dissection following successful angioplasty during removal of angioplasty balloon with no flow situation in LMCA complicated by cardiac arrest. He was resuscitated successfully by LMCA stenting and kissing balloon angioplasty of both left anterior descending (LAD) & left circumflex (LCX) artery ostium.

2. Case report

A 42-year-old patient presented with effort angina of Canadian Cardiovascular Society (CCS) grade II for last 2–3 months. He was a smoker and known hypertensive. General and systemic examination

was found to be within normal limit except blood pressure of 150/90 mm of Hg. His blood investigation revealed only presence of dyslipidemia (low density lipoprotein – 165 mg/dl & triglyceride – 290 mg/dl). Electrocardiogram didn't show any significant abnormality though he had a positive treadmill test at 8 METS. He was admitted for coronary angiogram which revealed significant lesion in proximal LAD and distal LCX. As he had significant effort angina, so percutaneous coronary intervention (PCI) & stenting of LAD and PCI with balloon angioplasty of distal LCX was planned. First, we had done stenting of LAD with an everolimus eluting stent (Xience V, Abbott Vascular) and followed by balloon angioplasty of LCX was done with an Empira NC balloon (Cordis) of 2.5 × 10 mm diameter (Fig. 1A and B). The guiding catheter used in this case was Judkin's left guiding catheter (JL 3.5, 7 Fr, Cordis). After doing angioplasty of LCX, the guiding catheter, guide wire & angioplasty balloon was removed suddenly & inadvertently which caused guiding catheter induced dissection of left aorto-coronary ostium, LCX ostium with no flow in left coronary system (Fig. 2). The patient went into cardiac arrest immediately after the untoward incident happened. He was resuscitated immediately and catheter based intervention planned. First, LMCA was stented with an everolimus eluting stent (Xience V, Abbott Vascular) and flow re established into LMCA & LAD system. Still, there was no flow in LCX. So, balloon angioplasty with Empira NC balloon (Cordis) was done in ostio-proximal LCX and followed by kissing balloon angioplasty was done in both LAD & LCX ostium with 3 × 10 mm & 2.75 × 10 mm Empira NC balloon (Cordis) respectively. Finally, TIMI (Thrombolysis in Myocardial Infarction) III flow was re

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Fig. 1. A Showed PTCA & stenting of LAD. B Showed balloon angioplasty of LCX.

established in left coronary system (Fig. 3) and patient also had normal cardiac activity. He was given injection of eptifibatide infusion for 24 h. Till 6 months of follow up after coronary intervention, patient was remained asymptomatic.

3. Discussion

Catheter induced dissection of aorto-coronary artery system is an uncommon complication and seen in less than 0.1% of cases following coronary angiogram³ and 0.3% of cases following PTCA.⁴ Iatrogenic LMCA dissection can happen with vigorous contrast injections while the catheter is not co-axial, not using a soft-tipped catheter, deep intubation, and careless catheter and intervention device manipulation.⁵ If the dissection is small and there is no reduction in distal coronary flow, the natural course of iatrogenic non-LMCA coronary artery dissections is very good.⁶ LMCA dissection generally progresses to complete coronary occlusion and it is the most severe form of coronary artery disease with a very high

mortality rate.⁷ However, early successful myocardial revascularization seems to improve survival. Traditionally, CABG has been regarded as the treatment of choice for patients with LMCA stenosis.⁸ Although emergency CABG is effective, it is a time-consuming procedure that entails the risk of irreversible, extensive myocardial damage. PCI of LMCA stenosis has now emerged as a new alternative treatment, and it has been developed and improved over the past several years.⁸ The combination of improvements in PCI techniques, the advent of stents, and the use of glycoprotein IIb/IIIa inhibitors have increased the reports of successful percutaneous intervention in unprotected LMCA stenosis.⁹ However, catheter-induced occlusive dissection of the unprotected LMCA extending to aortic sinus is quite rare following PCI. There are only a few reports of cases in which iatrogenic occlusive dissection of the LMCA following PCI which has been successfully revascularized percutaneously,¹⁰ but nowhere, it was mentioned due to sudden removal of angioplasty balloon. In our patient, initially, there was significant stenosis of the proximal LAD and distal LCX. But aorto-LMCA & ostio-proximal LCX

Fig. 2. Dissection of left aorto-coronary ostium with no flow in left coronary system seen.

Fig. 3. Showed TIMI III flow in left coronary system.

dissection causing no-flow in left coronary system developed following PTCA. Percutaneous revascularization was preferred to CABG in order to re-establish the patency of the LMCA, LAD, and LCX more rapidly.⁹ LMCA stenting enabled prompt restoration of the coronary blood flow before extensive myocardial necrosis developed. In fact, our patient had immediate cardiac arrest and he was resuscitated successfully. Stenting of the LMCA successfully sealed the entry point of dissection. On follow up, he had normal left ventricular function. At present, stent implantation is appropriate in the percutaneous treatment of LMCA dissection, because it achieves better flow while reducing the ischemia time due to balloon inflation.¹⁰ Many reports show that, in selected cases of protected or unprotected LMCA stenosis, coronary stenting yields good results, decreasing morbidity, mortality, and length of hospital stay.⁹

4. Conclusion

Aorto-LMCA & coronary artery dissection due to catheter induced dissection during removal of angioplasty balloon is rarely seen following PCI. Our case again confirms the effectiveness of rescue stenting of the unprotected LMCA for the treatment of life threatening occlusive dissection, by promptly re-establishing coronary blood flow to the myocardium. Our case also had good long term survival as reported previously for PCI in patients with LMCA dissection.¹⁰

Contributors

Srinivas BC & Nagesh CM were involved in the management and intervention of this patient. Soumya Patra reviewed the literature and drafted the manuscript. Babu Reddy was also involved in the

management of this patient. Manjunath CN corrected the manuscript. All authors approved the final version of this manuscript.

Conflicts of interest

All authors have none to declare.

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