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A novel concept of infusing intracoronary nicorandil mixed with contrast before stenting through thrombosuction catheter distal to occluded culprit artery for improving primary angioplasty outcomes

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Aims: During primary angioplasty, no reflow is one of the dreaded complications leading to poor procedural outcomes. The exact cause and treatment of this complication is uncertain. Sometimes due to large thrombus burden or delayed presentation wherein the thrombus becomes organized, it is difficult to improve thrombolysis in myocardial infarction (TIMI) flow by use of thrombus aspiration catheter alone or with adjuvant pharmacotherapy like infusing intracoronary Abciximab or thrombolytics. In such cases we cross the total occlusion containing thrombus by thombus aspiration catheter and perfuse the distal vessel with nicorandil mixed with contrast solution to assess the actual length of the lesion along with size and nature of distal vessel beyond totally occluded culprit artery. By this method not only distal microvasculature is protected by nicorandil before clot embolization but also appropriate sized stents can be deployed across the length of the thrombotic lesion trapping the thrombus against the vessel wall. This method minimizes intracoronary manipulations and reduces complication rates of no or slow flow during primary PCI.

Methods And Results: Between January 2013 and October 2014, 26 STEMI patients with no flow or TIMI I flow after thrombus aspiration during primary angioplasty were retrospectively analyzed. The results of using this novel method of infusing 2 mg intravenous nicorandil solutions mixed with 50% of iodine contrast in the distal culprit vessel through a coronary thrombus aspiration catheter (number of patients 14) were compared to those patients without use of this method (number of patients 12). Mean age of presentation was 52 years, more than half of the patients were males (60%) and the majority was anterior wall myocardial infarction (50%). The culprit vessel was left anterior descending artery LAD in the majority of cases (50%) right coronary artery RCA (40%) and rest (10%) had left circumflex artery involvement. The average window period of presentation is 10+/-2 hours. 12 patients were in cardiogenic shock and intra aortic balloon pump (IABP) was used in all these patients. In all MI patients thrombus aspiration catheter was used, and Gp2b3a inhibitors were used in all patients except 2 cases, which were rescue angioplasty cases. In 11 out of 14 patients, TIMI III flow was achieved when this novel method was used, whereas repeated attempts of thrombus aspiration and sometimes predilatation followed by blind stenting yielded adequate flow in only 4 out of 12 cases (p=0.0199). In nikorandil group 2 out of 14 patients succumbed, while in other group 4 out of 12 patients were dead at the end of 30 days after the procedure (p= 0.25)

Conclusions: Our preliminary experience showed that use of this novel concept of infusing nicorandil mixed with contrast beyond the totally occluded culprit vessels in acute MI patients helps to helps to achieve better statistically significant TIMI flow rates following primary angioplasty. Even though mortality benefit was achieved it was not statistically significant. However larger scale multifactorial adjusted prospective randomized studies are required to confirm our initial observations

Table 1: Comparison of TIMI III flow achieved with and without the use of novel technique.

	TIMIII achieved	Not achieved
Novel technique used (n=14)	11	3
Novel technique not used (n=12)	4	8

Table 2: Comparison of Mortality with and without the use of novel technique

	Survived	Dead
Novel technique used (n=14)	12	2
Novel technique not used (n=12)	8	4

Biography

Udaya Prashant Ponangi has graduated from JIPMER and did my DM cardiology training in Grant Medical College Mumbai, India. Currently working as interventional cardiology consultant in CARE Hospitalts, Banjara Hills, Hyderabad, India. He has around 10 international and national publications, 3 patents, and author of book on unexplained syncope. Did original research work on a new method of producing pulsatile flow from collapsible tubes, which has practical applications like producing hydroelectric power and novel laboratory simulator model of heart. Awarded Marquis Who`s Who in the World 2013 edition. Contributed to new method of Guide Catheter selection in anomalous coronary arteries with critical stenosis.

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