

Coronary angioplasty and COVID-19: are heparin requirements and thrombotic complications increasing?

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Background: Covid-19 infection is associated with coagulopathy and possible heparin resistance, raising concerns that routine heparin during percutaneous coronary intervention (PCI) is failing to achieve adequate anticoagulation. We examined heparin requirements and efficacy in patients treated by PCI before and after the first reported UK case of Covid-19 (January 31st 2020).

Methods: We retrospectively compared heparin dose, Activated Clotting Time (ACT) and coronary flow (TIMI grade) for PCI procedures at a London cardiac centre in the 3 months before the UK pandemic and the three months afterwards. Testing for COVID was not routinely performed. Pre-specified analyses in patients with STEMI, NSTEMI and Stable angina were undertaken.

Results: Of 1227 PCI procedures performed over the period of observation, 690 were pre-pandemic and 537 were afterwards. Overall median heparin dose per case was 11000units versus 11500units ($p = 0.137$) and maximum ACTs were 291s versus 305s, respectively ($p = 0.135$). Pre-PCI TIMI 3 flow was lower during the pandemic than before (60% v 65%, $p = 0.005$) but Post-PCI flow was similar (96% versus 96%, $p = 0.839$). There were no statistically significant differences in heparin dose or achieved ACT among patients with STEMI, NSTEMI or Stable presentations.

Conclusion: In spite of the increasing evidence that COVID-19 infection causes thrombosis, it appears that standard heparin management during PCI is sufficient to achieve effective anticoagulation and avoid peri-procedural thrombotic complications.

	Group 1 Pre Pandemic	Group 2 Pandemic	P value
Number of doses given	3 (3 to 4)	3 (3 to 4)	0.952
Total Heparin dose (units)	11000 (8000 to 14000)	11500 (9000 to 14000)	0.137
Number of ACTs measured	2 (1 to 2)	2 (1 to 2)	0.194
First ACT (seconds)	240 (199 to 318)	248 (206 to 326)	0.256
Maximum ACT (seconds)	291 (230 to 368)	305 (239 to 369)	0.135

Heparin dose and Activated Clotting Times (ACT) in patients undergoing PCI before Covid-19 pandemic (Group 1) and during pandemic (Group 2); median and interquartile ranges

Abstract Figure. Clinical Presentation

Figure: Total heparin dose and achieved Activated Clotting Times in patients undergoing percutaneous coronary intervention before and after the start of the COVID-19 pandemic according to clinical presentation; ST elevation myocardial infarction (STEMI), Non-ST elevation myocardial infarction (NSTEMI) and unstable angina.

