

**Use of ClearWay™ Intra Coronary Eptifatide and Isoptin
Versus Use of Mechanical Aspiration Thrombectomy
Device (Diver CE) in Primary PCI in Patients with STEMI**

Thesis

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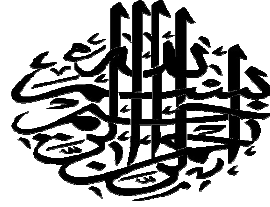
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قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم
سورة البقرة الآية (٣٢)

استخدام ClearWay وحقن ايبتيفاتيد و ايزوتين داخل الشرايين التاجية،
مقابل استخدام جهاز ميكانيكي Diver CE لاستئصال الخثرة في المرضى الذين
يعانون من ارتفاع القطعة ST الذي تم معالجتهم بالقسطرة التداخلية الاولى

رسالة

توطئة للحصول على درجة ماجستير
في أمراض القلب والأوعية الدموية

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List of Contents

	<u>Page</u>
Acknowledgement	I
List of Abbreviations.....	II
List of Tables	IV
List of Figures	VI
 Introduction	 1
Aim of the work.....	4
 Review of Literature:	
I - Reperfusion in acute ST elevation myocardial infarction.....	5
II - Clearway catheter and GP IIb/IIIa receptor antagonists	33
III - Aspiration of thrombus by thrombectomy device DIVER CE	57
 Patients & Methods	 66
RESULTS.....	76
Discussion.....	104
Summary.....	115
Conclusion.....	119
Recommendations	120
References	122
Arabic Summary	



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List of Abbreviations

ACS	: Acute coronary syndrome
AIVR	: Accelerated Idioventricular Rhythm
BNP	: Beta natriuretic peptide
CE	: Clot Extraction
CFR	: Coronary flow reserve
CHD	: Coronary heart disease
CHF	: Congestive heart failure
CI	: Confidence interval
CMR	: Cardiovascular magnetic resonance
cTFC	: Corrected TIMI frame count
ECG	: Electrocardiographic
FDA	: Food and Drug Administration
IRA	: Infarct-related artery
LAD	: The left anterior descending
LCX	: Left circumflex artery
LIBS	: Ligand-induced binding sites
LVEDV	: LV end-diastolic volume
LVEF	: LV ejection fraction
MACE	: Major adverse cardiac events
MBG	: Myocardial blush grade
MCE	: Myocardial contrast echocardiography
mm	: Millimeters
MPI	: Myocardial Perfusion Imaging

List of Abbreviations (Cont.)

NS	: Non-significant
NSTEMI	: Non-STEMI
Nt-proBNP	: N-terminal fragment of the prohormone
PCI	: Percutaneous coronary intervention
RBC	: Red Blood Cell Count
RCA	: Right coronary artery
RGD	: Arg-Gly-Asp-
SPECT	: Sestamibi single photon emission computed tomography
STEMI	: ST-segment elevation myocardial infarction
TIMI	: Thrombolysis in Myocardial Infarction
vWF	: von Willebrand factor
WBC	: White Blood Cell Count

List of Tables

	<u>Page</u>
Table 1: Distribution of age and gender.....	77
Table 2: Distribution of major risk factors.....	78
Table 3: History of Ischemic heart disease	79
Table 4: Location of the infarct segment	80
Table 5: Duration of chest pain and DTB in all patients.....	81
Table 6: Parameters of success of reperfusion.....	82
Table 7: Post-hoc analysis of Parameters of success of reperfusion	83
Table 8: Number of vessels affected and number of stents deployed.....	87
Table 9: The length and width of stents used.....	87
Table 10: PTCA with balloon usage.	89
Table 11: Fluoroscopy time comparison between 3 groups.....	90
Table 12: Post-hoc analysis for Fluoroscopy time comparison between 3 groups.....	90
Table 13: Comparison between 3 groups in number of patients who had TIMI3 flow after procedure.	92
Table 14: Comparison between 3 groups in patients who had MBG3 after procedure.	94
Table 15: Comparison between 3 groups in number of patients who had cTFC less than 40.	95
Table 16: Comparison between 3 groups in mean cTFC values.	95
Table 17: Post-hoc analysis for comparison between 3 groups in mean cTFC values.	96

List of Tables (Cont.)

		<u>Page</u>
Table 18:	Relation between pre-dilatation with balloon, and primary end points.	98
Table 19:	Relation between Thrombus burden and primary endpoints.	99
Table 20:	Comparison between Clearway and control in primary endpoints.	100
Table 21:	Comparison between Clearway and Diver Ce in primary endpoints.....	101
Table 22:	Multivariate analysis for the risk factors as a predictors for TIMI flow after.	102

List of Figures

	<u>Page</u>
Figure 1 : Palmaz-Schatz stent type 153. The center of this 15-mm stent is bridged by a single articulation.	9
Figure 2: Shows a representative MCE case demonstrating the progressive changes in video intensity observed within the risk area during coronary occlusion a reperfusion	16
Figure 3: Cardiovascular magnetic resonance (CMR)	18
Figure 4: Myocardial blush grading	22
Figure 5: Doppler flow velocity tracings of patient with anterior AMI before and 24 hours after PTCA	24
Figure 6: Schematic representation of pathophysiological mechanisms that may contribute to reperfusion no reflow in the setting of primary angioplasty for AMI	29
Figure 7 : No damage to IEL	33
Figure 8: SEM image of ePTFE microstructure – nodes and fibrils	34
Figure 9: Occlusion of blood flow	35
Figure 10: Containment of treatment zone and controlled infusion of drug	35
Figure 11: Schematic depiction of integrin α IIb β 3	40
Figure 12: Transitional states of α IIb β 3 on platelets	42
Figure 13: Picture of the Diver C.E. thrombus-aspirating device and magnification of the catheter's tip	58
Figure 14 : Use of DIVER CE in Anterior STEMI	59
Figure 15: Thrombus aspiration device used in primary PCI	61

List of Figures (Cont.)

	<u>Page</u>
Figure 16: Distribution of gender.....	77
Figure 17: STEMI location	80
Figure 18: Number of vessels affected	88
Figure 19: Total Fluoroscopy time.....	91
Figure 20: Comparison between TIMI flow in the 3 groups	92
Figure 21 : Comparison between 3 groups in MBG	94
Figure 22: Comparison between 3 groups in Mean corrected TIMI frame count	97
Figure 23: Relation between pre-dilatation and TIMI flow after, MBG, and cTFC. 98	
Figure 24 : Comparison between Clearway and control group in TIMI flow, MBG and cTFC after procedure.....	100
Figure 25: Comparison between ClearWay and Diver Ce as regards TIMI flow, MBG and cTFC after procedure	101

INTRODUCTION

Atherosclerosis is said to be the 21st century pandemic. It is almost universally present in adults in both developed and developing countries accounting for major economic losses and consuming healthcare funds⁽¹⁾.

Its presentation is diverse as it can manifest clinically as coronary heart disease (CHD), cerebrovascular disease (stroke), or peripheral arterial disease⁽¹⁾.

In affluent societies, coronary artery disease causes severe disability and more death than any other disease, including cancer. It manifests as angina, silent ischemia, unstable angina, myocardial infarction, arrhythmias, heart failure, and sudden death⁽²⁾.

ST- elevation myocardial infarction is by far the most serious presentation of Atherosclerotic coronary artery disease carrying the most hazardous consequences& patients with ST elevation are triaged immediately for reperfusion therapy, according to ACC/AHA& ESC guidelines for acute MI⁽³⁾.

In the ACC/AHA& ESC guidelines primary PCI is a class 1 indication for ST- elevation acute coronary syndrome or new left bundle branch block if performed within proper time window of symptom onset⁽⁴⁾.

Primary percutaneous coronary intervention (PCI) is considered the preferred reperfusion modality for patients presenting with ST-segment elevation myocardial infarction (STEMI) regardless of the hour of presentation as long as reperfusion can occur in a timely manner⁽⁵⁾.

It is possible that differences in technical details of the procedure account for major part of success of primary PCI. Yet despite the prompt and successful restoration of ante grade epicardial blood flow by PCI, a significant proportion of patients with AMI remain at increased risk of death and adverse outcomes. Efforts directed towards the identification of these patients prior to hospital discharge have utilized clinical markers such as demographic characteristics and bedside findings, and non-invasive and invasive testing⁽⁶⁾.

However, microvascular obstruction with diminished myocardial perfusion occurs in a large proportion of patients with a patent epicardial vessel after primary PCI, and this event is associated with an increased infarct size, reduced recovery of ventricular function, and increased mortality⁽⁷⁾.

The high frequency of suboptimal myocardial reperfusion after primary PCI has resulted in the development of various devices to protect the microcirculation. Different feasible and safe thrombectomy and distal protection devices have been used in clinical practice. The efficiency and safety of

adjunct thrombectomy using Diver CE device (Invatec, Italy) has been established⁽⁸⁾.

A promising novel solution to ameliorate the outcome of angioplasty for acute coronary syndromes resides in the combined use of pharmacological and catheter-based therapies to increase local concentration of drugs such as glycoprotein IIb/IIIa inhibitors at the culprit site, prolonging their residency time⁽⁹⁾.

The ClearWay™ RX Catheter is a low pressure atraumatic infusion balloon that allows for enhanced drug bioavailability and uptake while minimizing systemic effects. This super selective local drug delivery technique provides up to 500 times the systemic concentration of a drug by gently occluding the blood flow and significantly increasing the residence time of the infused drug at the specific target site.

In This study we will focus the light on the use of Diver CE catheter and the use of ClearWay intracoronary eptifibatide in primary PCI for patients with STEMI, and evaluate their net effect on myocardial reperfusion as assessed by TIMI flow, myocardial blush grade, and corrected TIMI frame count post procedure. We also compare both these two techniques to the conventional PCI technique used.

AIM OF THE WORK

To compare the Use of ClearWay™ Intra Coronary
eptifatide and isoptin versus use of aspiration
thrombectomy device (Diver CE) in primary PCI in patients
with STEMI, having a control group of patients managed by
conventional PCI techniques.