

CLINICAL IMPACT OF STENT FRACTURE AFTER PRIMARY STENTING WITH NITINOL STENT FOR TASC C AND D FEMORO-POPLITEAL LESION AT 1 YEAR

Thesis

Submitted in Fulfillment for
The M.D. Degree
Vascular Surgery
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2015

بسم الله الرحمن الرحيم

﴿فأما الزبد فيذهب جفاء و أما ما ينفع الناس فيمكث في الأرض﴾

صدق الله العظيم

«سورة الرعد..اية ١٧»

ACKNOWLEDGMENT

Thanks first and last to ALLAH for his great care, support and guidance in every step in our life.

I am greatly honored to express my deepest gratitude, without his stimulate supervision, continuous guidance, advice, encouragement and ultimate help, this work would not come to the light. Many thanks and appreciation to **Dr. Magdy Abd el Wahab Hagag**, professor of Vascular Surgery, Faculty of Medicine, Cairo University, for his sincere supervision and support.

Many thanks and appreciation to **Dr. Hisham Mahmoud El-Sharkawy**, professor of Vascular Surgery, Faculty of Medicine, Cairo University, for his sincere supervision and support.

No words can describe my deep gratitude and appreciation to **Dr. Ahmed Reyad Tawfik**, lecturer of Vascular Surgery, Faculty of Medicine, and Cairo University. He was the person who put the idea and plan of this work.

I would also to thank all my professors and colleagues in the General and Vascular Surgery Department for their marked help and support.

I am so grateful to my family, for their patience, guidance and encouragement.

Khadiga Sayed.,

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ABSTRACT



Introduction:

Inspite of the endovascular management of TASC C and D lesions becomes a routine, stenting the femoro-popliteal segment still controversial.

Patient and Methods:

Between November 2013 and March 2015; 102 limbs presented with denovo femoro-popliteal lesions TASC C and D. All treated with balloon angioplasty with bail-out stenting with self-expandable nitinol stents. Patients followed prospectively by clinical assessment, duplex, and biplane X ray for stent.

Results:

At a mean 9 ± 5.6 months, a complete follow up of 150 stents in 102 limbs, mean length of stented segment was 16.5 ± 9.9 cm; one stent in 64.7%, two stents in 25.5%, and three stents in 9.8% with the incidence of stent fracture was 77%, 87%, and 60% respectively. The mean length of stents in whom one and two stents inserted was ≤ 10 cm in 53% of limbs. Type I stent fracture was 9%, type II was 53%, type III was 26% and type IV was 12%.

82.4% of stents were fractured and 80% of the patients were diabetics and concomitant tibial angioplasty was done in 88.2% of the patients; 51.4% had one vessel as a distal run-off and 54% of them had peroneal artery as a single distal run-off vessel.

The location of stents were 35.3% of stents in the proximal SFA, 67.6% of stent in the mid and distal SFA, and 8% were in the upper popliteal artery.

40% of inserted stents were Epic (Boston Scientific), 29% were Protégé Ever Flex, 23% were E Lumminexx, and 8% were Absolute pro of (Brad).

Among fractured stent group, there were no significant difference in the incidence or type of stent fracture and either location of the stent or the manufacture type.

As the most common type of fractures was type II fracture; its relation to different stent manufactures; Absolute pro, Portege Ever Flex, E luminexx, and Epic was 7.14% (2/28), 28.5% (8/28), 25% (7/28), and 42.86% (12/28) respectively and P value was 0.258, 0.031, 0.191, and 0.055.

The relation of type II fracture to different locations; proximal, mid, distal, and Supra genicular part of Popliteal artery was 39.2% (11/28), 78.57%

(22/28), 64.3% (18/28), 21.4% (6/28), with the P value 0.504, 0.124, 0.065, and 0.003 respectively.

96.4% of limbs had fractured stents presented with critical ischemia. PTA with plain balloons or drug eluted balloon used for management of 47% of patients, 27% had stenting, 26% was transferred to surgery.

Conclusion:

Stenting the femoro-popliteal segment is associated with high incidence of stent fracture and has high impact on patients.

Key words:

Endovascular intervention stenting femoro-popliteal segment stent fracture.

ABBREVIATIONS:

AAA: Abdominal Aortic Aneurysm.

BMS: Bare Metal Stent.

CFD: Computational Fluid Dynamics.

CL: Crossed Leg.

CLI: Critical Limb Ischemia.

COF: Chronic Out Word Force.

DES: Drug Eluted Stent.

DES: Drug Eluting Stent.

DPSSL: Diode Pumped Solid State Laser.

EBR: Electron Beam Remelting.

EES: Evrolimus Eluting Stent.

EIA: External Iliac Artery

EP: Electropolishing.

FEA: Finite Element Analysis.

FEA: Finite Element Analysis.

HAZ: Heat Affected Zones.

IEL: Internal Elastic Lamina.

IVUS: Intra Vascular Ultrasound.

LAO: Left Anterior Oblique.

LSD: Longitudinal Stent Deformation.

MACE: Major Adverse Clinical Event.

NC: Number of Circumferentially Repeating Stent Cells.

Ni–Ti: Nickel Titanium.

OD: Outer Diameter.

PAD: Peripheral Arterial Disease.

PSV: Peak Systolic Velocity.

PTA: Percutaneous Transluminal Angioplasty.

PVD: Peripheral Vascular Disease.

RAO: Right Anterior Oblique.

RCA: Right Coronary Artery.

SEM: Scanning Electron Microscope.

SES: Serolimus Eluting Stent.

SF: Stent Fracture.

SFA: Superficial Femoral Artery.

SFPA: Superficial Femoral Artery Popliteal Artery.

SL: Straight-Leg.

SMSs: Shape Memory Alloys.

Ti C: Titanium Chromium.

TLR: Target Lesion Revascularization.

UHV: Ultra High Vacuum.

VAR: Vacuum Arc Remelting.

WSS: Wall Shear Stress.