

The Negative Impact On Cardiovascular Hemodynamics: Lessons Of TEVAR, F/EVAR, B/EVAR And EVAR: What Causes The Problem & What Can Be Done To Fix

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Disclosure

- Founder of Tulip Endovascular Innovation, Ireland
- Founder of Embricon Endovascular, Ireland
- Founder of Green Medical, Michigan, USA
- Research Education Grants :
 - Cordis, Medtronic, Endologix, Gore, Vascular Solutions
 - BMS, MSD, AstraZeneca, Abbot, AOTI
 - Sanofi-Aventis, Pfizer, Ulbrich, Bolton Medical
 - SFI, EI, NSAI, HRB, Cryolife, JoTec, Artivion

"4D" Imaging **"4D" Therapy**


4D MRA For Cardiovascular Hemodynamics & Arterial Compliance, Tissue Function But Still Deploying a 35 Years Old Technology

Introduction

- ❖ Prosthetic Aortic Replacement Causes Aortic Remodeling with Circumferential Strain, Which Lead to Progressive Distal Aortic Dilatation, Dissection & Aneurysmal Formation
- ❖ All Existing Stent Graft Materials Decreases Wall Compliance With Higher Wall Resistance
- ❖ Aortic Stiffness is A Strong Predictor of Future CV Events & All-cause Mortality

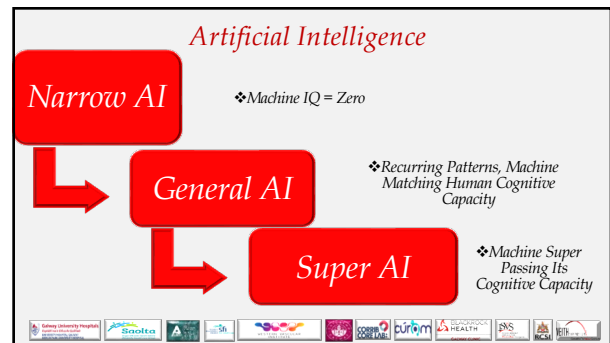
Reducing Profile of Delivery System To Make Technology More Amenable to Percutaneous Access Thereby Expanding Customer Base to other Interventionalist
Compromised Fundamental Science Behind Design of A Good Endograft & Jeopardized Long-term Durability with Negative Cardiovascular Consequence

Aortic Geometry, Wall Stiffness, Blood Pressure & Longitudinal Systolic Aortic Stretching & Oscillation Affect PWV Contributing to Biggest Impact On Wall Stress & All Commercially Available Endovascular Devices Increases Wall Stress & Lower Aortic Wall Compliance After Implantation



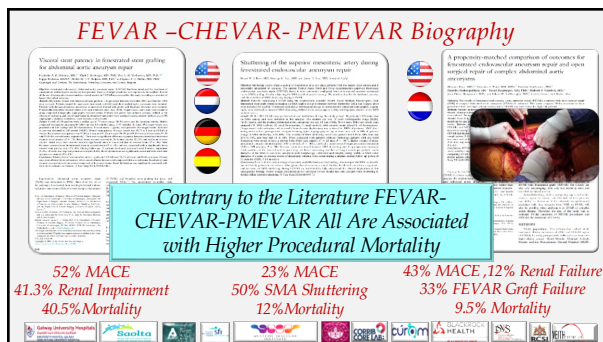
UK-COMPASS
Prof John Boyle vs Prof Srinivasa Rao Vallabhaneni

- ❖ In Long Term, FEVAR Had Twice Risk of Death Over Open Repair
- ❖ Open Repair Has Better Outcomes Than FEVAR & "Significantly Better" Outcomes At Three Years
- ❖ Significantly Greater Numbers Of Reinterventions Within First Three Years If Patient Had FEVAR & That Results Were "Significantly Worse" With FEVAR When Compared To EVAR & Longer-term All-Cause Mortality is Significantly Better For Open Repair



Artificial Intelligence

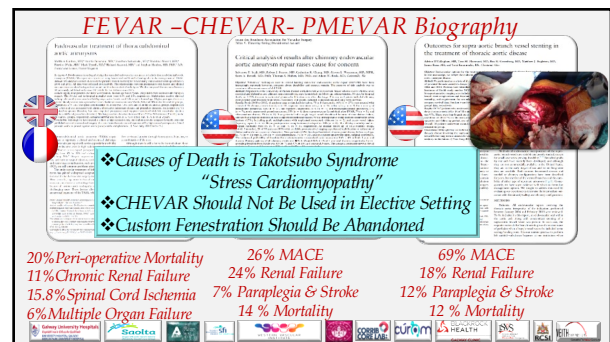
- Narrow AI** ❖ Machine IQ = Zero
- General AI** ❖ Recurring Patterns, Machine Matching Human Cognitive Capacity
- Super AI** ❖ Machine Super Passing Its Cognitive Capacity



FEVAR -CHEVAR- PMEVAR Biography

Contrary to the Literature FEVAR-CHEVAR-PMEVAR All Are Associated with Higher Procedural Mortality

- 52% MACE
- 41.3% Renal Impairment
- 40.5% Mortality
- 23% MACE
- 50% SMA Shuttering
- 12% Mortality
- 43% MACE, 12% Renal Failure
- 33% FEVAR Graft Failure
- 9.5% Mortality




FEVAR -CHEVAR- PMEVAR Biography

- ❖ Causes of Death is Takotsubo Syndrome "Stress Cardiomyopathy"
- ❖ CHEVAR Should Not Be Used in Elective Setting
- ❖ Custom Fenestration Should Be Abandoned

- 20% Peri-operative Mortality
- 11% Chronic Renal Failure
- 15.8% Spinal Cord Ischemia
- 6% Multiple Organ Failure
- 26% MACE
- 24% Renal Failure
- 7% Paraplegia & Stroke
- 14% Mortality
- 69% MACE
- 18% Renal Failure
- 12% Paraplegia & Stroke
- 12% Mortality



Secondary Procedure After FEVAR is High & When Performed for Visceral Vessel Had High Mortality Rates



2021

- ❖ In A Striking Contradiction To 2021 Claim That FEVAR is A "Perfect" Approach, Stanford Has Since Revealed That FEVAR Critically Impairs Renal Perfusion
- ❖ Labeling It A "Criminal Act," While Affirming BEVAR As Superior Option For Preserving & Improving Renal Perfusion Over Time In Complex AAA Repairs
- ❖ Highlighting How The Truth About Patient Outcomes Ultimately Surfaced

2024

Artificial Intelligence

Narrow AI

❖Machine IQ = Zero

➔

General AI

❖Recurring Patterns, Machine Matching Human Cognitive Capacity

➔

Super AI

❖Machine Super Passing Its Cognitive Capacity

In Time Knowledge of KOL

| KOL | Technique | Effects On Cardiovascular & Visceral |
|-----------------------|--------------------------|--|
| Weiguo Fu | False lumen Embolization | Increased Wall Stress Pressure, Higher MACE, Higher SINE |
| Christoph A. Nienaber | FLIRT | Increased Wall Stress Pressure, Higher MACE |
| Eric L.G. Verhoeven | FEVAR/BEVAR | Unpredictable Branch Failure & High Type I-III |
| Joseph V. Lombardi | PETTICOAT | Successful in Only One Third of All Cases |
| Chan Che Shih | PETTICOAT | Successful in Only One Third of All Cases |
| Jean-Marc Alsac | STABILISE | MACE with Visceral Stents |
| Luca Bertoglio | STABILISE | MACE with Visceral Stents |
| Frams L. Moll | TEVAR for CS-TBAD | Increase in Cardiovascular Related Mortality |
| Juan C. Parodi | Endovascular Scissoring | Progressing in the Right Direction |

In All Scenarios AI/DML Exposed "Failure" to Our Patients

FEVAR-CHEVAR-PMEVAR in High Score Group Had More Implanted Related Complications

FEVAR-CHEVAR-PMEVAR Carries Greater Re-intervention Risk Than OSR & Outcome is Questionable

Loss of Windkessel Effect with Alteration in Pulse Wave Propagation - Result in Adaptive Left Ventricular Hypertrophy, with Loss of Diastolic Systemic Augmentation with Reduced Organ Perfusion Mainly Myocardial Ischaemia Despite Absence of Coronary Artery Stenosis

Endovascular Induced Cardiac Failure

Adverse Hemodynamic Alteration Post-FEVAR-CH-PM-EVAR is a Major Concern

Best Solution in The Short-term is to Reduce The Stented Length of The Aorta, While in The Longer Term Encourage Continuous Improvement in Stent-Graft Materials & Design

