Long-term Results of MicroMesh Stents Show Their Value in CAS; Limitations and Differences

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Disclosures

- ***Symposia Honoraria & Proctor Fees***:
  - Abbott, Endologix
- ***Symposia Honoraria***:
  - Boston Scientific, Medtronic, Penumbra, Shockwave
- ***VIVA Board Member***
- ***National PI/Co-PI***: C-GUARDIANS, CONFIDENCE, SAPPHIRE WW, CANOPY, PERFORMANCE 3, POWER PAD 2
- ***Stock Options:*** INSPIRE MD
- ***Research Grants, Stocks, Equity:*** None

Ideal Characteristics of a Carotid Stent

- Conformable, works in majority of carotid anatomies, AND
- Maximizes plaque coverage to reduce protrusion/ embolization

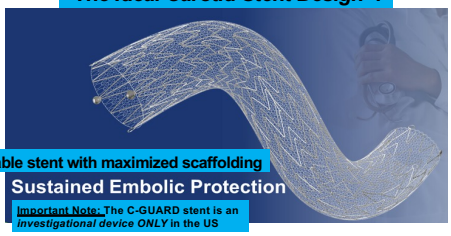
Available Conventional Carotid Stents

Open Cell Stents: Conformable, but have the least plaque coverage

Closed Cell stents: Better plaque coverage, but rigid and less conformable

Micro-Mesh Carotid Stents

"The Ideal Carotid Stent Design"?



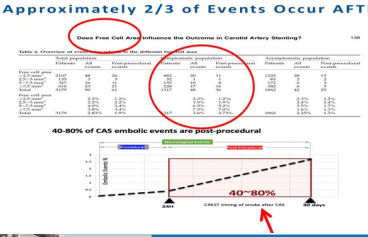
Conformable stent with maximized scaffolding

Sustained Embolic Protection

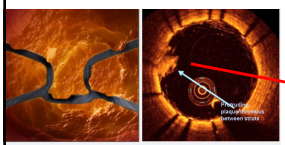
Important Note: The C-GUARD stent is an *investigational device ONLY* in the US

Why a Micro-mesh Carotid Stent?

Approximately 2/3 of Events Occur AFTER the CAS Procedure

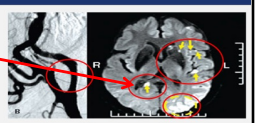


Post-CAS Strokes: Plaque Protrusion Through Stent Cells



Conventional Open Cell Stent (1st GEN):
Bare or dual layer approach, with plaque protrusion risk

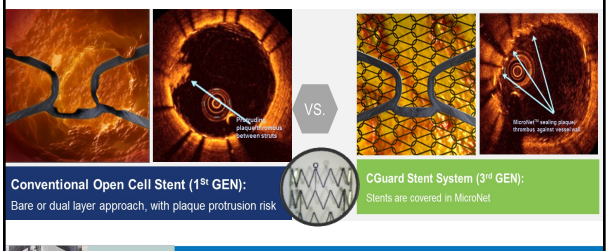
Post-Procedure
with Conventional Stent



Successful opening of the carotid artery

MRI reveals new multiple micro-infarcts (obstructions) due to liberation of embolic particles

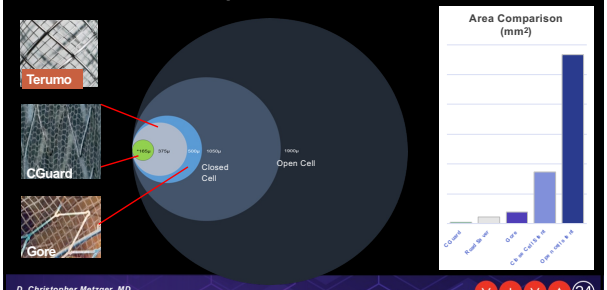
Stroke Prevention Strategy: MicroNet Technology



Conventional Open Cell Stent (1st GEN):
Bare or dual layer approach, with plaque protrusion risk

CGuard Stent System (3rd GEN):
Stents are covered in MicroNet

"Pore Size" Comparisons of Carotid Stents



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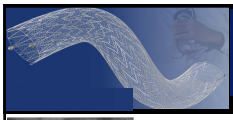
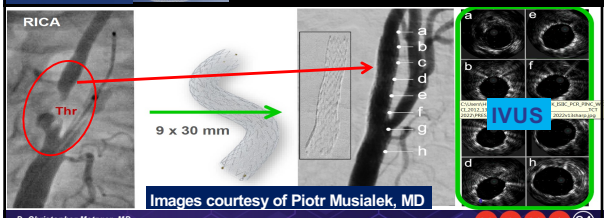
Theoretic Advantages of the MicroMesh Stent

- Maximized *conformability* suitable for more carotid anatomies ("open –cell" stent with proprietary "Smart Fit" auto-taper technology)
- Coupled with maximized *scaffolding and plaque coverage* with smallest pore size and free cell area of available carotid stents
- Potential to minimize plaque protrusion/embolization *during* procedure at highest risk intervals (stent placement, post dilatation) ***and*** post - procedure

The C-Guard Stent system is investigational only in the US



*Maximized *conformability* (open cell stent)
*Maximized *scaffolding and plaque coverage* with smallest pore size and free cell area of available carotid stents
*Minimize plaque protrusion/embolization *during* procedure at highest risk CAS intervals *and* post - procedure



Images courtesy of Piotr Musialek, MD

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MESH STENTS, SPECIFIC PLATFORMS AND FEATURES

Second Generation Stents

Mesh Design
- Mesh for permanent plaque coverage
- Open Cell Stent for conformability

Name	RoadSaver / Casper	Gore® Carotid Stent	CGuard ™
Manufacturer	Terumo / Microvention	Gore®	InspireMD
Clinical data	2014 CE Approved	2018 FDA Approved	2015 CE Approved/IDE
Stent frame	Nitinol closed-cell	Nitinol open-cell	Nitinol open-cell
Mesh position in relation to frame	inside	outside	outside
Mesh material	Nitinol	PTFE Polytetrafluoroethylene	PET Polyethylene terephthalate
Mesh structure	braided	inter-woven	20 µ single - fibre knitted
Pore size	375 - 500 µm	500 µm	150 - 180 µm

Differences in stent sizing and exact lengths

So Chris: Where's the Data?

EUROPEAN DATA with the C-Guard MicroNet Stent

Clinical Data Supporting CGuard Peri-procedural Safety

CGuard commercially available in Europe since 2015 (CE Mark) ; >50,000 stents sold

Study	Year	N	DS 30-day % (n)	DSMI 30-day % (n)
CARENET	2015	30	0.0% (0)	0.0% (0)
PARADIGM	2016	101	0.0% (0)	0.0% (0)
CASANA	2017	82	1.22% (1)	1.22% (1)
WISSGOTT I	2017	30	0.0% (0)	0.0% (0)
IRONGUARD I	2018	200	2.50% (5)	2.50% (5)
WISSGOTT II	2019	30	0.0% (0)	0.0% (0)
IRONGUARD 2	2020	733	0.05% (4)	1.09% (8)
GREEK Study	2021	103	0.0% (0)	0.0% (0)
SIBERIA	2021	50	0.0% (0)	0.0% (0)
TOTAL		1359	0.80% (11)	1.03% (14)

1359 | 0.80% | 1.03%

CAUTION: The CGuard Stent System is Investigational Use Only and Not for Sale in the USA

Clinical Data Supporting CGuard at 1-year

Extensive body of literature from independent studies in peer-reviewed journals

Study	N	DSMI at 30-d and Ipsilateral Stroke at 1-Y % (n)
CARENET	28	0.0% (0)
IRONGUARD I	199	3.01% (6)
IRONGUARD II	726	2.20% (16)
PARADIGM	101	0.0% (0)
SIBERIA	50	0.0% (0)
TOTAL	1104	1.99% (22)

1104 | 1.99%

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Randomized Controlled Trial: CGuard™ MicroNet™ vs Acculink

Superior Protection from New DW-MRI Lesions

CGuard demonstrates SUPERIORITY to other stents

Андрей Анатольевич Карпенко
FSBI "SRIMATS Imen. AK. E.N. Meshalkin "of the Ministry of Health of Russia Center of Vascular and Hybrid Surgery SCIENTIFIC RESEARCH INSTITUTE OF CARDIOVASCULAR PATHOLOGY Novosibirsk city

CLINICAL RESULTS:

- The study data provide, for the first time, Level-1 evidence for a novel role of MicroNET-covered carotid stent (stent as a peri- and post-procedural cerebral protector)

DW-MRI

Study Overview (N)	#/N (%) DSMI 30d CGuard	#/N (%) DSMI 30d Acculink
SIBERIA Randomized Trial	0/50 (0%)	3/50 (6.00%)
MINOR STROKE/TIA	0/50 (0%)	2/50 (4%)
MAJOR STROKE	0/50 (0%)	0/50 (0%)
MYOCARDIAL INFACTION	0/50 (0%)	1/50 (2%)
Additional information:	0/50 (0%)	0/50 (0%)

Single Center Independent Investigator Initiated Study Randomized Clinical Trial. ISO 2012 Compliant.

Randomized Trial; CGuard™ demonstrates Neuroprotection vs Conventional stents

2020 PCR e-Course by Pavel Ignatenko
2021 LINC Sarv Bugurov

US Pivotal Data from the C-GUARDIANS IDE Trial

C-GUARDIANS Trial Design

Design	Prospective, multicenter, international, single-arm clinical trial comparing the primary endpoint to a performance goal derived from literature
Trial Objective	Evaluate the safety and efficacy of the CGuard Prime™ Carotid Stent System in the treatment of carotid artery stenosis in symptomatic and asymptomatic patients at high risk for CEA (25% symptomatic) undergoing carotid artery stenting (CAS)
Principal Investigators	Dr. Chris Metzger, MD — OhioHealth Riverside Methodist Hospital, Columbus, Ohio, USA; Dr. Piotr Musialek, MD, PhD — Jagiellonian University, John Paul II Hospital, Krakow, Poland
Sample Size & Population	316 subjects; 24 US and EU sites; Symptomatic with ≥ 50% stenosis or asymptomatic with ≥ 80% stenosis; ≥ 80 years of age at high risk for CEA Pre-specified 25% symptomatic
Primary Endpoint	Incidence of death (all-cause mortality), all stroke, and myocardial infarction (DSMI) through 30-days post-index procedure or Ipsilateral stroke from 31 to 365 days

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C-GUARDIANS: 30-Day Major Adverse Events (LBCT VIVA 2023)

Event rate in % (n)	ITT (N=316)	Per Protocol^
Death, Stroke or MI*	0.95% (3)	0.63% (2)
Death#	0.32% (1)	0.00% (0)
Any stroke#	0.95% (3)	0.63% (2)
Major Stroke#	0.32% (1)	0.00% (0)
Minor Stroke#	0.63% (2)	0.32% (1)
MI#	0.00% (0)	0.00% (0)
Death or any stroke*	0.95% (3)	0.63% (2)
Death or major stroke*	0.63% (2)	0.32% (1)

30-day S/D/MI

* Hierarchical: patient count (each patient first occurrence of the most serious event). # Non-hierarchical: event count (multiple events in each patient are counted individually).
^ Per Protocol Analysis excludes 1 patient (did not take dual antiplatelet therapy; had a major stroke and died).

The CEC independently adjudicated all neurological, cardiac events:
- 1 major fatal stroke on post procedural day 10 after all DAPT stopped contrary to protocol requirements.
- 1 minor stroke. (NIHSS 2, post procedure). NIHSS 1, CDU patent 30 days, NIHSS 0 at 6 and 12 months
- 1 retinal infarct in a patient presenting with amaurosis fugax, adjudicated as a minor stroke. (NIHSS 1). NIHSS 0, CDU patent 30 days

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C-GUARDIANS Trial 1-Year Primary Endpoint Results

Event*	ITT	Per Protocol**
30-day DSMI + Ipsilateral stroke between 31 and 365 days	1.95 % (6)	1.70% (5)
30-day DSMI	0.95% (3)	0.63% (2)
Ipsilateral stroke between 31 and 365 days	1.00% (3)	1.04% (3)
TLR	0.98% (3)	1.01% (3)

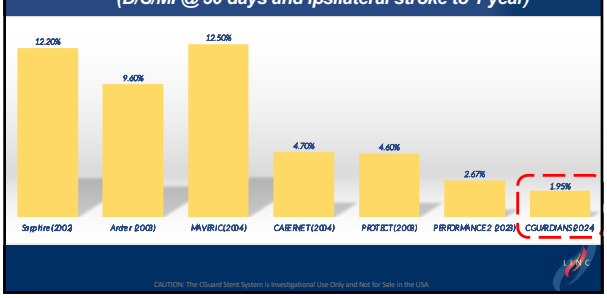
* Kaplan-Meier estimate for all 1-year endpoints
** Per Protocol Analysis excludes 15 patients with Major Protocol Deviations

LINC 2024 LBCT

The CEC independently adjudicated all neurological, cardiac events:
- *1 minor stroke (retinal) on POD 189.*
- *1 major stroke on POD 280: Prostatectomy (Antiplatelet therapy stopped).*
- *1 major stroke on POD 307: Stent patent; A Fib discovered.*

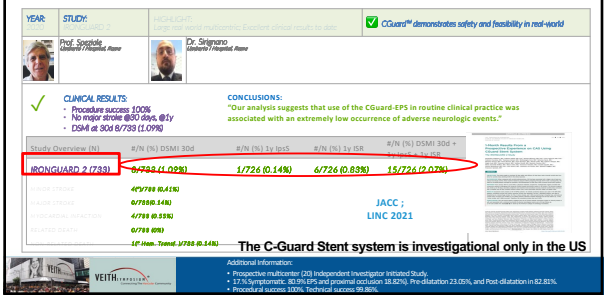
C-GUARDIANS: 30-Day DSMI in Context of CAS, TCAR Trials

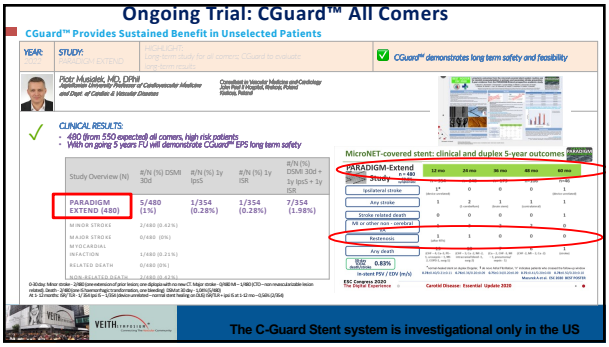
C-GUARDIANS: 1-Year Outcomes in Context
(D/S/MI @ 30 days and ipsilateral stroke to 1 year)



Longer –term EUROPEAN DATA with the C-Guard MicroNet Stent

CGuard™ Real Life Registry (733 Patients, 20 Centers)





Conclusions

- The micro-mesh stents offer theoretic advantages with excellent conformability coupled with maximized plaque coverage
- Reduction in plaque protrusion occurs during the highest risk components of CAS (stent, post dilation) AND after the CAS procedure, conferring a “neuro protective” stent effect
- The C-GUARDIANS IDE pivotal trial showed outstanding “best in class” results as good as any trial of carotid revascularization, and is consistent with extensive long term European data

Thank You for Your Attention!