



PLATFORM OF LABORATORIES FOR ADVANCES IN CARDIAC EXPERIENCE

ROMA

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di Confindustria

**Auditorium
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Hot topics in Cath Lab: malattia coronarica multivasale

MALATTIA CORONARICA MULTIVASALE E SINDROME CORONARICA ACUTA: SPAZIO ALLA STRATEGIA IBRIDA

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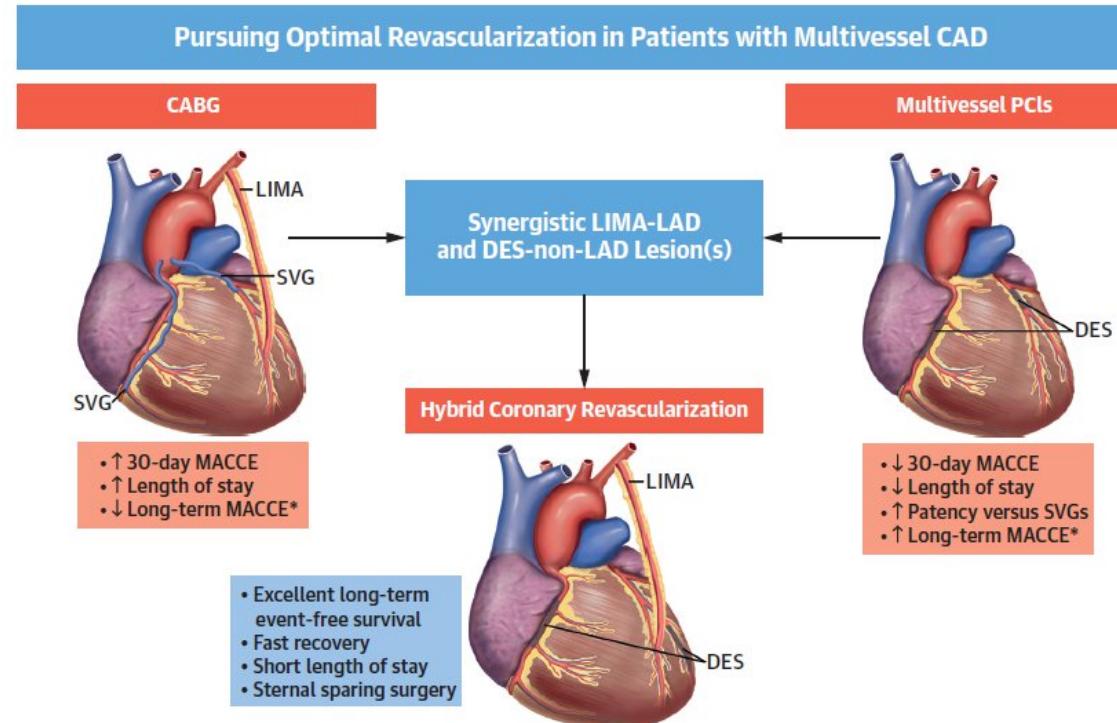


Cosa si intende per rivascolarizzazione ibrida?

- Rivascolarizzazione della coronaria destra e/o del ramo circonflesso mediante PCI
- Rivascolarizzazione del ramo IVA mediante chirurgia off-pump:
 - MIDCAB (anastomosi dell'AMIS a cuore battente attraverso toracotomia anteriore o laterale)
 - OPCAB (anastomosi dell'AMIS a cuore battente attraverso ministernotomia)
 - Approccio minitoracotomico o totalmente endoscopico con robot



Razionale della rivascolarizzazione ibrida



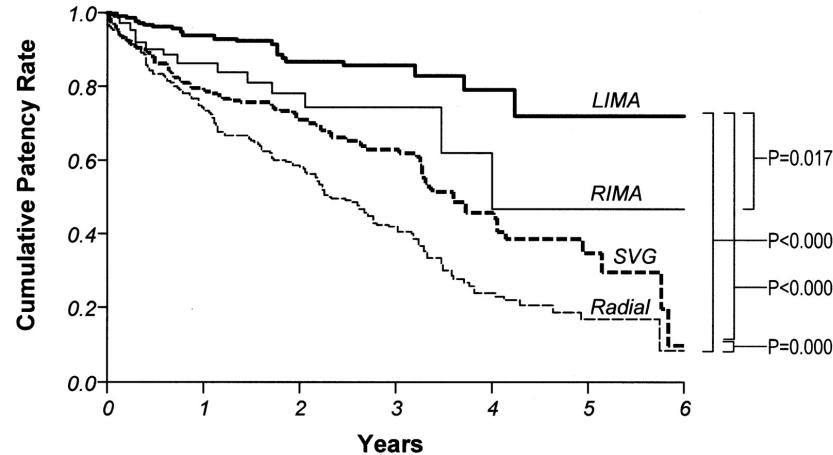


Vantaggi potenziali della rivascolarizzazione ibrida

Vantaggi	Svantaggi
Tempi di recupero più rapidi vs CABG convenzionale	Non adatta a procedure in emergenza
Riduzione di stroke, sanguinamenti, infezioni, ventilazione meccanica e ospedalizzazione vs CABG convenzionale	Tempi di recupero più lunghi rispetto a PCI
No sternotomia, manipolazione aortica, CEC	Pazienti senza malattia del TC o IVA non sono candidati
Maggior tasso di pervietà AMIS vs DES e DES vs VGS	Tecnicamente più complessa rispetto a CABG convenzionale o PCI multivasale (?)
Maggiore sopravvivenza libera da eventi vs multivessel PCI e CABG convenzionale (?)	Alti costi per logistica e device



Failure rates of CABG surgery conduits



Numbers at Risk:							
LIMA	265	146	89	38	17	3	0
RIMA	75	37	22	10	4	0	0
SVG	267	157	114	63	27	7	0
Radial	392	220	136	64	24	8	0

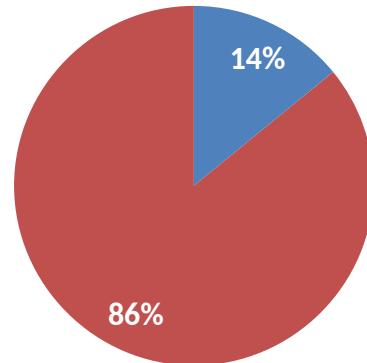
Conduit	Early graft failure at 1 year (%)	Late graft failure at ≥ 10 years
Saphenous vein graft	2-25	40-50
Radial artery	4-8	17-37
Left internal mammary artery	<5	5-12
Right internal mammary artery	<5	10-35



Tipologia di bypass coronarici nella pratica clinica

- STS Adult Cardiac Surgery Database, 2008-2018
- Patients aged \leq 50 years
- Multivessel CABG with at least 1 arterial graft
- 123263 patients included

■ Multiple arterial grafts ■ Single arterial graft



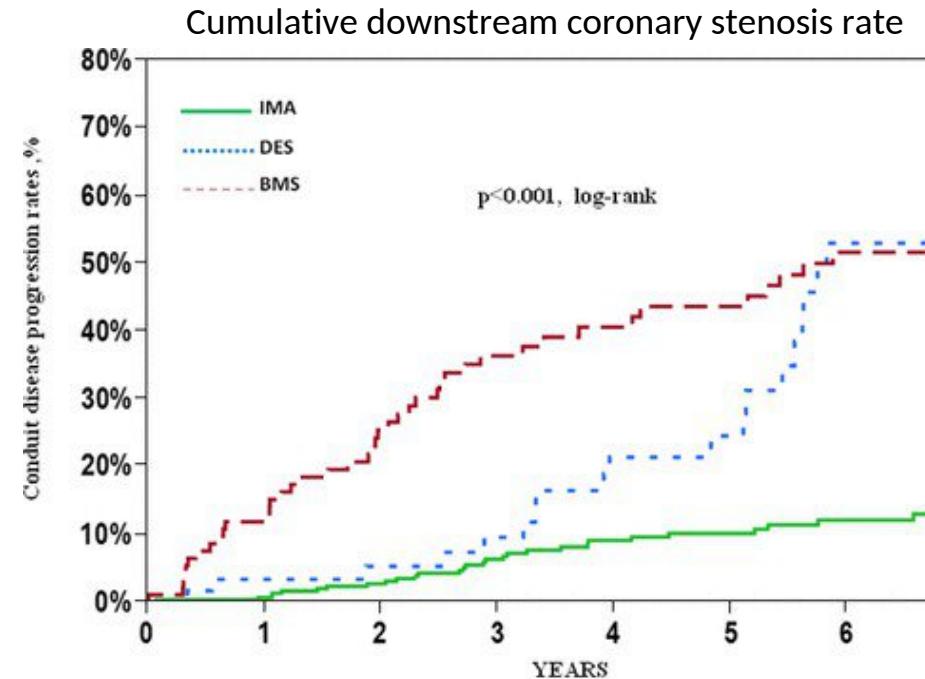
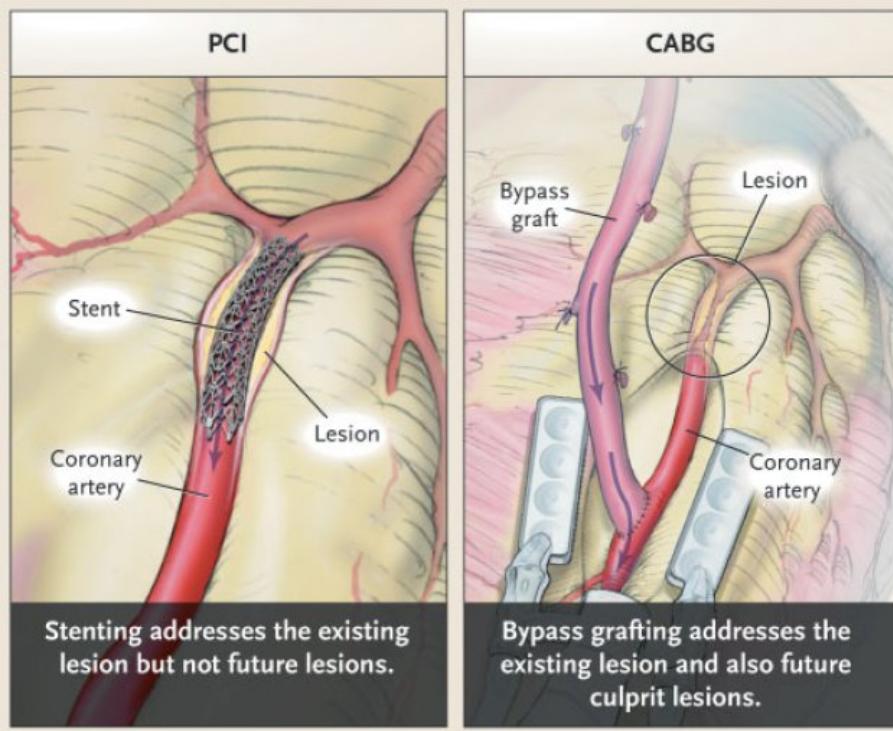
The SVG remains the most commonly used conduit worldwide for all non-LAD coronary territories (80-90% of all patients)

Gaudino et al. JACC 2020

Caliskan et al. Nat Rev Cardiol 2020

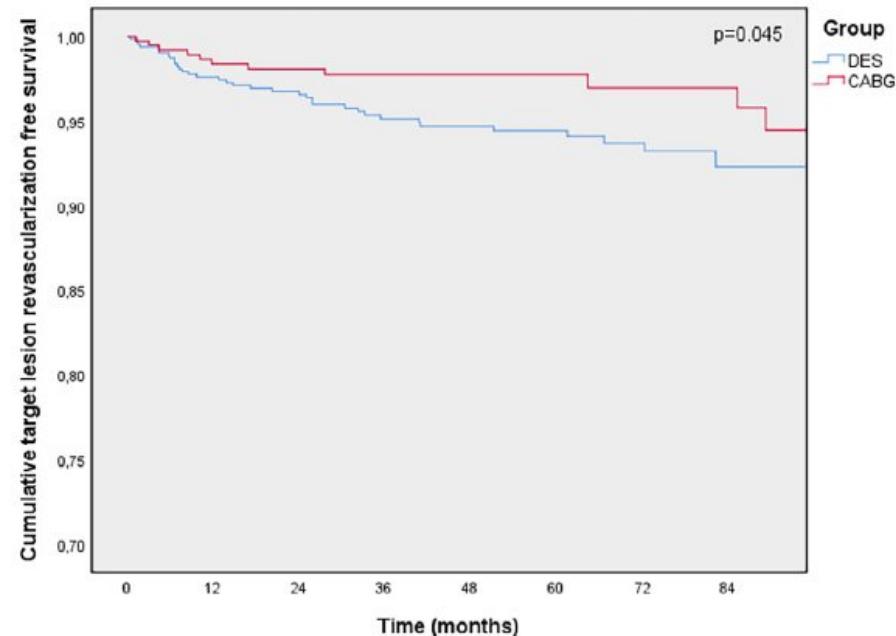
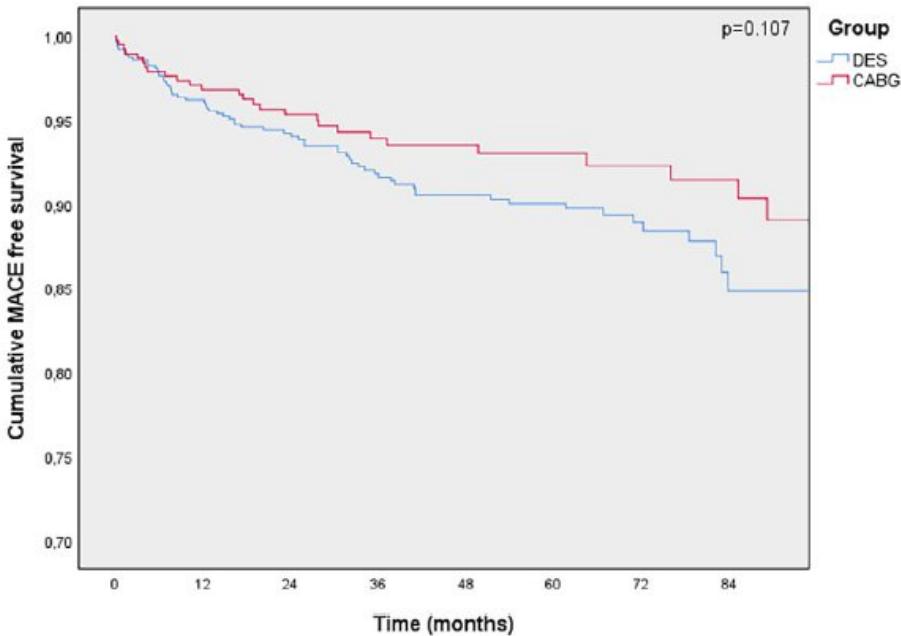


LIMA: drug-eluting conduit?





LIMA vs 2° gen. DES in isolated proximal LAD stenosis



Matsoukis et al. Catheter Cardiovasc Interv 2020



Timing della rivascolarizzazione ibrida

2-Step HCR		
1-Step HCR	Standard HCR	Reverse HCR
MIDCAB followed by PCI as 1 procedure	MIDCAB first followed by PCI on another day	PCI first followed by MIDCAB on another day
Complete revascularization achieved in a single procedure; CABG of non-LAD lesions can be performed in PCI that is unsuccessful or complicated	Prior LIMA-LAD graft can be angiographically assessed and treated if required during the second stage of the procedure	Most common approach for patients presenting with ACS of non-LAD lesions, or if non-LAD lesion severity is much greater than LAD lesion severity
Allows immediate assessment of the LIMA-LAD anastomosis	Allows use of dual antiplatelet therapy without increasing the risk of surgical-related bleeding	If unsuccessful PCI, CABG can be performed during the second stage of the procedure
Short hospital stay and possibly better patient satisfaction	Less myocardium at ischemic risk during the PCI	Complex antiplatelet therapy management; potentially higher risk of stent thrombosis and/or bleeding
Requires a hybrid room	During the waiting period, the patient may require urgent revascularization of the non-LAD lesions	Unable to angiographically assess the LIMA-LAD graft
Potential increase in bleeding, AKI and stent thrombosis		



ACC/AHA/SCAI CLINICAL PRACTICE GUIDELINE

2021 ACC/AHA/SCAI Guideline for Coronary Artery Revascularization: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines

- Similar rates of death/MI/stroke/revasc. as conventional CABG in small RCTs and propensity-matched observational studies
- Role as an alternative to multivessel PCI remains unclear



ESC

European Society
of Cardiology

European Heart Journal (2019) **40**, 87–165
doi:10.1093/eurheartj/ehy394

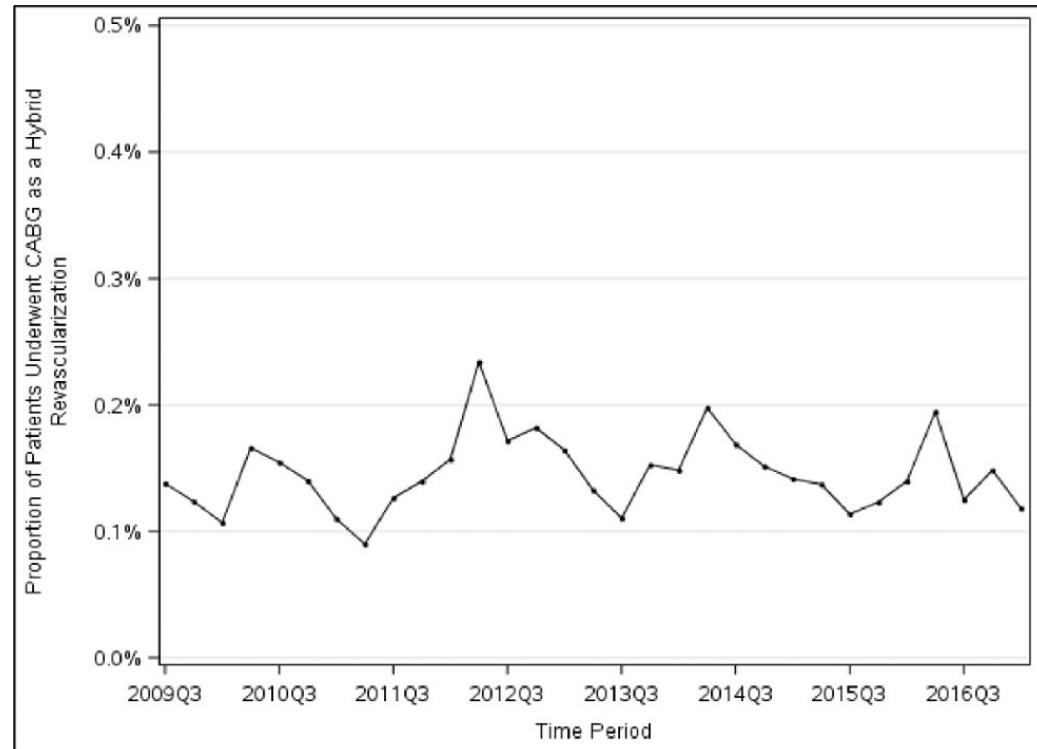
ESC/EACTS GUIDELINES

2018 ESC/EACTS Guidelines on myocardial revascularization

Hybrid procedures, defined as consecutive or combined surgical and percutaneous revascularization, may be considered in specific patient subsets at experienced centres (class IIB LOE B)



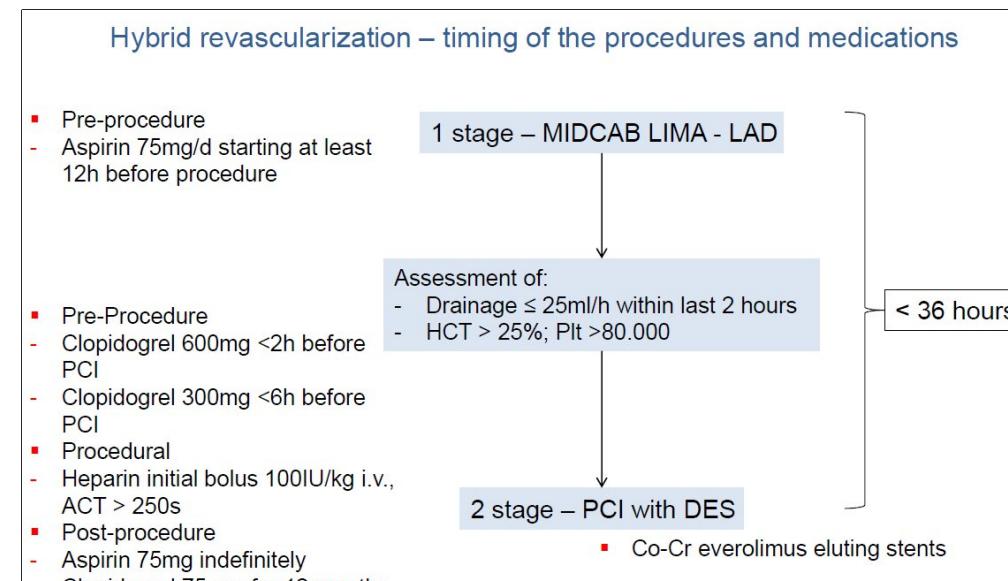
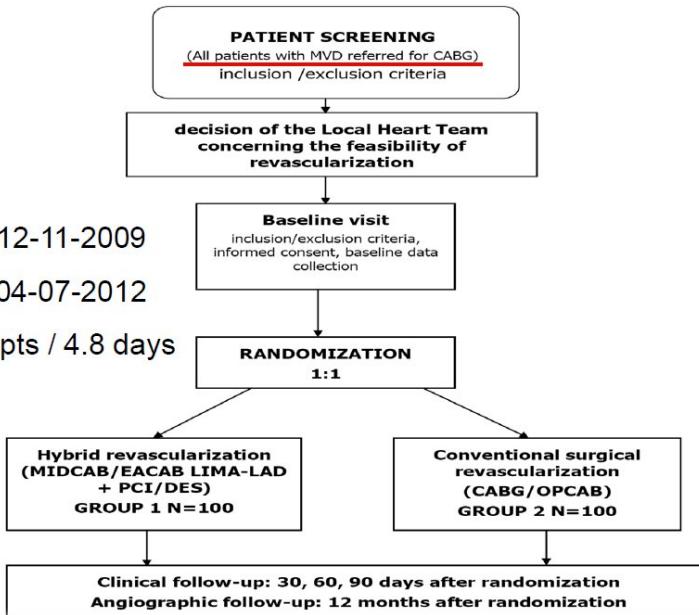
Prevalenza HCR nella pratica clinica





POL-MIDES

STUDY DESIGN





POL-MIDES

RESULTS

PRIMARY ENDPOINT - FEASIBILITY

- % of patients with completed hybrid revascularization procedure

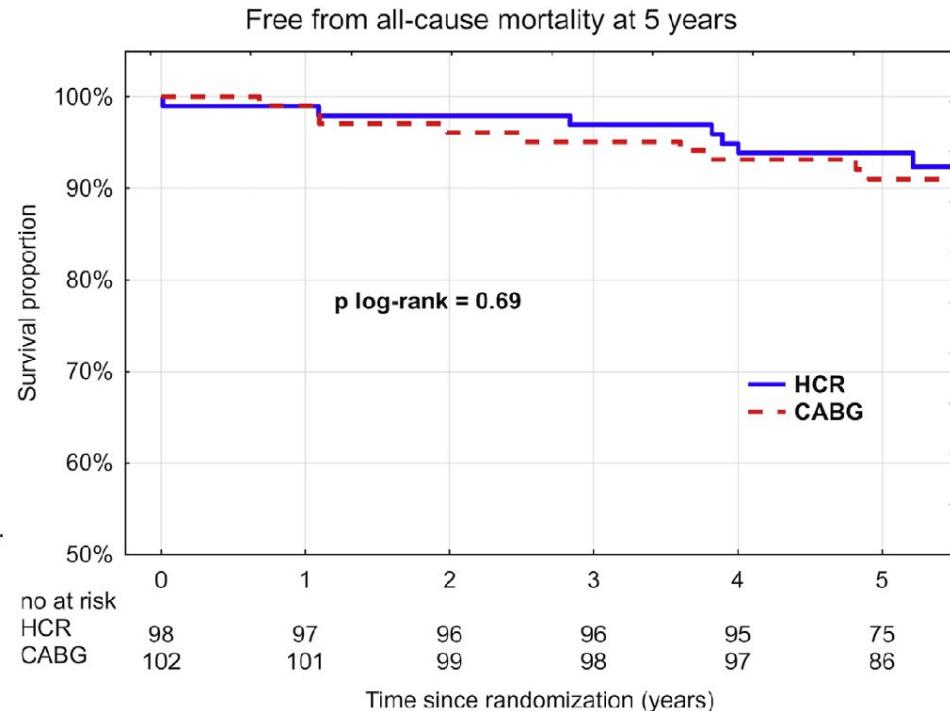
93.9%

- % of conversion to standard CABG

6.1%

Reasons:

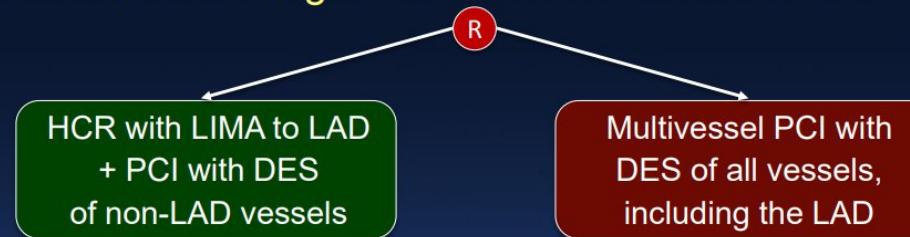
- LAD not visible through the minithoracothomy incision – 2 pts.
- Hemodynamically unstable when preparing LAD for grafting. Recurrent VTs. Emergency conversion to full sternotomy – 1 pts.
- LIMA damaged during endoscopic harvesting – 1 pts.
- Patient did not tolerate single lung ventilation – 1 pts.
- Surgeons decision 'on table' – 1 pts.





Randomized Trial of Hybrid Coronary Revascularization vs. PCI

2,354 pts at up to 100 sites with MVD involving the LAD distribution eligible for both HCR and PCI with DES



Follow-up: 30 days, 1 year and annually through 5 years

Primary endpoint

5-year MACCE (death, MI, stroke, repeat revascularization)

Powered to detect superiority of HCR over PCI

Principal Investigators: John D. Puskas and Gregg W. Stone

Clinical and Data Coordinating Center: InCHOIR, Mt Sinai, NY, NY



Courtesy of Dr. Emiliano Navarra



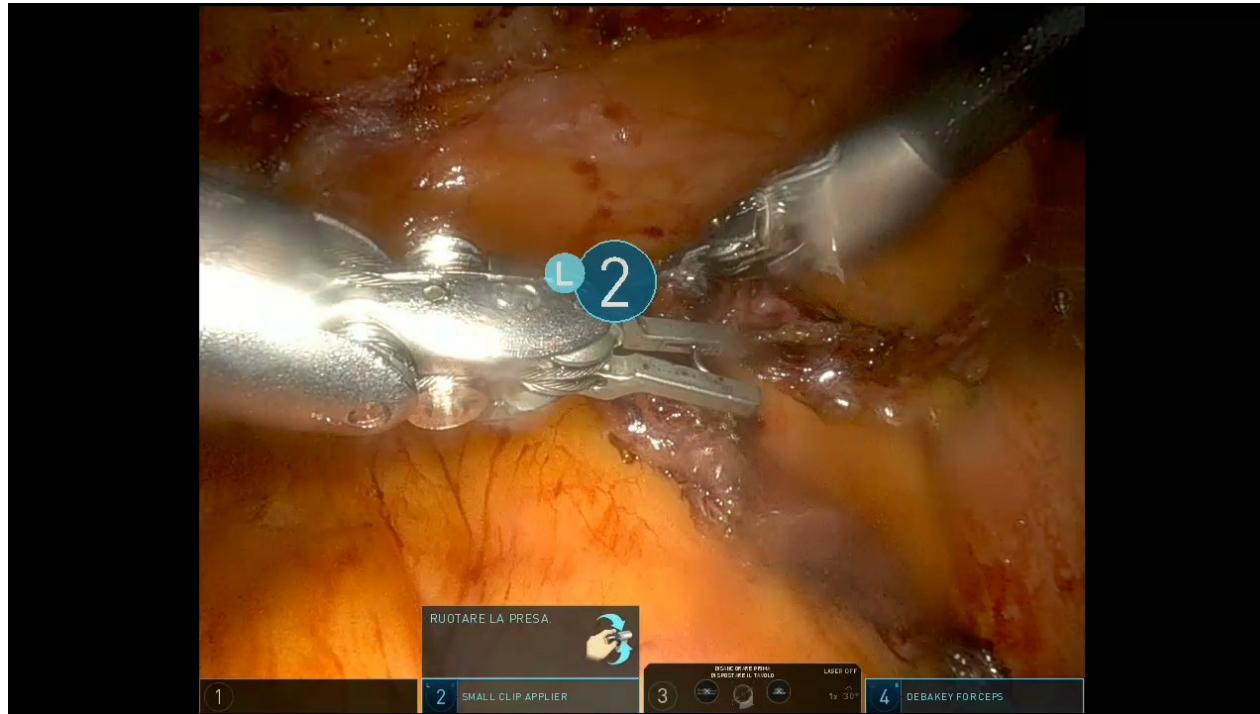


Courtesy of Dr. Emiliano Navarra



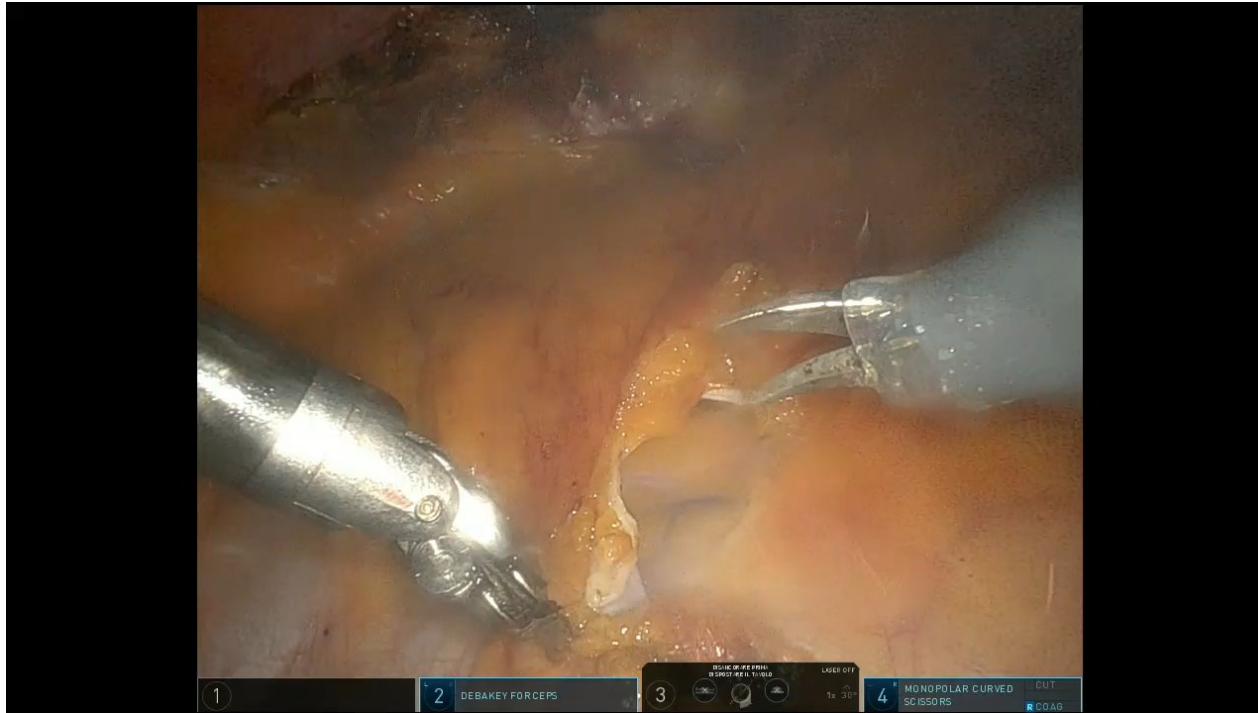


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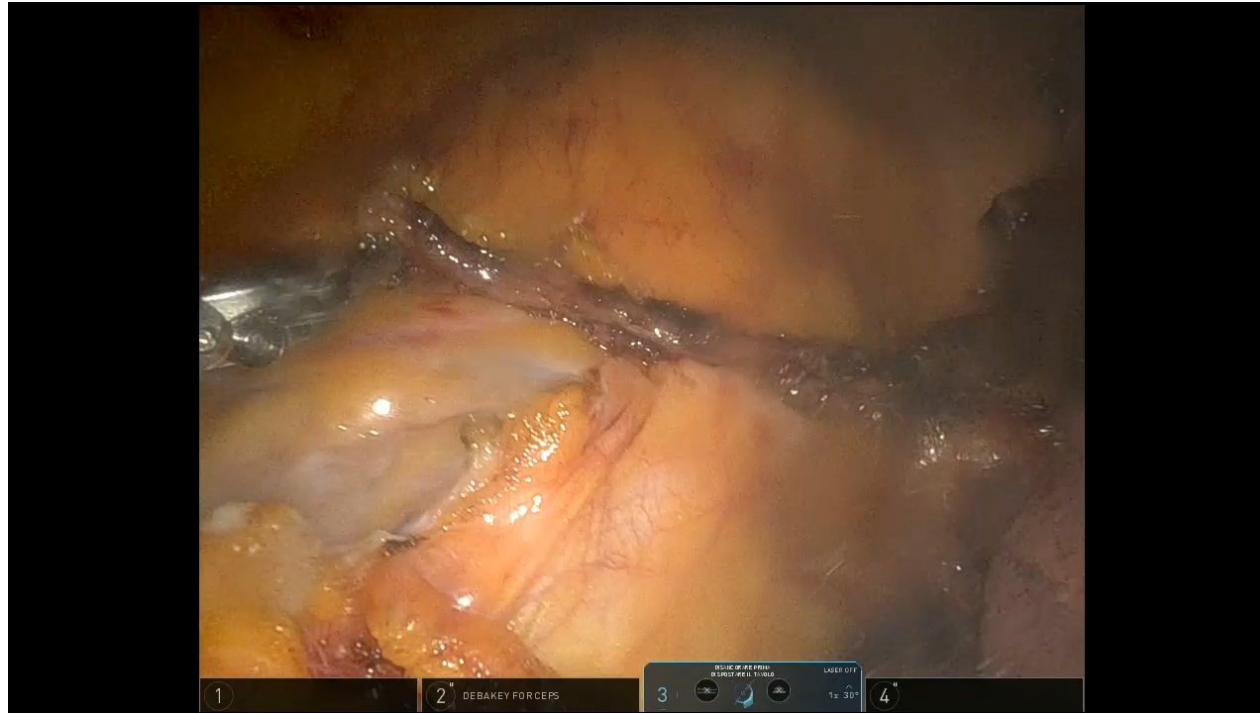


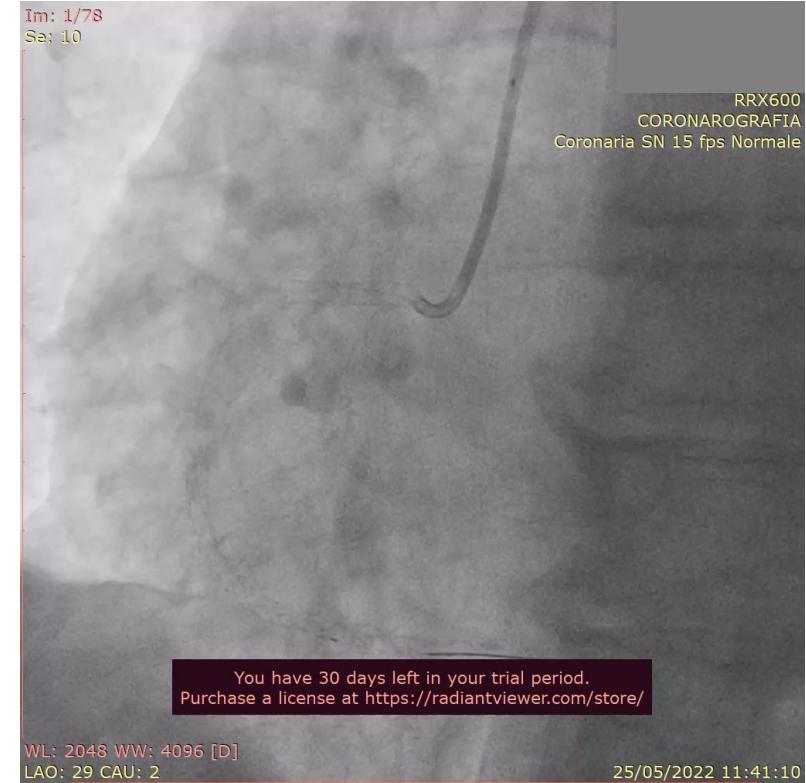
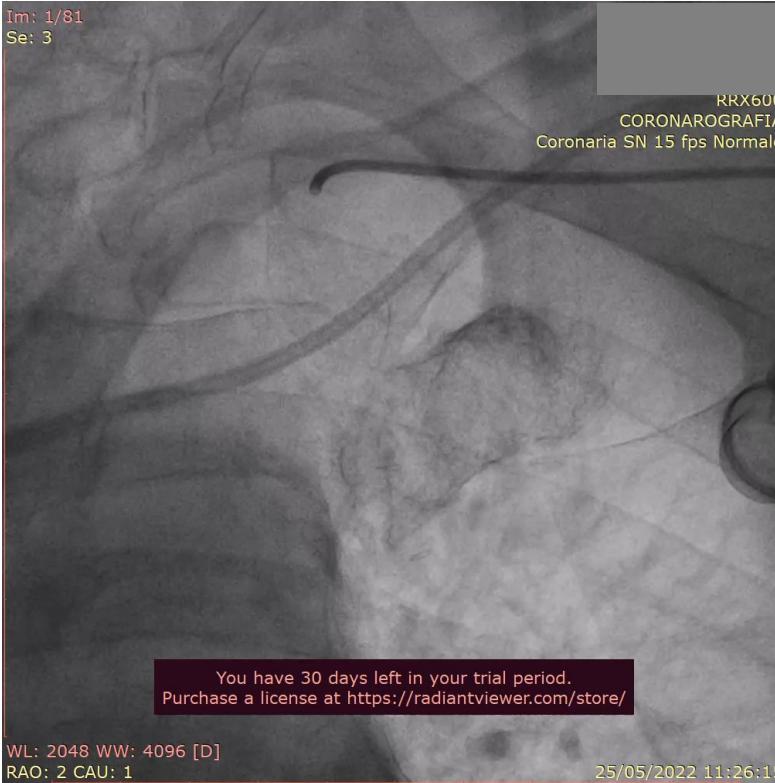
Courtesy of Dr. Emiliano Navarra





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Conclusioni

- HCR: possibile incremento con la diffusione delle tecniche mini-invasive
- Ruolo ancora da chiarire sia rispetto alla chirurgia che alla PCI multivasale, soprattutto nel setting SCA
- Probabile beneficio in pazienti con anatomia complessa di TC-IVA
- «Evidence» limitata
- Analisi costo-efficacia?