

**EVOLUTION OF EVAR AS THE
TREATMENT OF CHOICE FOR
RUPTURED AAAs**

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LINC - 2021

LEIPZIG – JANUARY 25 - 29, 2021

Disclosure

Speaker name:

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I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

- I do not have any potential conflict of interest



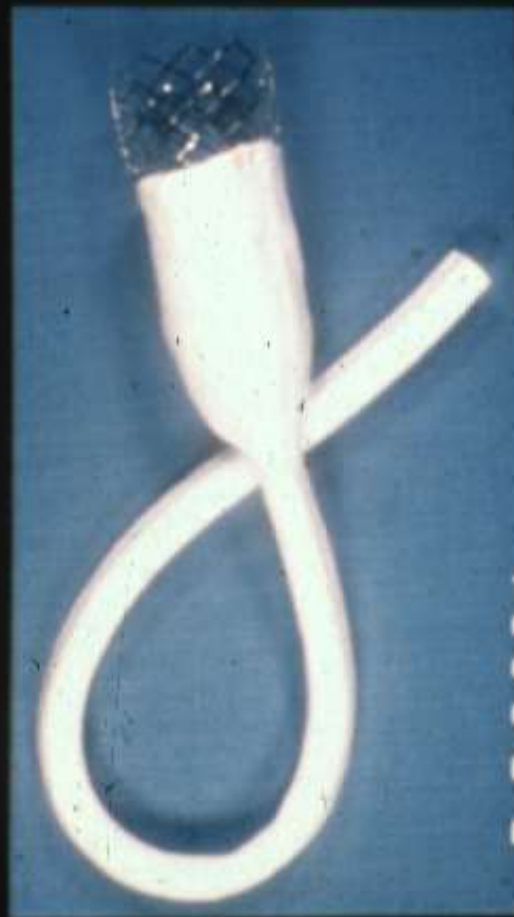
IN APRIL 1994 1994ININ

**BECAUSE WE HAD A SURGEON
MADE AOR ENDOGRAFT STERILE
& AVAILABLE FOR EMERGENCIES**

**WE DID THE FIRST EVAR FOR
A RUPTURED AAA IN WORLD**

Endovascular Repair of Ruptured Aortoiliac Aneurysms

Montefiore Endovascular Grafts (MEG)



MEGS



Completion

**April 1994
FIRST EVAR
FOR RAAA
IN WORLD**

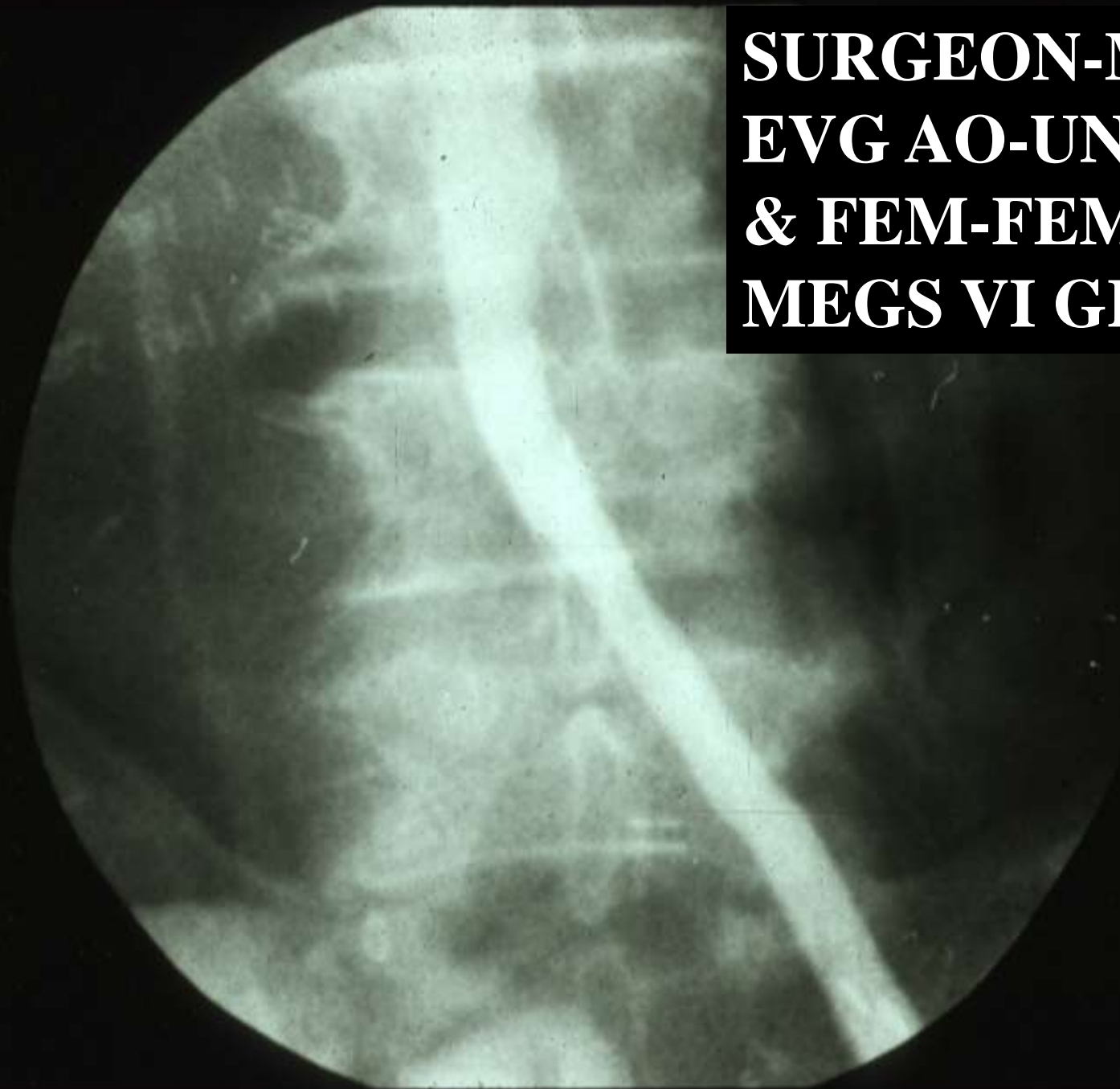
**Inoperable Patient
Hostile Abd
EF 16%
BP 60 mmHg
Severe Pain**

R

kV 120
mA 300
Large

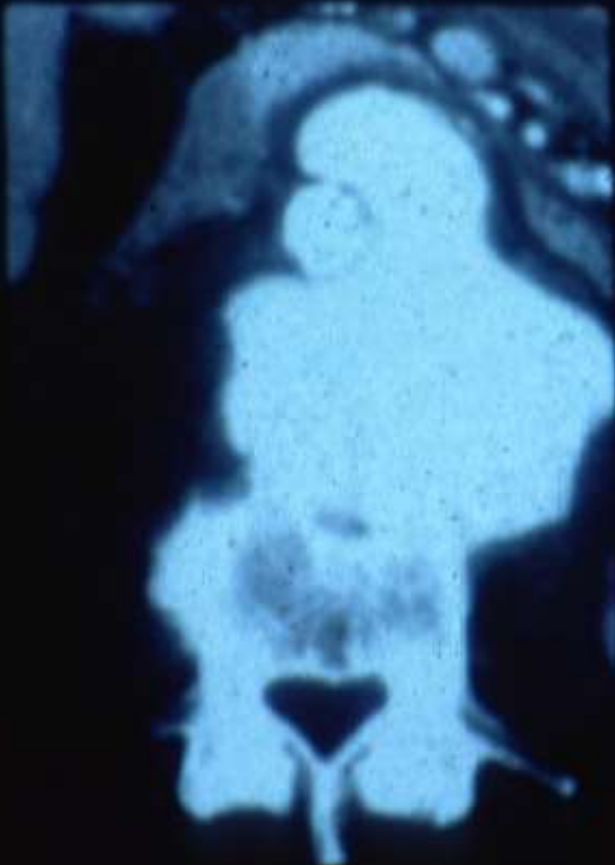
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**SURGEON-MADE
EVG AO-UNIFEM
& FEM-FEM
MEGS VI GRAFT**

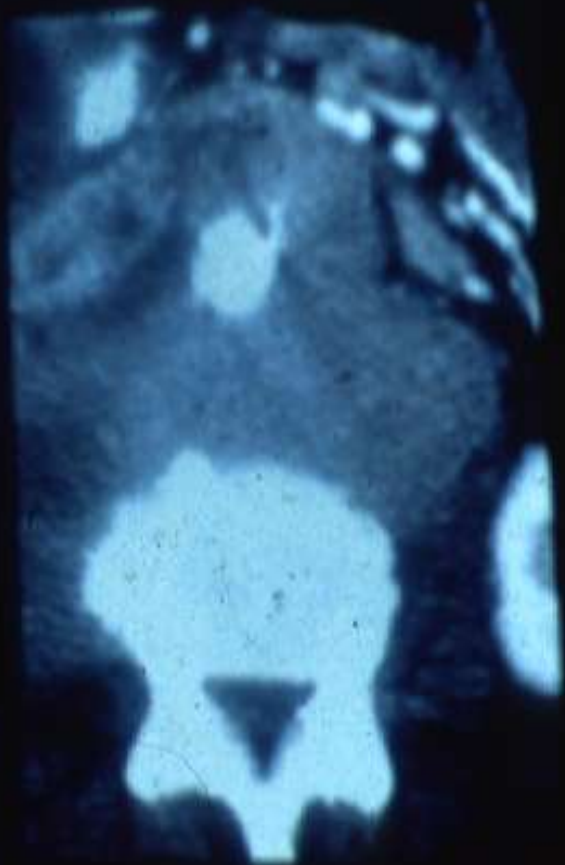


FIRST EVAR FOR RAAA APRIL 1994

PREOP



POSTOP



**SURVIVED
>3 YEARS**

IN 1994 & 1995

WE TREATED

**12 Patients With CT Scan Rupture
And **Prohibitive Risk** For Open
Operation**

6 AAAs 6 AIAs

9 WERE HYPOTENSIVE

**OUR RESULTS OF EVAR
TREATMENT OF RUPTURED AAAs
AND AIAs In 1994 & 95**

12 Patients Treated

12 Aneurysms Excluded

2 Postoperative Deaths

17% Mortality

WE LEARNED

- Requirement For Rapid Control
Which Mandated Laparotomy
JUST NOT SO!

Solutions: **Hypotensive Hemostasis**

EVAR INTUITIVELY BETTER

- **MINIMIZES DISSECTION**
- **CUTS BLOOD LOSS**
- **AVOIDS HYPOTHERMIA**
- **AVOIDS VESSEL INJURY**
- **AVOIDS COAGULOPATHY**
- **REQUIRES DIF SKILLS & EQUIP**

OUR HYPOTHESIS IN 1995

**EVGs And Other Image-Guided
Endovascular Techniques
Should Be Employed
For All Ruptured AAAs
Even In Good Risk Patients**

FROM 1994 -2000
ALMOST NO ONE ELSE
IN THE WORLD
AGREED WITH US!
“OPEN REPAIR WAS
BEST Rx FOR RAAAs”

OUR RESULTS OF ENDOVASCULAR TREATMENT OF RUPTURED AAAs

57 Patients Treated (Endo If Poss)

45 With EVGs (25 SMGs; 20 IMGs)

12 Open Operations (21%)

7 Deaths – 12% Mortality

BY 2000-2005
OUR AND OTHERS'
RESULTS SUGGEST
THAT EVAR IMPROVES
Rx OUTCOMES
FOR RAAAs

HOWEVER
SOME GROUPS
HAVE HAD POOR
RESULTS WITH
EVAR FOR RAAAs

4 CONTROLLED STUDIES SHOWED EVAR NO BETTER THAN OPEN REPAIR

- **PEPPELENBOSCH, BUTH ET AL**
J VASC SURG 43:1111, 2006
- **HINCHLIFFE, ET AL**
EUR J VASC ENDOV SURG
32:506, 2006
- **CHO – U PITTSBURG – JVS 2012**
- **GUNNARSSON, ET AL. SWEDISH**
REGISTRY DATA – EJVES 2015

IN 2009

EVAR FOR RUPT AAAs

- **REMAINED CONTROVERSIAL**

- MANY SAID WE

NEED A RCT OF

EVAR vs OR

**COLLECTED WORLD EXPER
WITH ENDOVASCULAR Rx
(EVAR) FOR RUPT AAA_s**

**FJ VEITH, M LACHAT, M MALINA
E VERHOEVEN, G COPPI, T LARZON
M MEHTA & RAAA INVESTIGATORS**

**ANN SURG -- NOV 2009;
250 : 818-824**

KEY RESULTS

- FROM 13 CTRS – EVAR ON ALL ANAT POSS RAAA PTS
680 RAAA PTS Rxs BY EVAR
763 RAAA PTS RxD BY OR

30-DAY MORTALITY

EVAR

OR

19.7% VS 36.3% (P<.0001)

**WHY CAN SOME GROUPS
LIKE THE 13 CENTERS
GET GOOD RESULTS &
OTHERS NOT ???**

**WE BELIEVE
TREATMENT STRATEGIES
ADJUNCTS & TECHNIQUES**

**MAKE A DIFFERENCE AND
MAY ACCOUNT FOR BETTER
RESULTS**

SOME KEY ELEMENTS

**VEITH, ET AL
ANN SURG 2009**

TOP TIP

RESTRICT

RESUSCITATION

“HYPOTENSIVE

HEMOSTASIS”

IF MOVING & TALKING - OK

IF BP 50-70 mm Hg, IT'S OK

TOP TIP

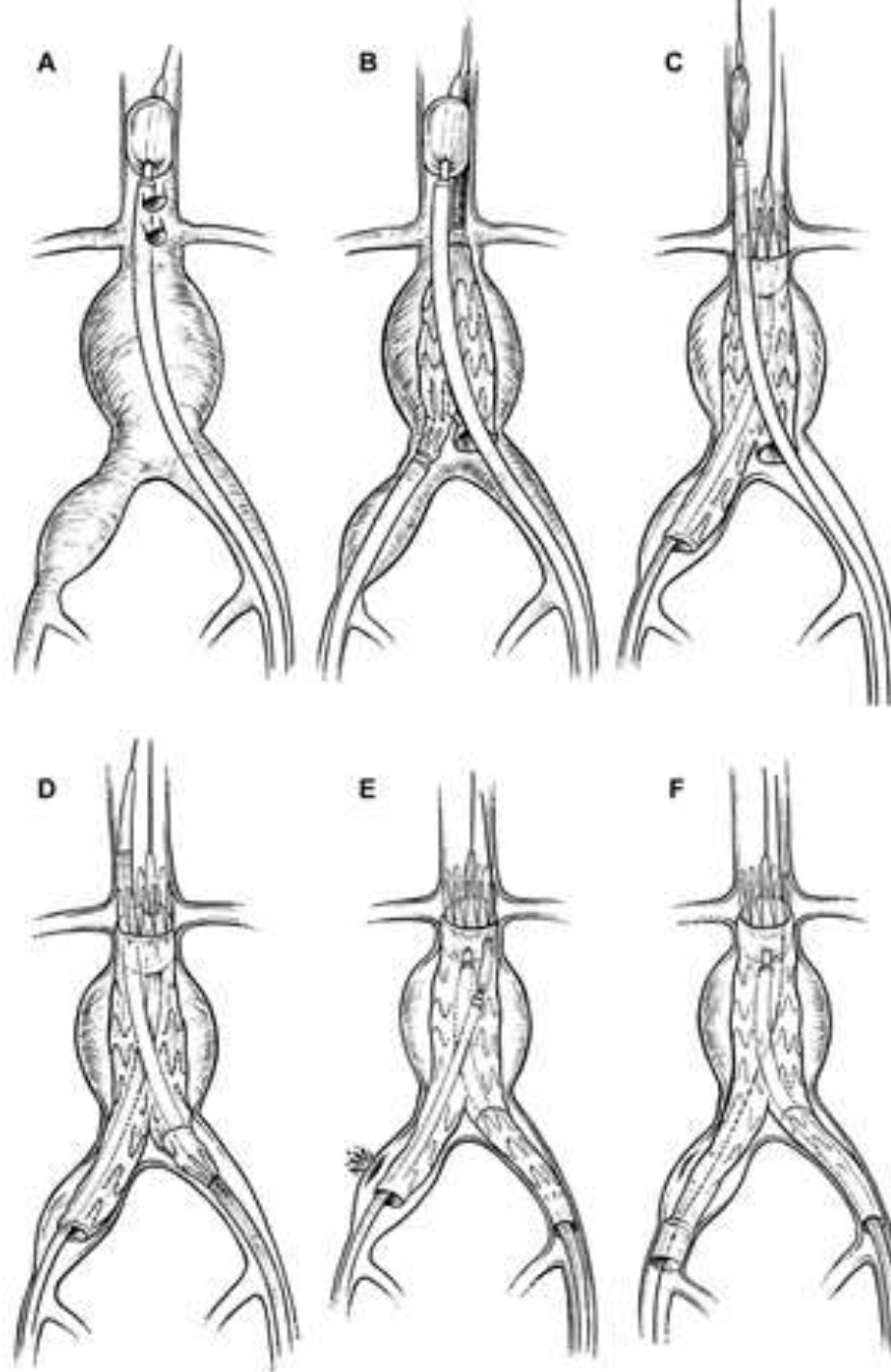
**WHEN HYPOTENSIVE
HEMOSTASIS DOES
NOT WORK & NEED
SUPRACELIAC BALLOON
TECHNIQUE IS KEY**

MALINA, VEITH, IVANCEV JEVT 2005

VEITH ET AL, VIDEO 2010 SVS

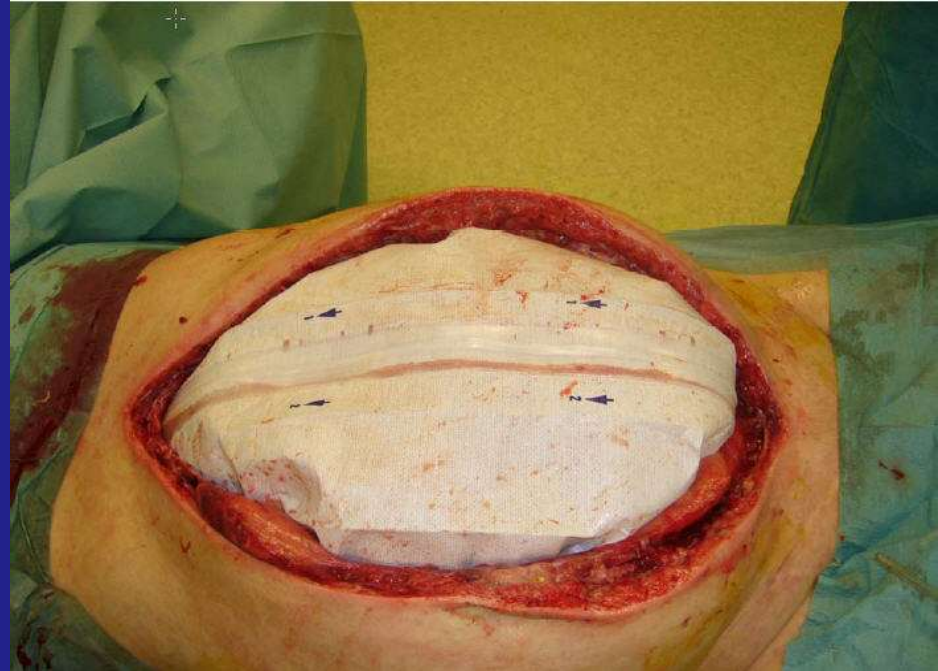
BERLAND, VEITH, CAYNE JVS JAN 2013: 272-5

**BERLAND
VEITH
CAYNE
JVS - JAN
2013 P 272**



TOP TIP

- WATCH FOR & Rx **ABD COMPARTMENT SYNDROME**
 - DECOMPRESS (OAT) PRN
 - VAC DRESSING, ETC
 - LACHAT, MAYER, VEITH
- JVS - JULY 2009



**COURTESY
DIETER MAYER
MARIO LACHAT**

**DESPITE ALL THESE
POINTS & OUR FIRM
BELIEF THAT
EVAR IS THE BEST Rx
FOR RUPTURED AAAs**

EVAR FOR RUPT AAAs

- REMAINED CONTROVERSIAL
FROM 2005 - 2016
 - MANY STILL SAYING
**NEED RCT OF
EVAR vs OR**
 - 3 NOW COMPLETED !!!

THREE RECENTLY REPORTED RANDOMIZED CONTROLLED TRIALS

ECAR - FRENCH



AJAX – DUTCH



****IMPROVE - UK**



**ALL 3 RCTs CLAIMED NO
DIFFERENCE IN 30-DAY MORT
BETW EVAR & OPEN REPAIR
HOWEVER - SADLY
THAT CONCLUSION OF ALL
3 RCTS IS FLAWED,
MISLEADING & WRONG!!!**

**FLAWS AND ERRORS
IN THE 3 RCTs MADE
THEM MISLEADING &
WRONG !!!**

**VEITH & ROCKMAN:
RECENT RCTs MISLEADING
VASCULAR 23: 217-219, 2015**

MOST RECENT RESULTS FROM IMPROVE RCT

- FINALLY ALSO
CONFIRM EVAR SUPERIORITY**
- BETTER LONG TERM
SURVIVAL WITH EVAR**
 - BETTER SHORT & LONG
SURVIVAL IN WOMEN**

CONCLUSION – Re RAAAs & EVAR TREATMENT

THE LOW MORTALITY (~ 20%) &
MANY **INOPERABLE CASES**
TREATED SUCCESSFULLY SHOW
EVAR IS A BETTER WAY TO
TREAT RUPTURED AAAs IN
ANATOMICALLY SUITED PTS

CONCLUSION (CONTD)

IF THE SKILLS & EQUIPMENT
ARE AVAILABLE & ANATOMY
IS SUITABLE, EVAR SHOULD
BE THE **TREATMENT OF
CHOICE FOR RUPTURED
AAAs** IN 2021 & BEYOND

A 2ND CONCLUSION

**RCTs – LEVEL 1 EVIDENCE
ARE NOT ALWAYS
THE INFALLIBLE
HOLY GRAIL THEY ARE
THOUGHT TO BE**

CONCLUSION III

AS WITH EVERYTHING
ELSE IN THIS WORLD

- HOW YOU DO EVAR FOR
RAAAs MATTERS -
- INCLUDING STRATEGIES &
TECHNICAL TIPS WE HAVE
ADVOCATED (ANN SURG 2009)

**THANKS FOR
YOUR ATTENTION**