ESVS 2017

UPDATE

31st ANNUAL MEETING LYON, FRANCE

esvs Lyon 2017

ESVS 2017

- 31st meeting
- Multiple parallel sessions
- Symposia, scientific sessions, invited lectures, academic workshops, industry sessions
- **1450 Participants, 35 Industries, 2 Honorary Lectures, 14 Symposia, 7Scientific Sessions, 5 Nurses Sessions, 106 Presented Posters , 36 Workshops, 7 Seminars**

Carotid Artery Guidelines 2017

- Updated evidence stroke prevention
- Atherosclerotic VA disease
- Screening in asymptomatic disease and carotid intervention in dementia
- Timing of intervention – rapid and following thrombolysis
- Intraoperative techniques
- Complication management
- Concurrent carotid/cardiac disease
- Asymptomatic carotid disease in major non-cardiac surgery
- Occlusive disease proximal CCA and brachiocephalic

Carotid guidelines - sample

- Dementia association with ACS – 9/10 studies
  - Similar risk factors
  - Mechanism - TCD, silent infarcts, hypoperfusion, marker
  - Lack of clear evidence of beneficial effect - CREST 2 incl serial cognitive fxn testing

- BMT
  - Clopidogrel agent of choice
  - Start antiplts early
  - CHANCE high risk stroke - early DAPT better than aspirin alone

- Timing
  - Leicester study– higher risk 30-d death/CVA in first 48 hrs (2.4%)
  - Australia 4.8%<48 hrs, 1.8 % 3-7 days
  - After lysis – varying recommendations, hold heparin/antiplatelets
    - Early recovery, infarction <1/3 MCA, recanalisation, no evidence oedema/blood
    - c/I –persistent deficit, high risk, haemorrhage previous neck surgery

Carotid guidelines - sample

- Restenosis post CEA– adopt same treatment criteria
- CABG –
  - 50-100% 7% risk
  - 80% 9 % risk
- Recent review – risk stroke in asymptomatic CAS <2% (all stenosis) and 6.5% bilateral ACS
- One pooled study 95% of 476 post CABG strokes could not be attributed to CAS

Carotid guidelines - sample

- Surgery recommendations
  - Checklist
  - Non synchronous
  - longitudinal vs transverse,
  - no evidence sinus block
  - protamine – less neck explorations, no diff stroke (SR)
  - shunting – no evidence, no consensus selective,
  - Eversion CEA –
    - some review evidence outcomes better
    - COCHRANE – no difference peri op and 30d outcomes but 2 fold reduction in late restenosis,
    - when compared to patched CEA no diff
  - No evidence drains
  - Post op – period in recovery ward - up to 40% require treatment HTN, use one dose only

Carotid session

- Asymptomatic carotid disease
  - Stroke risk asymptomatic carotid disease 2%, less with statins
  - Intervention- need long term data, stroke risk 1-2%
  - New studies –long F/U, large numbers, intervention/none
  - ACST-2, SPACE 2….
  - Risk stratification- plaque, TCD, MRI, PET
- Antiplatelet therapy in carotid disease
  - Platelets activated CVD
  - BMT – aspirin or clopidogrel +dypyrimadole
  - No indication long-term DAPT (unless cardiac risk)
  - Future – measure platelet function (HTPR)
- CAS guidelines
  - Increased compared to ESVS 2013

Clinical Trial Updates

- OVER trial long term results
  - Patients recruited 2002-2011
  - Late improvement EVAR
  - Rupture post repair rare but higher EV (poor f/u)

- LAMA
  - RCT EVLT vs MOCA
  - Success 87-92%
  - Reduced Procedural pain – no difference after phlebectomies
  - Qol, cosmesis, return

Clinical Trial Updates

- VIVA screening trial
  - Denmark
  - Randomly assigned 50,156 Danish men aged 65 to 74 years to receive screening for PAD, AAA and hypertension or to receive no screening
  - Outcome – reduction in all cause mortality
  - At median follow-up of 4.4 years, 10.2% of those in the screening group and 10.8% of those in the control group had died (HR = 0.93; 95% CI, 0.88-0.98).
  - Absolute risk reduction of 0.006, number needed to invite of 169 to prevent one death.

Clinical trial updates

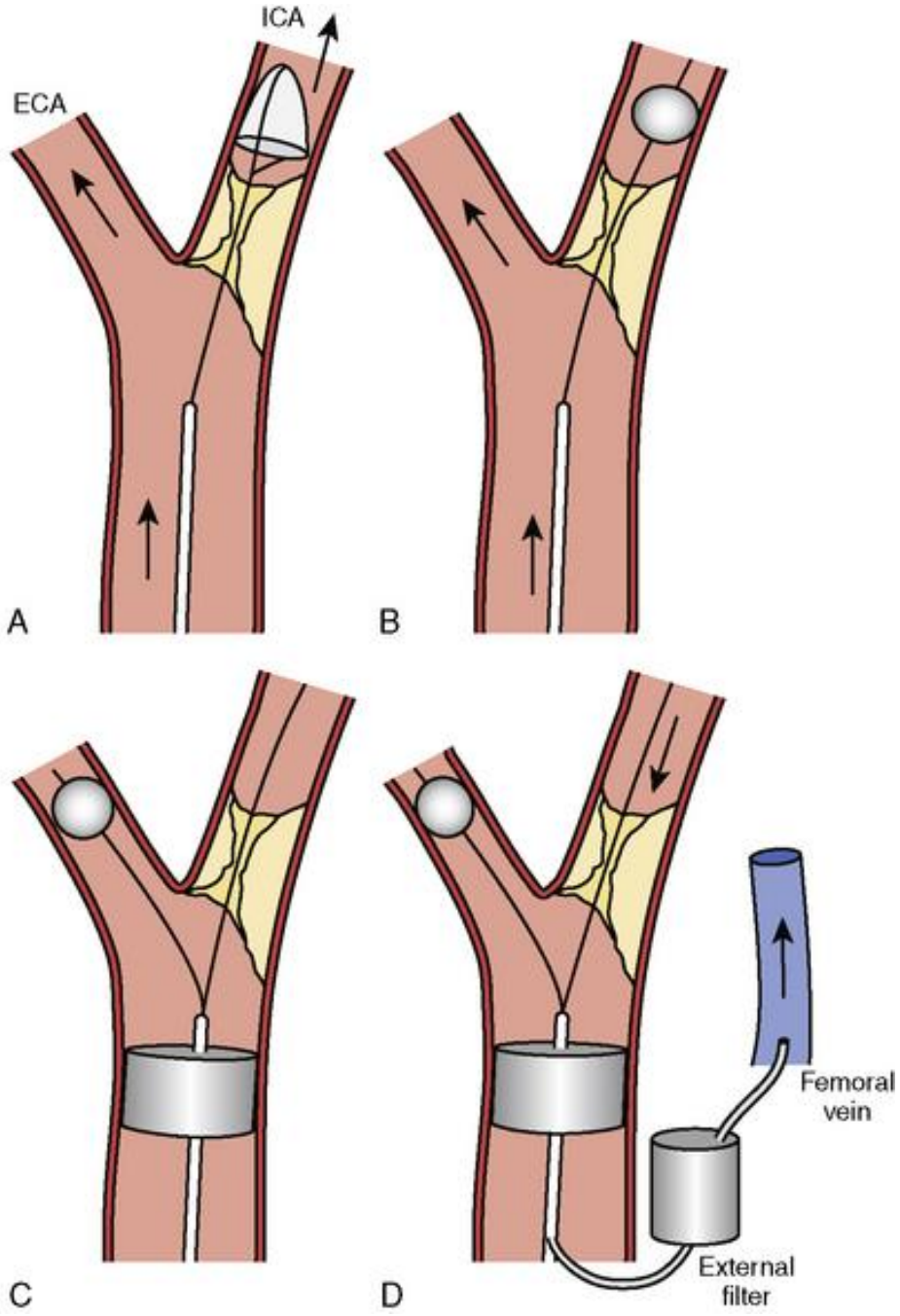
- Euclid –natural hx and outcomes CLI
  - In PAD is ticagrelor superior to clopidogrel for prevention of cardiovascular death, MI, or ischemic stroke?
  - 13,885 patients
  - No difference primary outcome – 10.6% vs 10.8%
  - Possible benefit CAD

- ATTRACT
  - RCT lysis DVT
  - No difference primary endpoint
  - Severe PTS reduced

Clinical Trial Updates

- TIC AAA
  - Effect of ADP inhibition
  - 144 patients randomised
  - No difference volume or diameter AAA
  - More bleeding complications

- ACTS-2
  - Anticipated completion 2626
  - New stents, flow reversal, MOMA
  - Good BMT at trial entry
  - 30-day CVA 1% both groups



Clinical Trial Updates

- BEST- CLI
- Prospective, multicentre, open label, randomised
  - Endo vs bypass (any conduit)
  - 2 cohorts – those with/without GSV
  - Aim to recruit 2100
  - Outcomes/QoL/costs

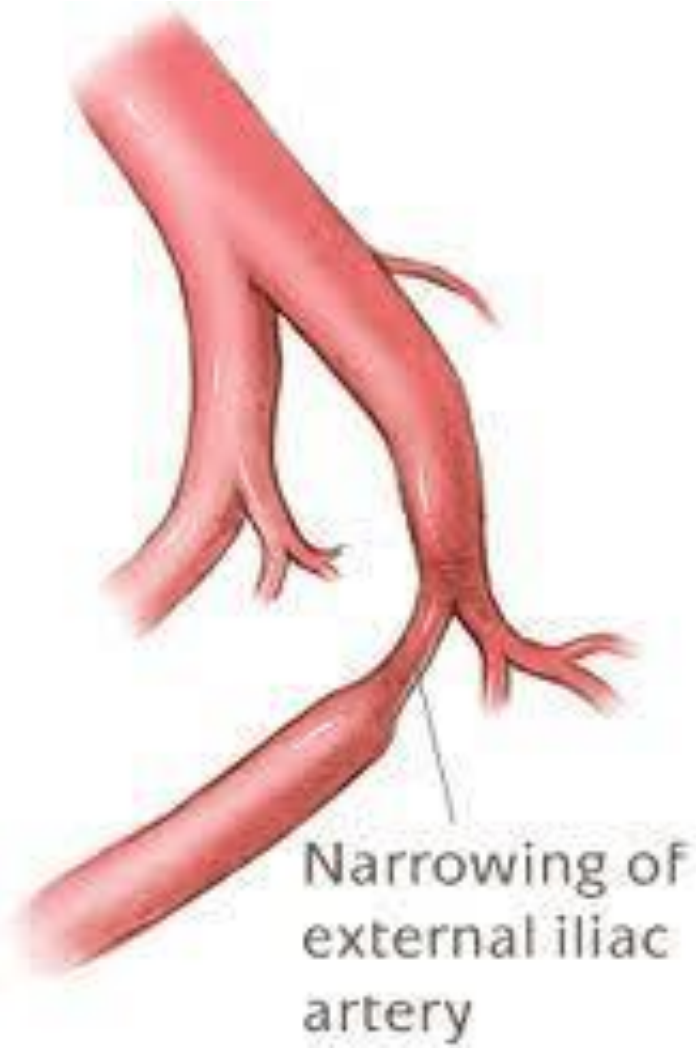
Clinical Trial Updates

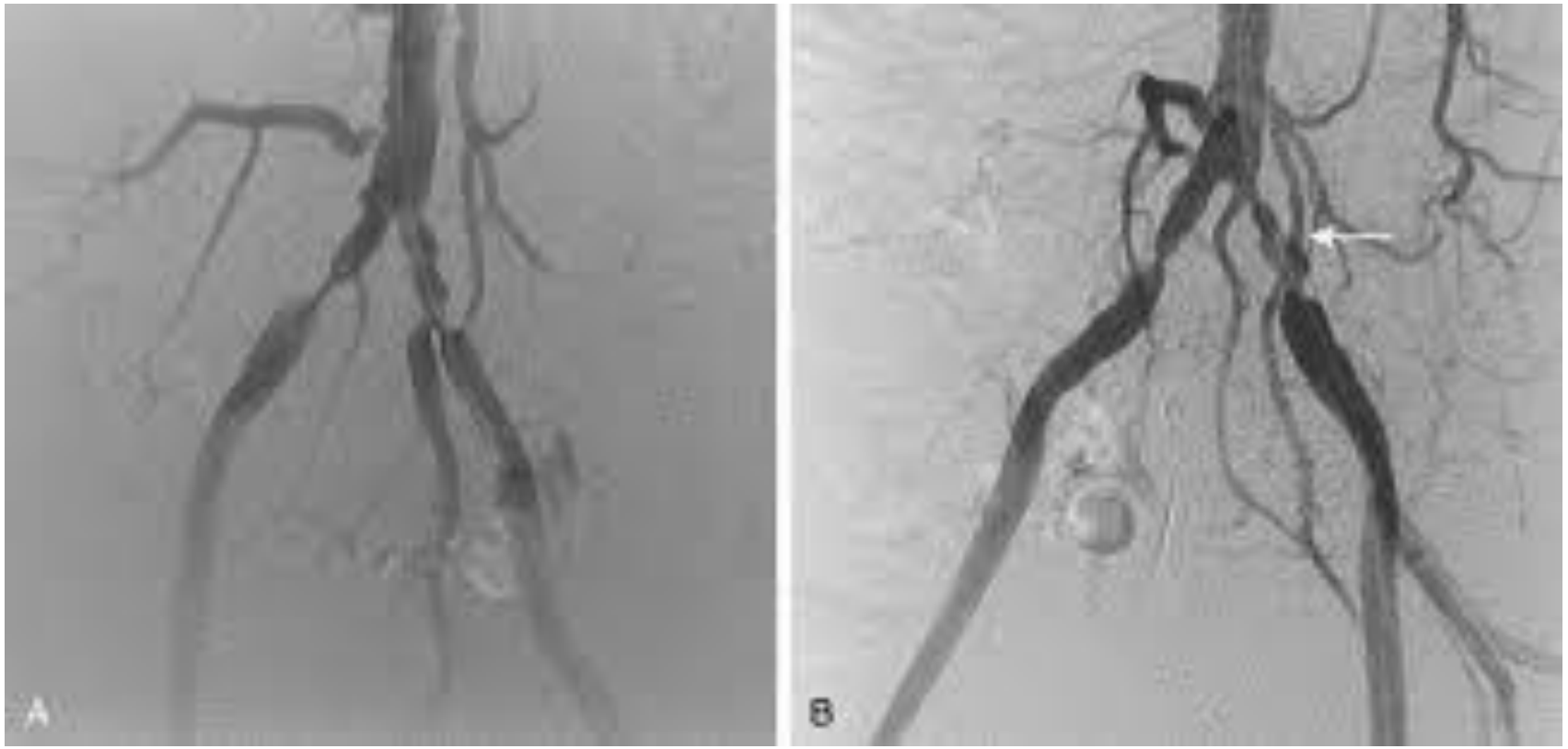
- BASIL 2
  - UK multicentre trial
  - Severe limb ischaemia with clinical equipoise
  - Vein bypass vs best endo for infrapopliteal disease

- BASIL 3
  - Recruitment started Feb 2016
  - multi-centre randomised controlled trial of clinical and cost-effectiveness of drug coated balloons, drug eluting stents, and plain balloon angioplasty
  - 33 centres open currently aim 59

French vascular society session

- Iliac artery endofibrosis –EIAE commonest
  - Young patients, endurance athletes
  - Cramping pain extreme exercise
  - Typically male cyclists <40
  - Repetitive hip flexion
  - Mechanism
    - Likely multifactorial
    - Different pathological process to atherosclerosis
  - Underdiagnosed




A
B

EIAE management

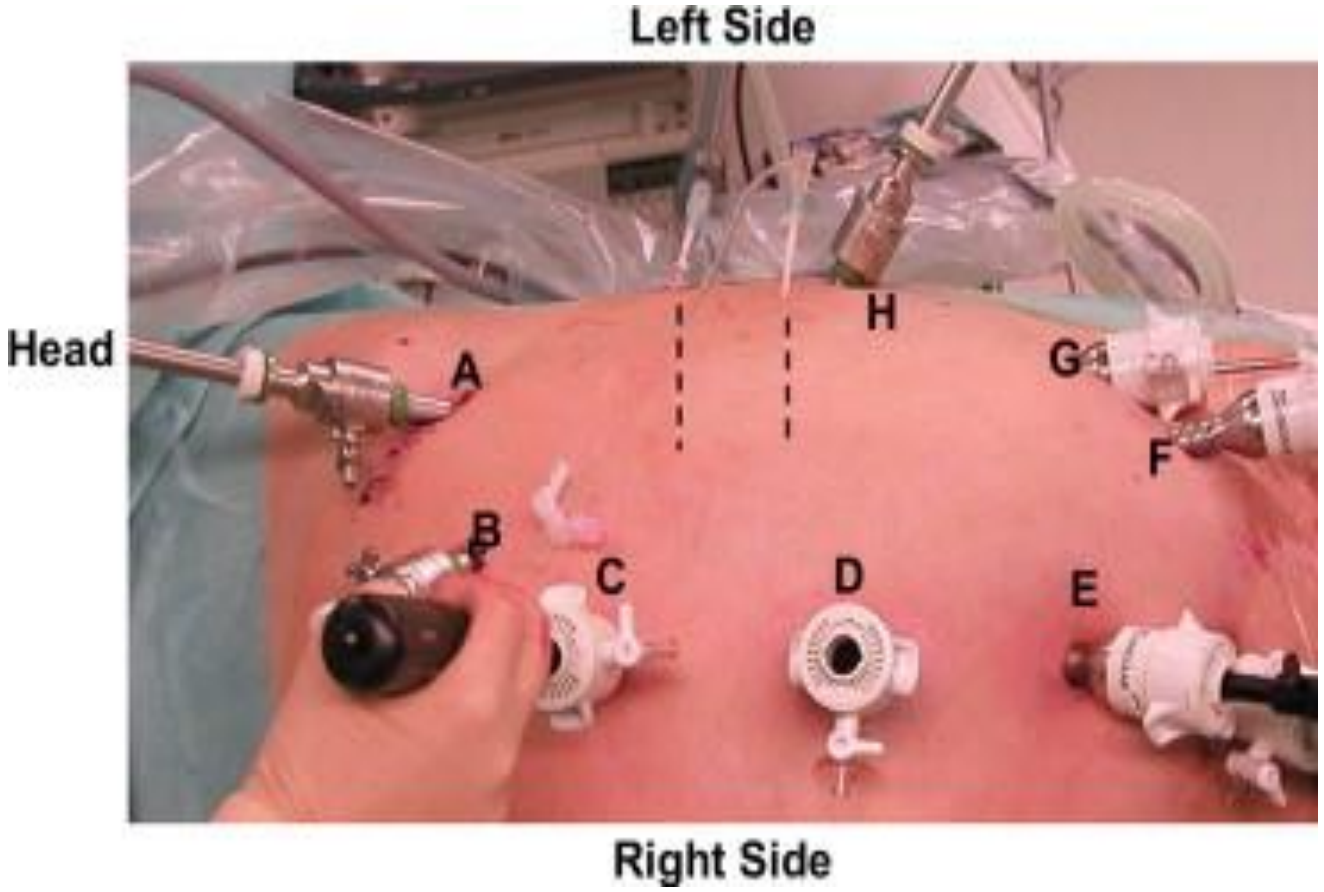
- Challenging
- Conservative
- Angioplasty/stenting ineffective
- Surgery
  - Endarterectomy –”endofibrosectomy”
  - Patch plasty
  - Bypass
- Chevalier et al -300 patients
  - Return to sport mean 2.8mths, 99% by 53 mths

AAA allograft

- For infected aortic grafts/stents
  - Extra-anatomical poor results
    - Stump rupture 33-20%, poor patency, infxn, etc
  - Femoral vein harvest – long, complex
- Cryopreserved allograft
- Large arteries procured from brain-dead multiorgan donors or non-heart-beating donors
  - Selection
  - antibiotic decontamination
  - Cryopreservation
- Series allografts mortality 26%
- Rare specific complications include early or late allograft rupture and late aortic dilatation

Minimally Invasive Aortic Surgery

- Shown to be feasible and safe
- Many published series
- Option for patients unsuitable EVAR
- Faster recovery
- Advantages retroperitoneal approach



Minimally Invasive Aortic Surgery

- First laparoscopic aortic repair 1995 Quebec

Aortoiliac aneurysmal disease

Totally laparoscopic

First author	*Year*	*n*	*Mean age*	*Approach*	*Mean operative time (min)*	*Mean clamping time (min)*	*Conversion n (%)*	*30-day mortality n (%)*	*Major nonfatal complications at 30 days n (%)*
Castronuovo et al (83)	2000	60	71 (53-87)	Retroperitoneoscopic	462 (90-690)	112 (43-286)	3 (5.0)	3 (5.0)	12 (20.0)
Coggia et al (84)	2005	49	73 (46-85)	Retrocolic transperitoneal 1 retroperitoneal	290 (160-420)	81.5 (35-320)	3 (6.1)	3 (6.1)	14 (28.6)
Cau et al (76)	2006	23	68 (51-79)	Retrocolic transperitoneal	251 ± 57	101 ± 15	7 (30.0)	1 (4.3)	5 (21.7)
Kolvenbach et al (21)	2006	131	NA	Retrocolic transperitoneal	265 (145-405)	95 (30-160)	23 (17.6)	4 (3.0)	23 (17.6)
Total		263	71		313	97	36 (13.7)	11 (4.2)	54 (20.5)

Laparoscopy-assisted

First author	*Year*	*n*	*Mean age*	*Approach*	*Mean operative time (min)*	*Mean clamping time (min)*	*Conversion n (%)*	*30-day mortality n (%)*	*Major nonfatal complications at 30 days n (%)*
Kline et al (85)	1998	20	71 (60-79)	Retrocolic transperitoneal	246 ± 55	NA	2 (10.0)	0	3 (15.0)
Alimi et al (53)	2003	24	68 (57-82)	Direct transperitoneal	238 (155-360)	76 (42-160)	4 (16.7)	1 (4.2)	5 (20.8)
Total		44	69		242	76	6 (13.6)	1 (2.3)	8 (18.0)

HALS

Firs author	*Year*	*n*	*Mean age*	*Approach*	*Mean operative time (min)*	*Mean clamping time (min)*	*Conversion n (%)*	*30-day mortality n (%)*	*Major nonfatal complications at 30 days n (%)*
Kolvenbach et al (21)	2006	215	NA	Retrocolic transperitoneal	175 (85-290)	55 (25-130)	11 (5.1)	4 (1.8)	15 (7.0)
Ferrari et al (86)	2009	188	69 (±7)	Retrocolic transperitoneal	231 ± 64	25 ± 5	0	0	22 (11.7)
Total		403	69		201	41	11 (2.7)	4 (1.0)	37 (9.2)

(HALS: hand-assisted laparoscopic surgery, NA: not available)

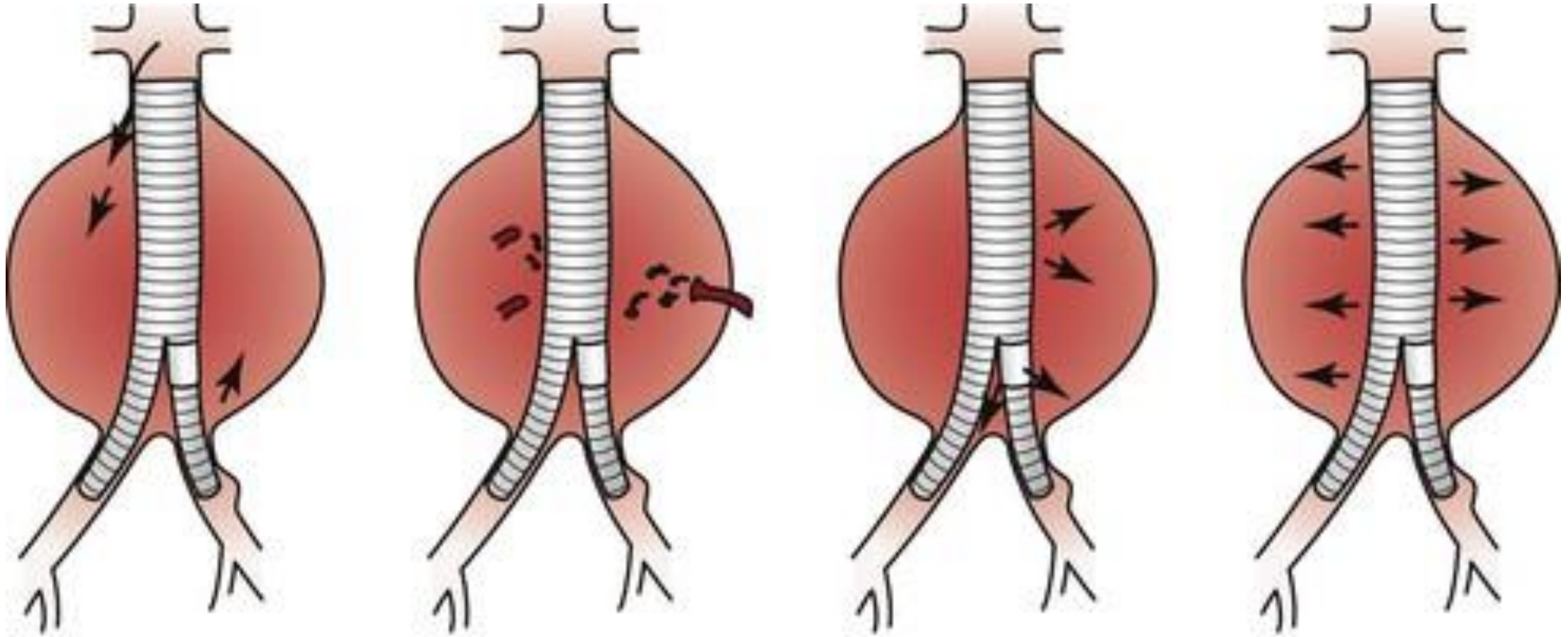
Minimally Invasive Aortic Surgery

- Cochrane Review 2017
- HALS/TLS
- RCTs – elective lap repair VS EVAR or open repair
- One study. 100 pts, HALS vs EVAR
  - HALS longer op time
  - No diff mortality
  - LOS 4.2 VS 3.4
- High learning curve, long operative time (complications)
- Learning curve largest barrier
- ??vascular specialty training

ESVS Debate

- Type 2 Endoleak post EVAR with no sac expansion should not be treated
- Type 2 endoleaks
  - 40% EL – median sacral/accessory renal rare
  - Type 2 a/b
  - Not all type 2 need treatment
  - 19%/20% needed intervention

Jouhannet C, et al. Reinterventions for type 2 endoleaks with enlargement of the aneurismal sac after endovascular treatment of abdominal aortic aneurysms. Ann Vasc Surg. 2014;28:192-200.
Sarac T, et al. Long-term follow-up of type II endoleak embolization reveals the need for close surveillance. J Vasc Surg. 2012;55:33-40.


Type I
Type II
Type III
Type IV

T2EL

- Greenhalgh et al - type II endoleaks are not associated with aneurysm rupture
  - data >2,000 patients from the EUROSTAR registry
  - 1.8% rupture rate after 2 years, with no significant difference between those with or without type II endoleaks
- A recent meta-analysis comprising over 2,000 patients resolution of over 50% of type II endoleaks within 1 year of follow-up.
- One systematic review reported that from 1,515 isolated type II endoleaks, 35.4% resolved spontaneously with an overall rupture rate of 0.9%

Type 2 endoleaks

- Persistent Type 2
  - >6 mths
  - Predictors include a patent IMA > 2.5 mm, lumbar artery > 1.9 mm in diameter, > two lumbar arteries
  - Associated with reintervention rates, conversion to open repair, and aneurysm sac rupture

Otsu M, Ishizaka T, Watanabe M, et al. Analysis of anatomical risk factors for persistent type II endoleaks following endovascular abdominal aortic aneurysm repair using CT angiography. Surg Today. 2016;46:48-55.

Löwenthal D, Herzog L, Rogits B, et al. Identification of predictive CT angiographic factors in the development of high risk type 2 endoleaks after endovascular aneurysm repair in patients with infrarenal aortic aneurysms. Rofo. 2015;187:49-55

Protective	Risk
Smoking	Patent lumbar arteries
PAD	Diameter of lumbar arteries
	Patent IMA
	Proportion of sac lined with thrombus
	Maximum thrombus thickness
	Older age

Management

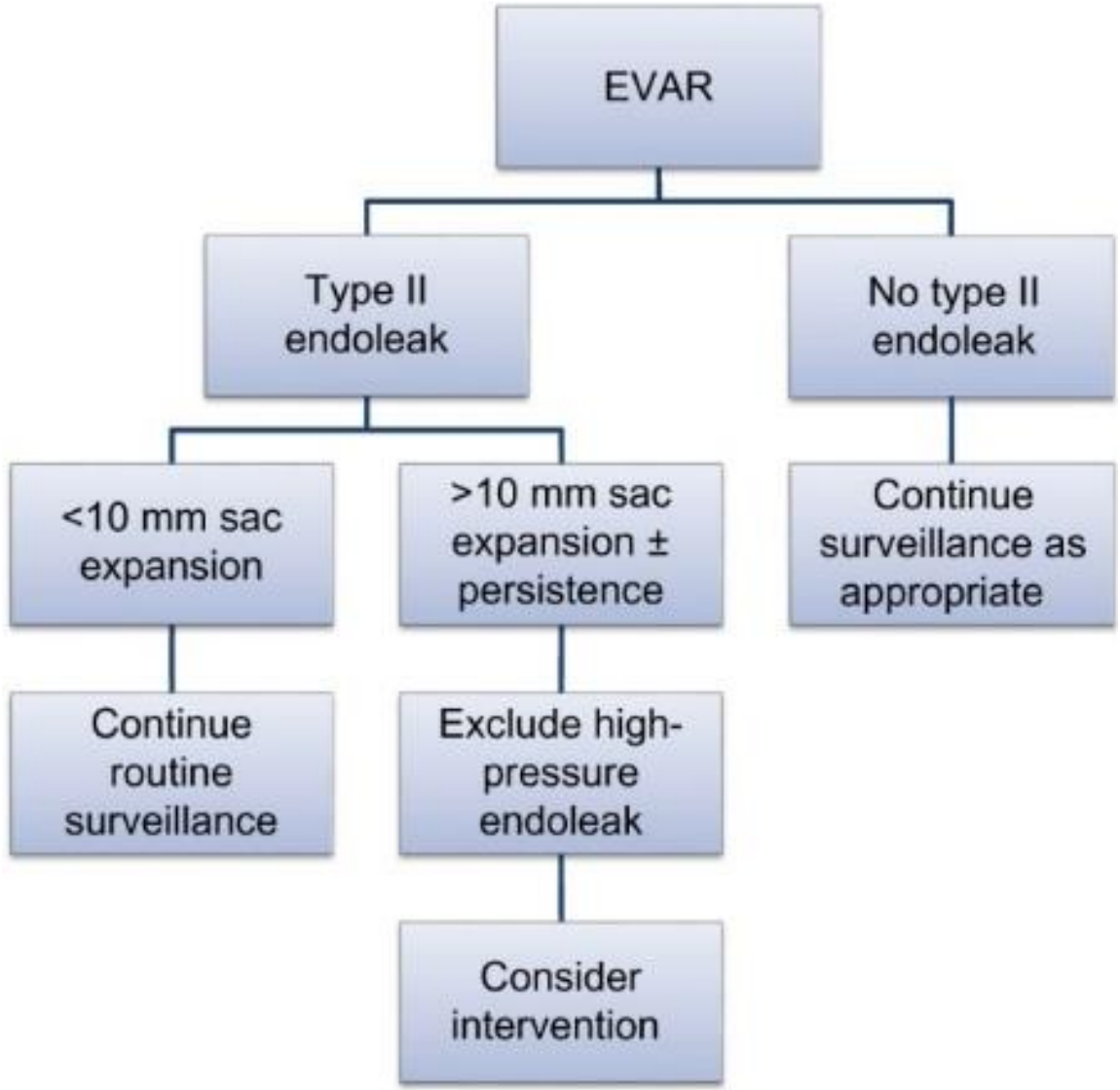
- Mascoli et al – intraprocedural sac embolization – fewer type 2 and interventions but no difference sac size
- Some groups pre-emptively embolise if large or “empty sac
  - Ward et al (J Vasc Interv Radiol. 2013;24:49-55) treated IMA pre-EVAR – decreased type 2, sac enlargement and reintervention @2 yrs
  - Manunga et al Ann Vasc Surg. 2017 Feb;39:40-47 – MA 620 patients, preoperative IMA embolization
    - 99% success rate, 1 fatality
    - Less type 2 and less reintervention post EVAR
    - Remaining T2EL all lumbar
    - Recommended treating if >3mm

Management

- Success rates?
- Gallagher at al, (J Endovasc Ther. 2012 Apr;19(2):182-92) –
  - 56% required > procedure
  - Lumbar arteries 17% primary, 40% secondary success rates
  - 24% overall failed despite multiple attempts

Pro-treatment

- Independent risk factor for sac expansion
  - Cieri et al demonstrated a significantly higher proportion of aneurysm growth of over 5 mm in their type II endoleak cohort ($P \leq 0.0001$).
- Inferior sac regression
- Sildoff et al Eur J Vasc Endovasc Surg. 2014 Oct;48(4):391-9.
  - 904 patients, 19% type 2
  - Small degree of sac expansion (up to 5mm)
  - Equivalent aneurysm relayed mortality and improved survival
- Many persistent Type 2 actually Type 1
- Intra sac pressure – conflicting results
  - Hinen et al – sac pressure not correlated with expansion
  - Ikoma et al (Cardiovasc Intervent Radiol. 2016 Apr; 39(4):522-9) high pressure associated with persistent Type 2


EVAR
Type II endoleak
No type II endoleak
<10 mm sac expansion
>10 mm sac expansion ± persistence
Continue surveillance as appropriate
Continue routine surveillance
Exclude high-pressure endoleak
Consider intervention

Venous lysis debate – active endovascular treatment acute ileofemoral DVT vs conservative

- CAVENT n = 209
- PTS reduced by 28% at 6 mths and 14% at 2 years
- No diff QoL

- CAVA still enrolling

- ATTRACT –presented, not published

Venous lysis debate – active endovascular treatment acute ileofemoral DVT vs conservative

- ATTRACT
  - RCT – lysis for DVT
  - Primary outcome cumulative occurrence of PTS between 6 and 24 months
  - Secondary outcomes including PTS severity, quality of life (QOL), symptom severity, and safety outcomes were also assessed.
  - No significant difference in PTS
  - PCDT reduced early symptoms and severity PTS
  - Major bleeding 1.7% v 0.3%; p=0.049
  - Any bleeding 4.5% v1.7%, p=0.049

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