



CRITICAL ISSUES 20TH INTERNATIONAL EXPERTS SYMPOSIUM
in aortic endografting 2016

May 20 & 21, 2016 - BARRIÈRE HOTEL - LILLE - FRANCE



When to use a branch and when to use a fenestration

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www.critical-issues-congress.com

Disclosure of Interest

Potential conflicts of interest

Cook Medical:

Consulting

European proctor

Unrestricted educational grants

Aortic morphology

FENESTRATIONS

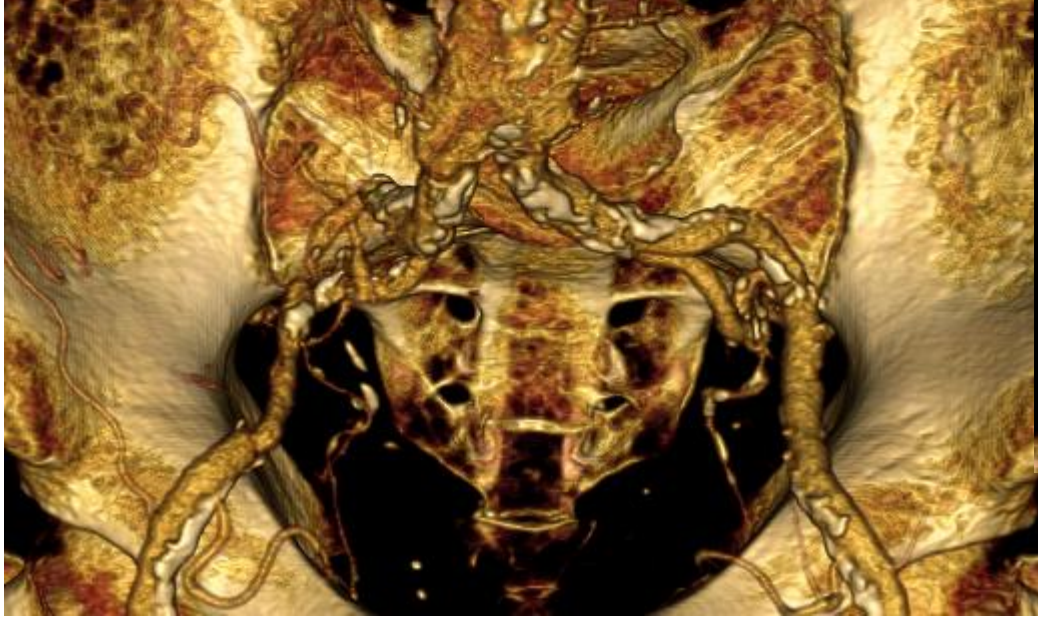
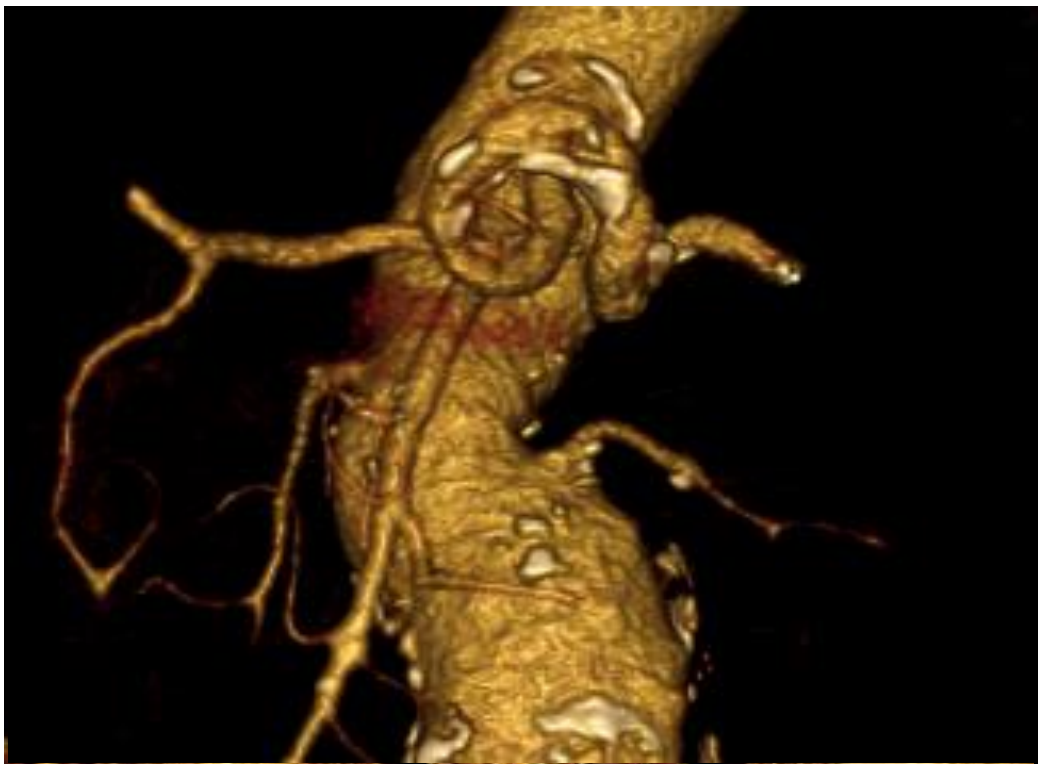
Short-necked infrarenal

Juxtarenal

Suprarenal

FENESTRATIONS or BRANCHES

Thoraco-abdominal aneurysm



Aortic morphology

FENESTRATIONS

Short-necked infrarenal

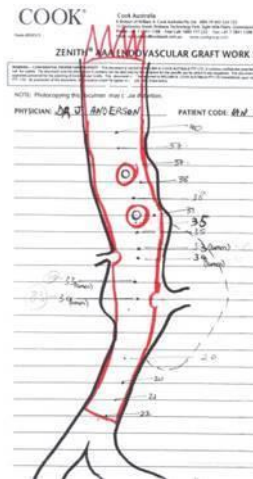
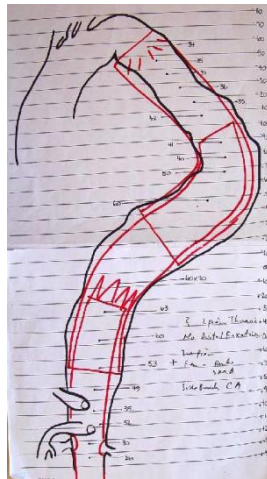
Juxtarenal

Suprarenal

FENESTRATIONS or BRANCHES

Thoraco-abdominal aneurysm

15 years of debate



Considerations

Lumen

(diameter, bridging distance, angulation, atheroma)

Access quality

(ilio-femoral, proximal, atheroma, prior surgery)

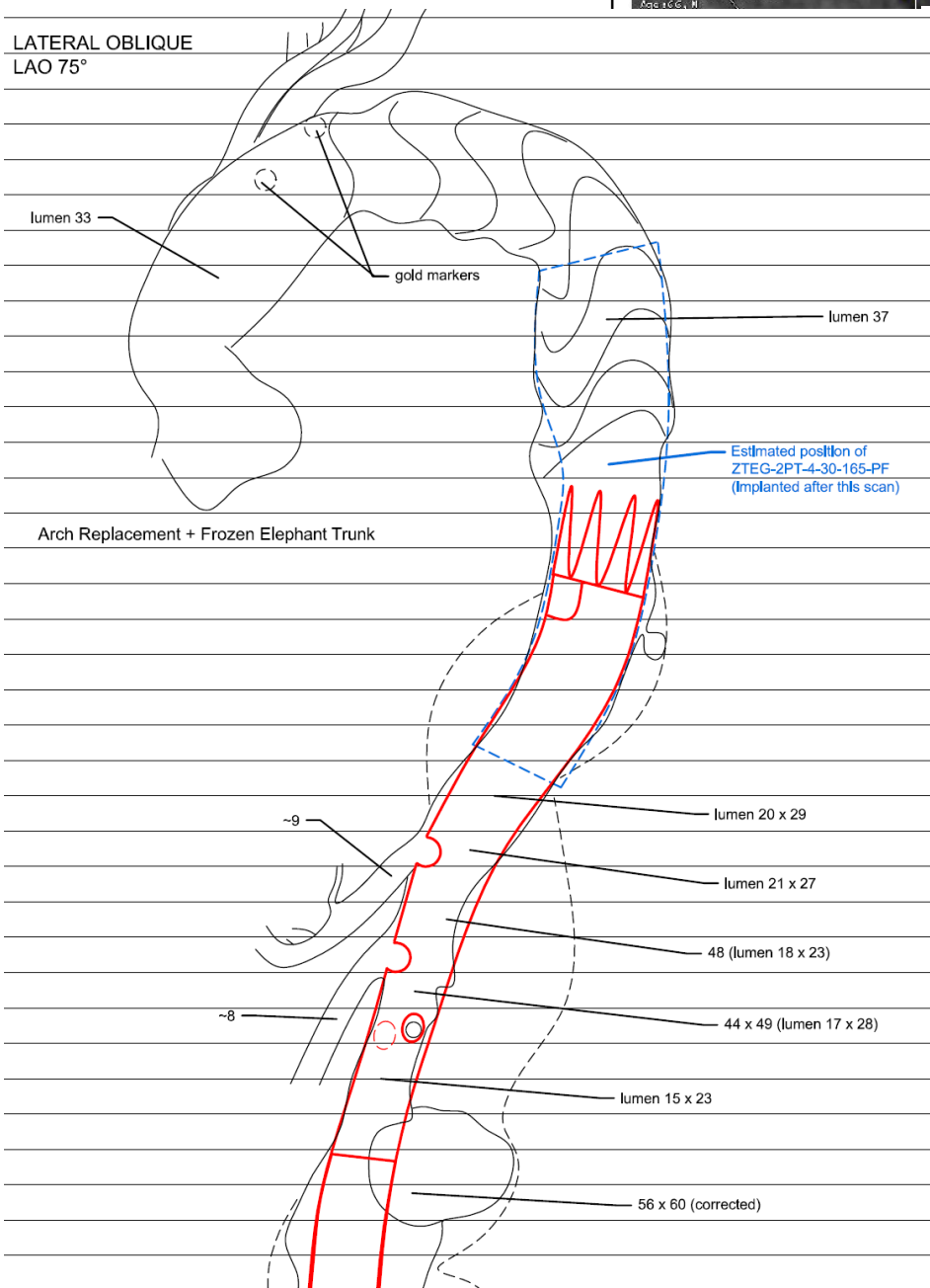
Aortic coverage

(durable repair, risk of SCI, staging)

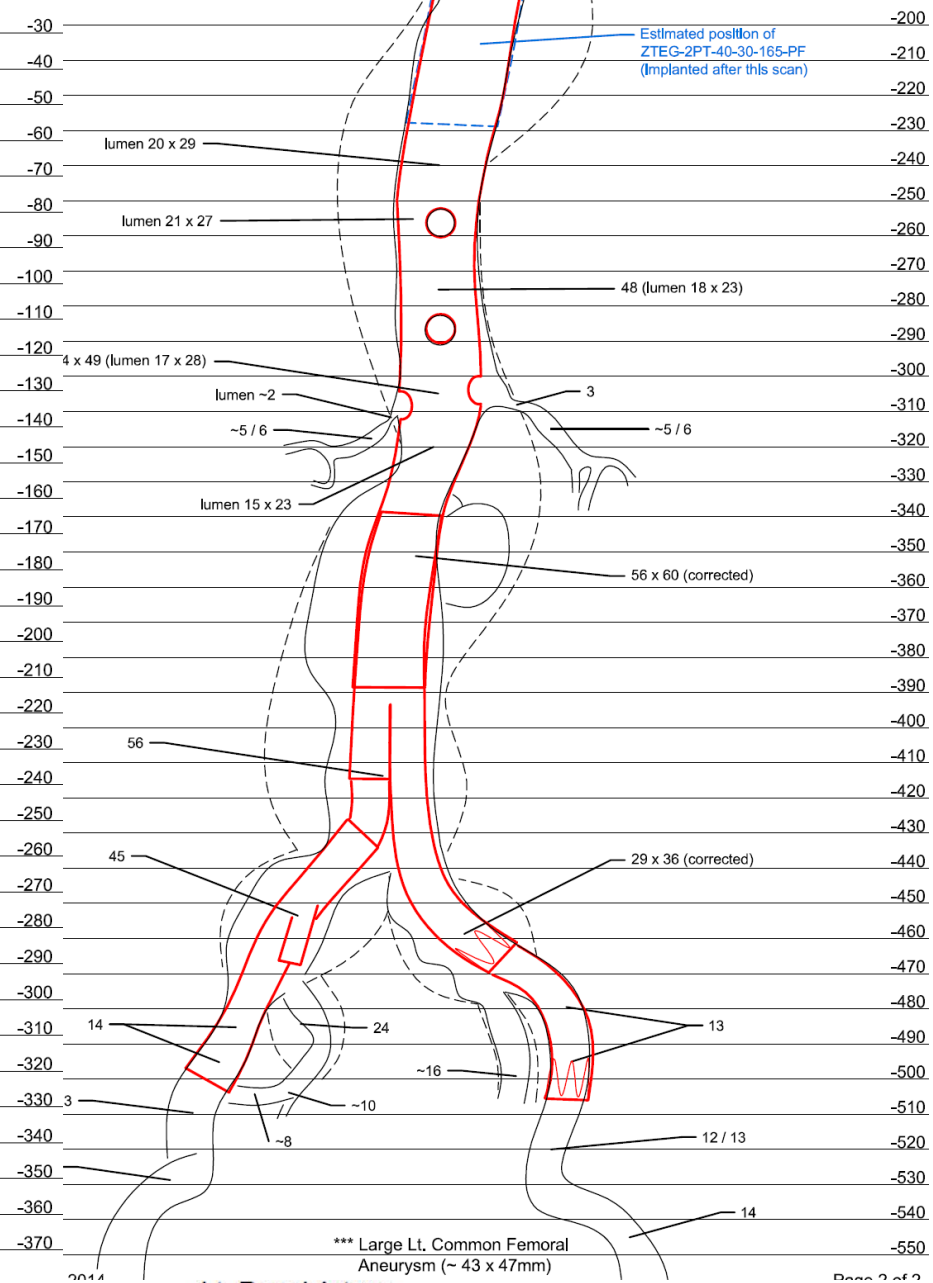
Target vessel morphology

(take-off angulation, orientation, length, diameter)

LATERAL OBLIQUE
 LAO 75°



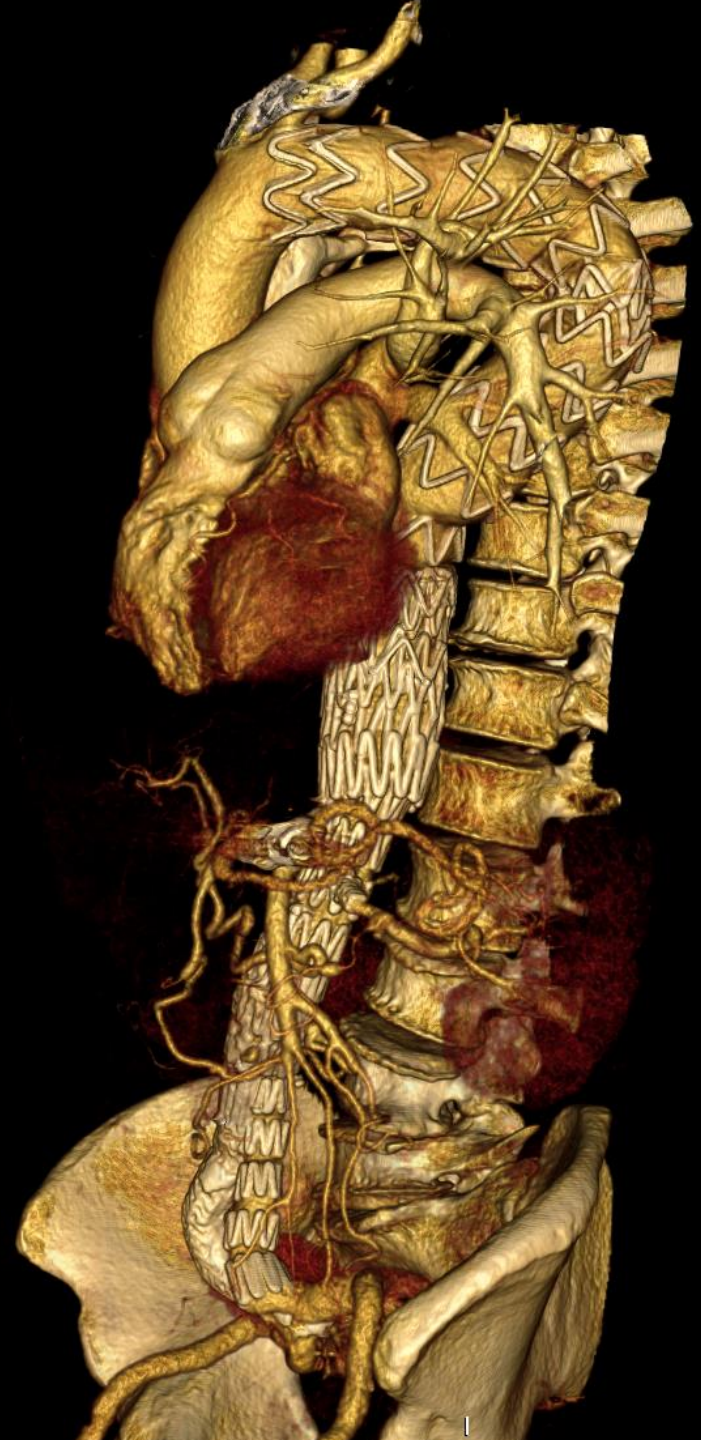
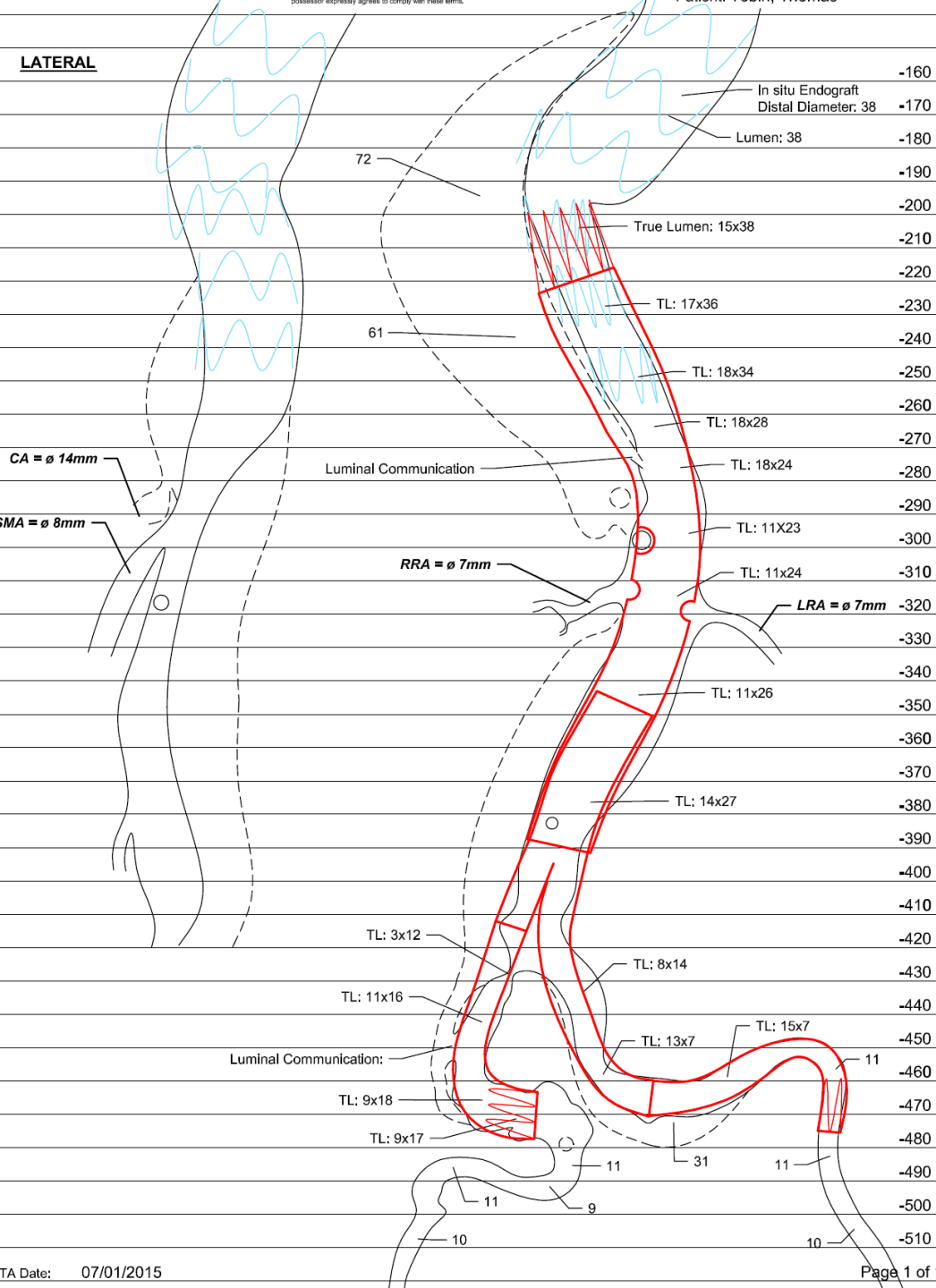
Rt. Renal Artery
 O'clock = 9:15



Lt. Renal Artery
 O'clock = 2:30

*** Large Lt. Common Femoral
 Aneurysm (~ 43 x 47mm)

LATERAL



BEVAR and renal arteries

THEORETICALLY better co-axial alignment and improved tolerance to respiratory/cardiac movements

BUT downward angulation may be associated with high stress at the stent graft - distal target vessel transition causing **endothelial damage** and **material fatigue**

AND tortuosity and long bridging distance may be associated with **increased flow resistance**, **risk of kinking** and **turbulence** causing **intimal hyperplasia**

Short bridging length probably better than long

BEVAR-FEVAR and renal arteries

UCSF

Proponents of BEVAR for almost everything

Single centre experience

148 renal branches

RA occlusion 6% vs. 2.6% CA, 0% SMA (mean FU 21m)

Cleveland Clinic

Proponents of fenestrations for renal arteries

Single centre experience

1111 renal fenestrations

RA occlusion 2.2% (mean FU 3 yrs)

449 patients treated by BEVAR or FEVAR

348 Crawford extent I-III, 101 extent IV endograft coverage

BEVAR alone (%)

Royal Free 78, Malmo 63, St.Thomas' 55, Nuremberg 30, Lille 16

30-day mortality – Branch 9%, Fen 4%

856 renal target vessels – 445 branch, 411 fenestrations

Failed cannulation – Branch 2%, Fen 0%

2-yr freedom from occlusion – Branch 90%, Fen 97% (SS)

2-yr freedom from occlusion + R/I – Branch 86%, Fen 95% (SS)

NS trend persisted for extent I-III repair alone

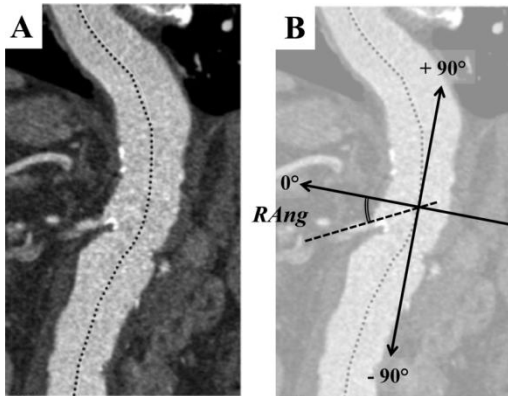
Tortuosity is the Significant Predictive Factor for Renal Branch Occlusion after Branched Endovascular Aortic Aneurysm Repair

EJVES 2016;51:350-7

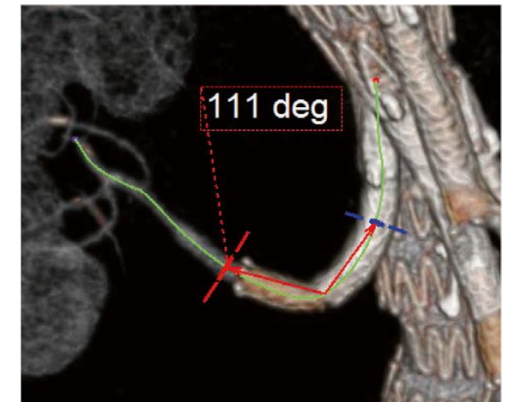
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Patency of 90 renal arteries in 49 patients

Pre-operative RA angulation



Morphology of renal branches



10 occlusions
2-yr 1^o patency 84%

$$\text{Tortuosity index} = \frac{\text{Bridging length (centreline reco)}}{\text{Linear distance}} > 1.11; p=0.04$$

Length of bridging covered stents
Angulations of distal renal artery
Renal length covered

NS for occlusion

Post-dissection TAAA

October 2010 – October 2015, Nuremberg

32 patients

Fens = 16, Fens+Branches = 15, Branches = 1

30-day mortality = 6%

2-year TV patency 95% (mean FU 20m)

October 2011 – March 2015, Lille

16 patients

Fens = 15 , Branches = 1

30-day mortality = 6%

TV patency 100% (mean FU 12m)

Birmingham experience

213 patients treated by BEVAR or FEVAR

All supracoeliac coverage, renal and visceral stent-grafting

Crawford extent II,III endograft coverage

BEVAR alone = 17%, Branches+fens = 13%, Fens = 70%

767 stent-grafted target vessels

	Total	Branch	Fenestration	Failed
CA	160	54	105	1
SMA	212	55	157	0
RA	405	76	324	5 (1.2%)
	767	185	586	6 (0.7%)

Birmingham experience

30-day mortality

Elective = 0.5% (1 of 181); acute/rupture = 31% (10 of 32)

Permanent dialysis = 0.5% (1 of 202)

16 of 190 survivors (excl. 12 survivors with SM-FEVAR)

19 of 693 (2.7%) target vessel events @ 1 - 54m FU

CA (n=3; 1 BEVAR)

PTA for compression (2), redo stent-graft for EL (1)

SMA (n=2; 1 BEVAR)

Redo SG for EL (2)

RA (n=8; 2 BEVAR)

Redo SG for EL (7), redo SG for stenosis (1)

RA occlusion 6 of 405 (1.5%) (5 BEVAR, 1 FEVAR)

1-year freedom from TV re-intervention/occlusion = 91 (\pm 3)%

Summary

Many factors to consider during planning

One approach does not fit every patient

Renal fenestrations more durable than branches

CA/SMA probably do well with either approach

Our preference

RA fens and CA/SMA fens or branches

**More data required specifically for patients
undergoing extent I-III endograft coverage**