CONTROVERSES ET ACTUALITÉS EN CHIRURGIE VASCULAIRE
CONTROVERSIES & UPDATES IN VASCULAR SURGERY
JANUARY 23-25 2014
MARRIOTT RIVE GAUCHE & CONFERENCE CENTER PARIS, FRANCE

Paraplegia and complex EVAR

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www.cacvs.org

Disclosure

Speaker name: R G McWilliams

I do not have any potential conflict of interest

Early Results of Fenestrated Endovascular Repair of Juxtarenal Aortic Aneurysms in the United Kingdom

On behalf of the British Society for Endovascular Therapy and the Global Collaborators on Advanced Stent-Graft Techniques for Aneurysm Repair (GLOBALSTAR) Registry

(*Circulation*. 2012;125:2707-2715.)

- 318 patients – 14 UK centres
- 5 cases of spinal cord ischaemia
- 4/5 endograft extended to CA
- No preop predisposing factors recorded
- 1 full/2 partial/2 no recovery

Risk factors, outcomes, and clinical manifestations of spinal cord ischemia following thoracic endovascular aortic repair

Brant W. Ullery, MD,[a] Albert T. Cheung, MD,[b] Ronald M. Fairman, MD,[a] Benjamin M. Jackson, MD,[a] Edward Y. Woo, MD,[a] Joseph Bavaria, MD,[c] Alberto Pochettino, MD,[c] and Grace J. Wang, MD,[a] *Philadelphia, Pa*

J Vasc Surg 2011;54:677-84

- 424 TEVAR
- 12 (2.8%) SCI
- Chronic renal insufficiency: significantly and independently associated with SCI
- SSEP monitoring for high risk

The Incidence of Spinal Cord Ischaemia Following Thoracic and Thoracoabdominal Aortic Endovascular Intervention

S.L. Drinkwater [a], A. Goebells [a], A. Haydar [b], P. Bourke [a], L. Brown [c], M. Hamady [b], R.G.J. Gibbs [a,*], On behalf of the Regional Vascular Unit, St Mary's Hospital, Imperial College NHS Trust

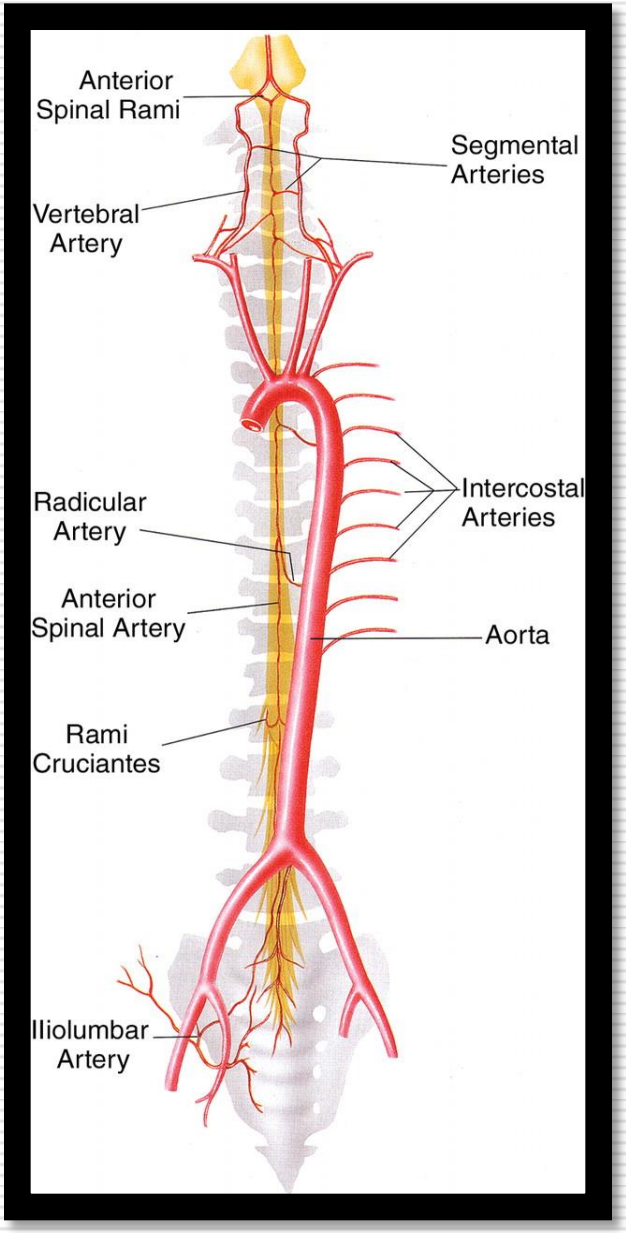
Eur J Vasc Endovasc Surg (2010) 40, 729–735

Table 3 Risk of spinal cord ischaemia and permanent paraplegia by type of procedure.

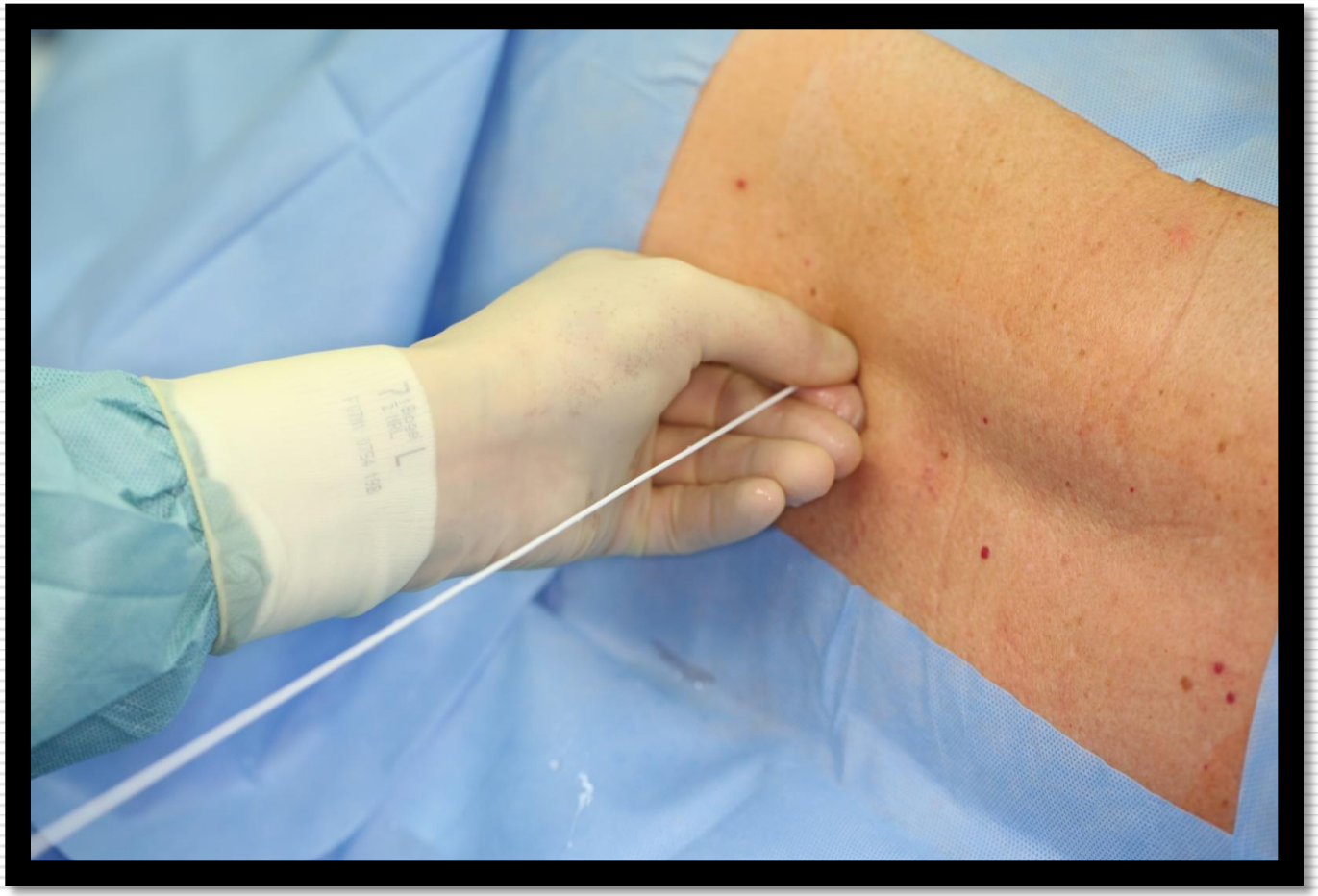
Procedure	Spinal Cord Ischaemia	Paraplegia
TEVAR	2/111 (1.8%)	1/111 (0.9%)
Fenestrated/Branched Graft	2/14 (14.3%)	1/14 (7.1%)
Arch Hybrid	3/30 (10%)	2/30 (6.7%)
Visceral Hybrid	16/80 (20%)	9/80 (11.3%)
Global SCI risk	23/235 (9.8%)	13/235 (5.5%)

Limit reduction of spinal cord supply

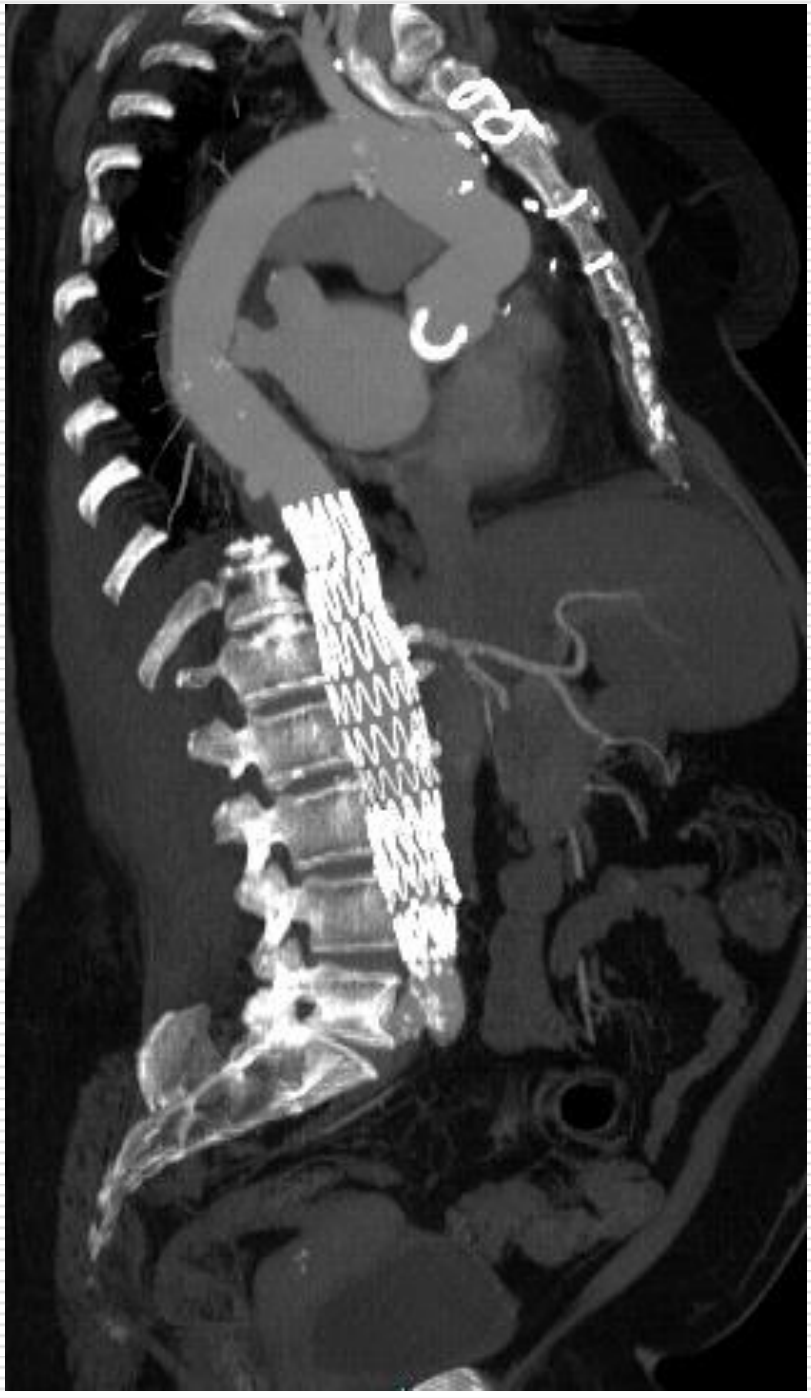
Francisco de Assis Aquino Gondim, MD, et al

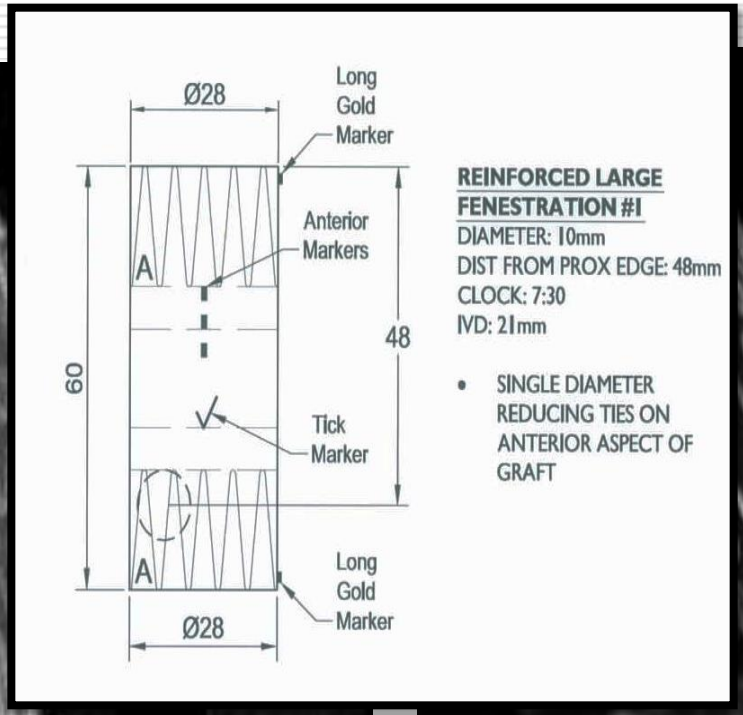


Optimise spinal cord perfusion pressure



Additional options?





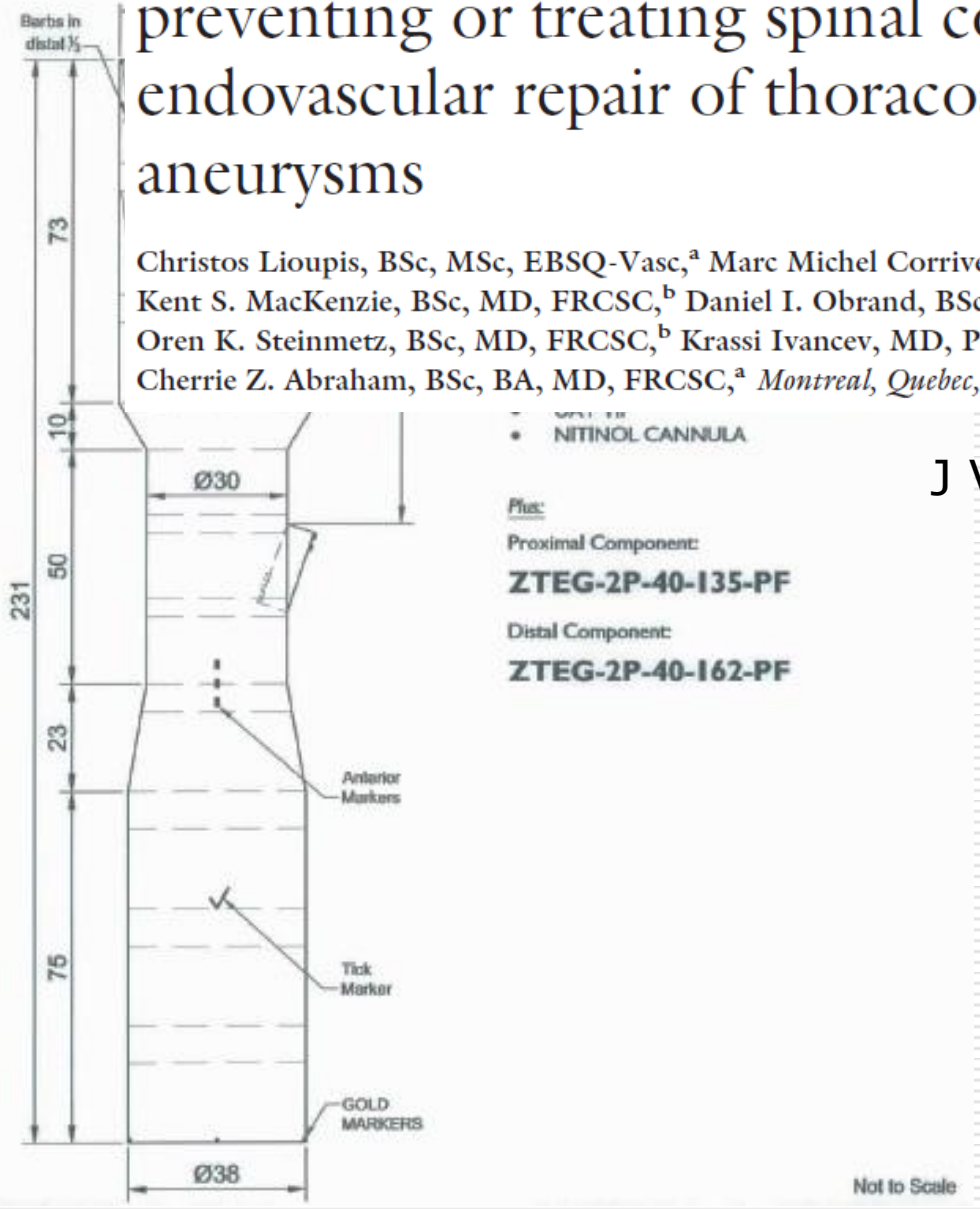
REINFORCED LARGE FENESTRATION #1

DIAMETER: 10mm
DIST FROM PROX EDGE: 48mm
CLOCK: 7:30
IVD: 21mm

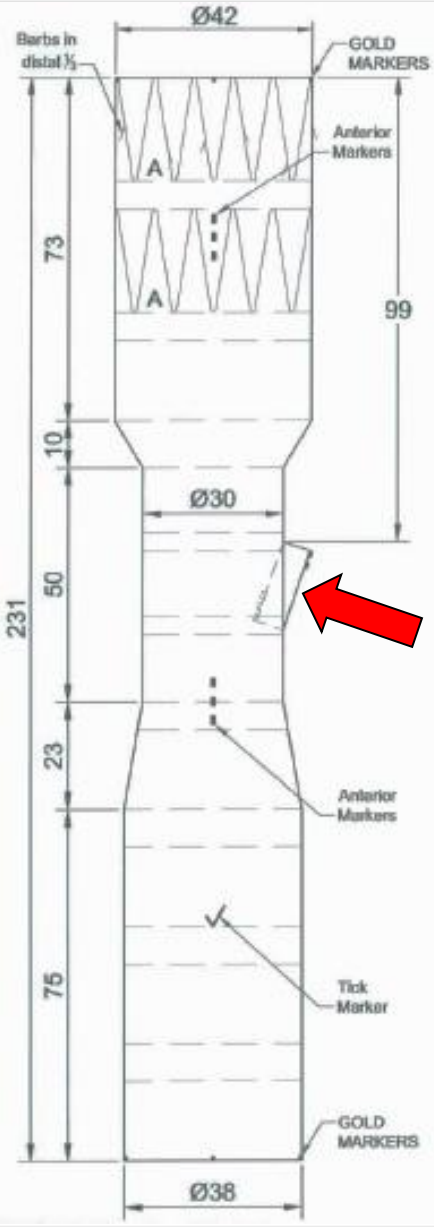
- SINGLE DIAMETER REDUCING TIES ON ANTERIOR ASPECT OF GRAFT

Paraplegia prevention branches: A new adjunct for preventing or treating spinal cord injury after endovascular repair of thoracoabdominal aneurysms

Christos Lioupis, BSc, MSc, EBSQ-Vasc,[a] Marc Michel Corriveau, BSc, MD, FRCSC,[b] Kent S. MacKenzie, BSc, MD, FRCSC,[b] Daniel I. Obrand, BSc, MD, FRCSC,[b] Oren K. Steinmetz, BSc, MD, FRCSC,[b] Krassi Ivancev, MD, PhD,[c] and Cherrie Z. Abraham, BSc, BA, MD, FRCSC,[a] *Montreal, Quebec, Canada; and London, United Kingdom*



J Vasc Surg 2011;54:252-7



BRANCH COMPONENT

INTERNAL/EXTERNAL SIDEBRANCH #1
UPWARDS FACING
PERFUSION BRANCH
DIAMETER: 6mm
LENGTH: 18mm
DIST FROM PROX EDGE: 99mm
CLOCK: 3:00

- NO DIAMETER REDUCING TIES
- UAT TIP
- NITINOL CANNULA

Plus:

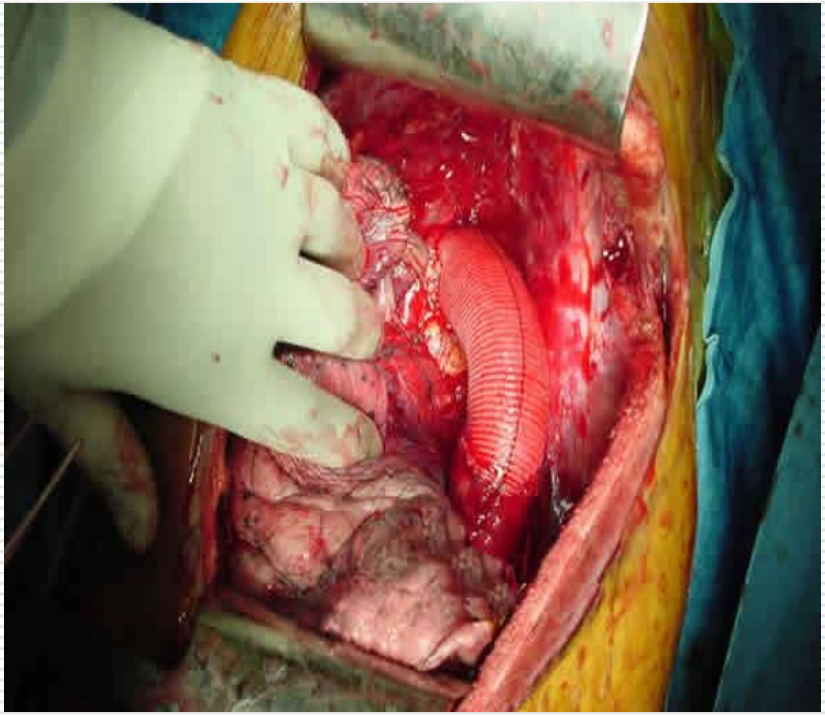
Proximal Component:

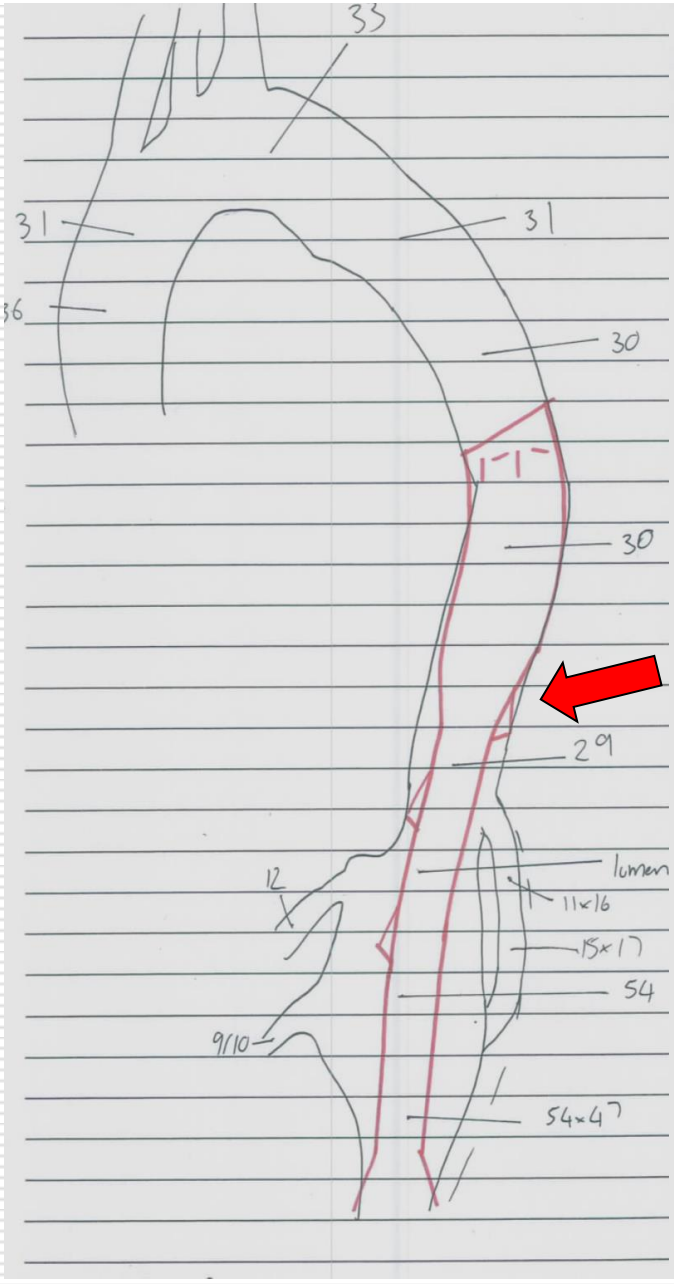
ZTEG-2P-40-135-PF

Distal Component:

ZTEG-2P-40-162-PF

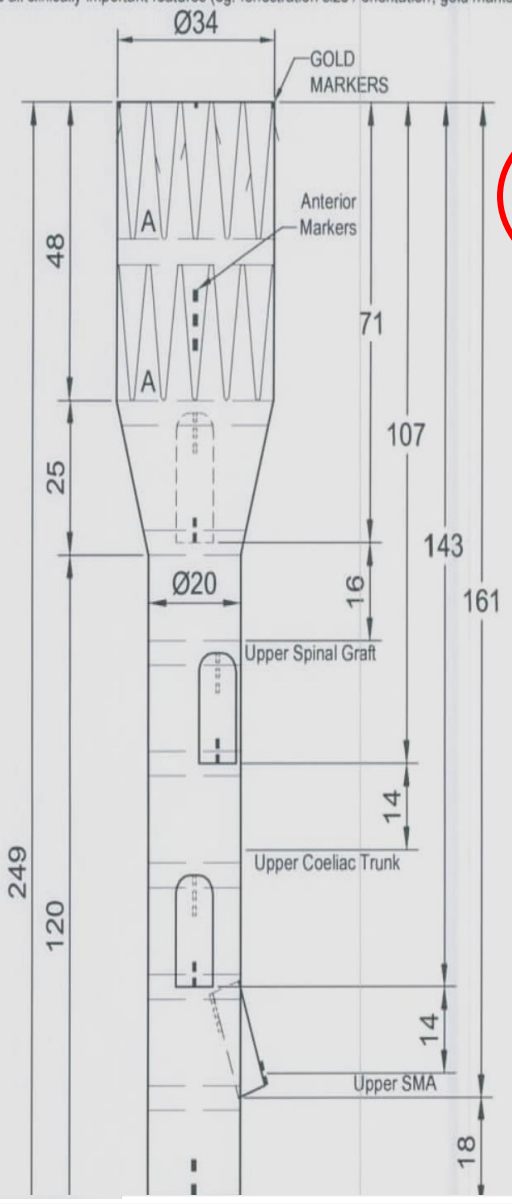
Not to Scale





NON STANDARD DEVICE REQUEST

Ensure all clinically important features (eg. fenestration size / orientation, gold marker placement, sealing stents) are included in this graft design prior to approval.



INTERNAL/EXTERNAL SIDEBRANCH #1
DIAMETER: 8mm
LENGTH: 21mm
DIST FROM PROX EDGE: 71mm
CLOCK: 6:00

INTERNAL/EXTERNAL SIDEBRANCH #2
Preloaded Catheter & Guidewire
DIAMETER: 8mm
LENGTH: 18mm
DIST FROM PROX EDGE: 107mm
CLOCK: 1:00

INTERNAL/EXTERNAL SIDEBRANCH #3
DIAMETER: 8mm
LENGTH: 18mm
DIST FROM PROX EDGE: 143mm
CLOCK: 12:00

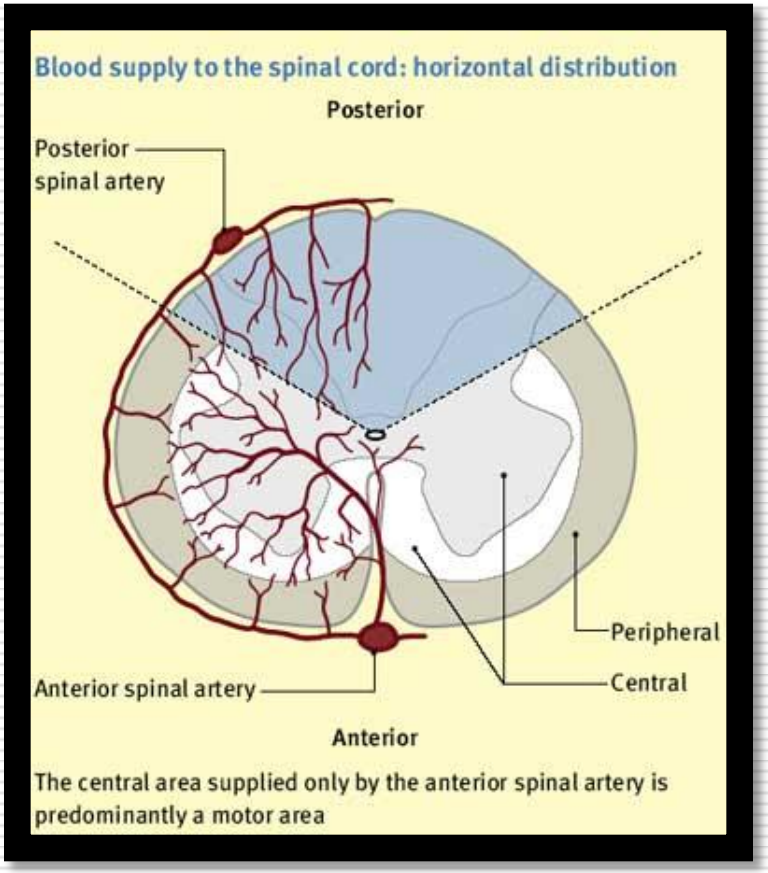
INTERNAL/EXTERNAL SIDEBRANCH #4
DIAMETER: 6mm
LENGTH: 18mm
DIST FROM PROX EDGE: 161mm
CLOCK: 2:30

- SINGLE DIAMETER REDUCING TIES
- UAT TIP
- NITINOL CANNULA

Plus:

ESBE-26-58

Neuromonitoring with MEPs

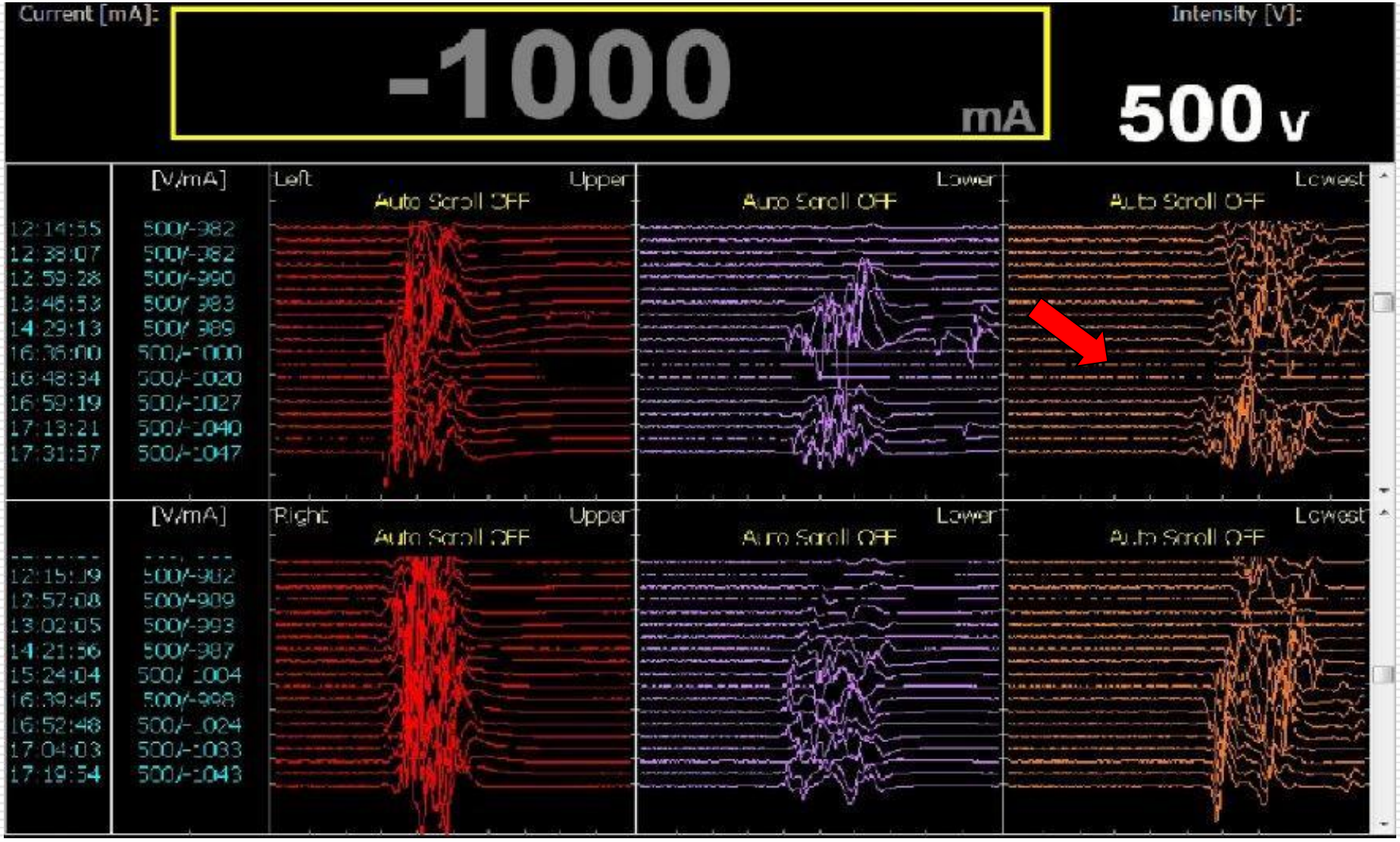


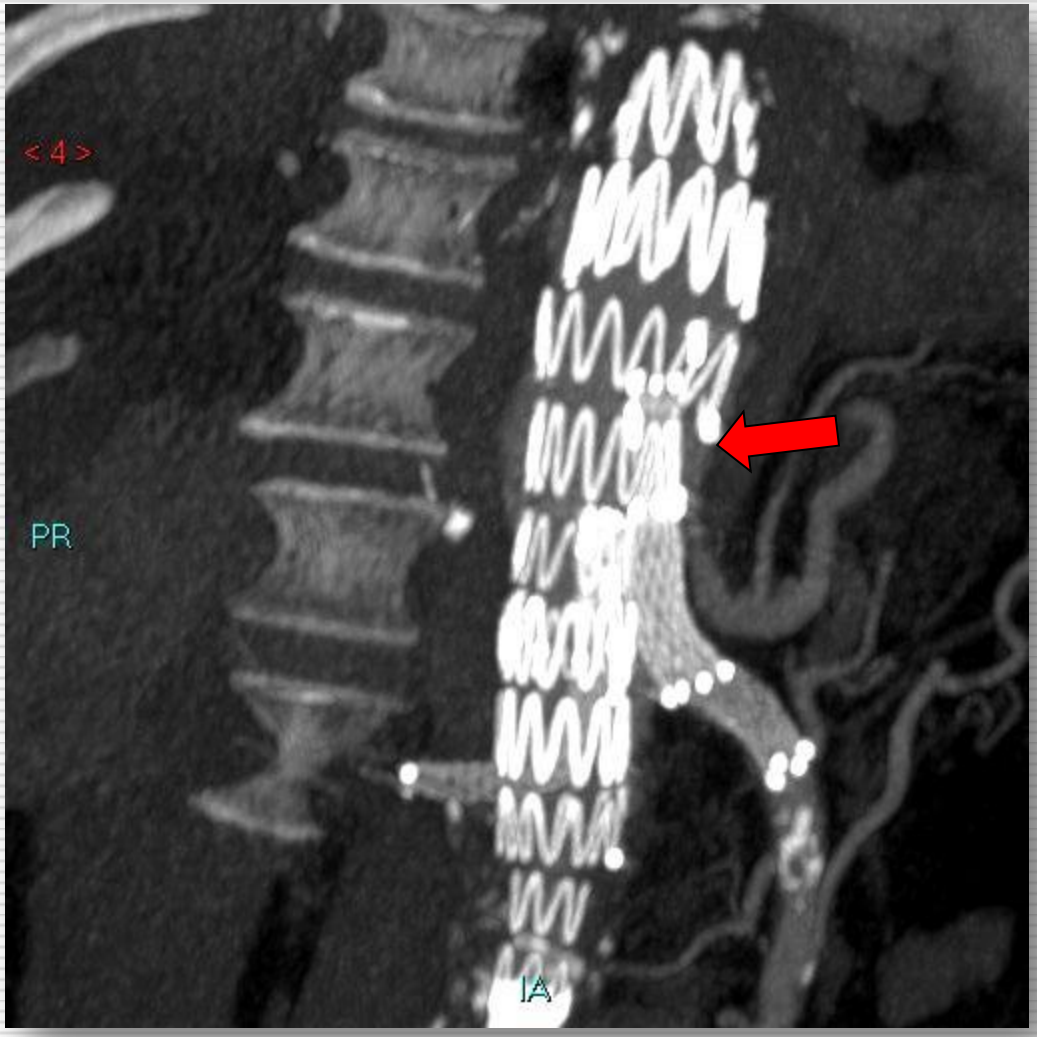
Obtained from
http://www.frca.co.uk/article.aspx?articleid=100360

Technique

- TIVA technique
- Minimal muscle relaxants
- One sensor lead in each arm for internal control of procedure
- Two or Three sensor leads in each leg to detect MEP changes due to cord malperfusion
- We take a 50% or more loss of amplitude in the leg MEPs as indicative of cord malperfusion and impending paraplegia

Test occlusion of last branch


Current [mA]:
-1000
mA
Intensity [V]:
500 v
[V/mA]
Left
Upper
Auto Scroll OFF
Lower
Auto Scroll OFF
Lowest
Auto Scroll OFF
12:14:55 500/-982
12:38:07 500/-982
12:59:28 500/-990
13:46:53 500/ 983
14 29:13 500/ 989
16:36:00 500/-1000
16:48:34 500/-1020
16:59:19 500/-1027
17:13:21 500/-1040
17:31:57 500/-1047
[V/mA]
Right
Upper
Auto Scroll OFF
Lower
Auto Scroll OFF
Lowest
Auto Scroll OFF
12:15:09 500/-902
12:57:08 500/-909
13:02:05 500/-993
14:21:56 500/-987
15:24:04 500/ 1004
16:39:45 500/-998
16:52:48 500/-1024
17:04:03 500/-1033
17:19:54 500/-1043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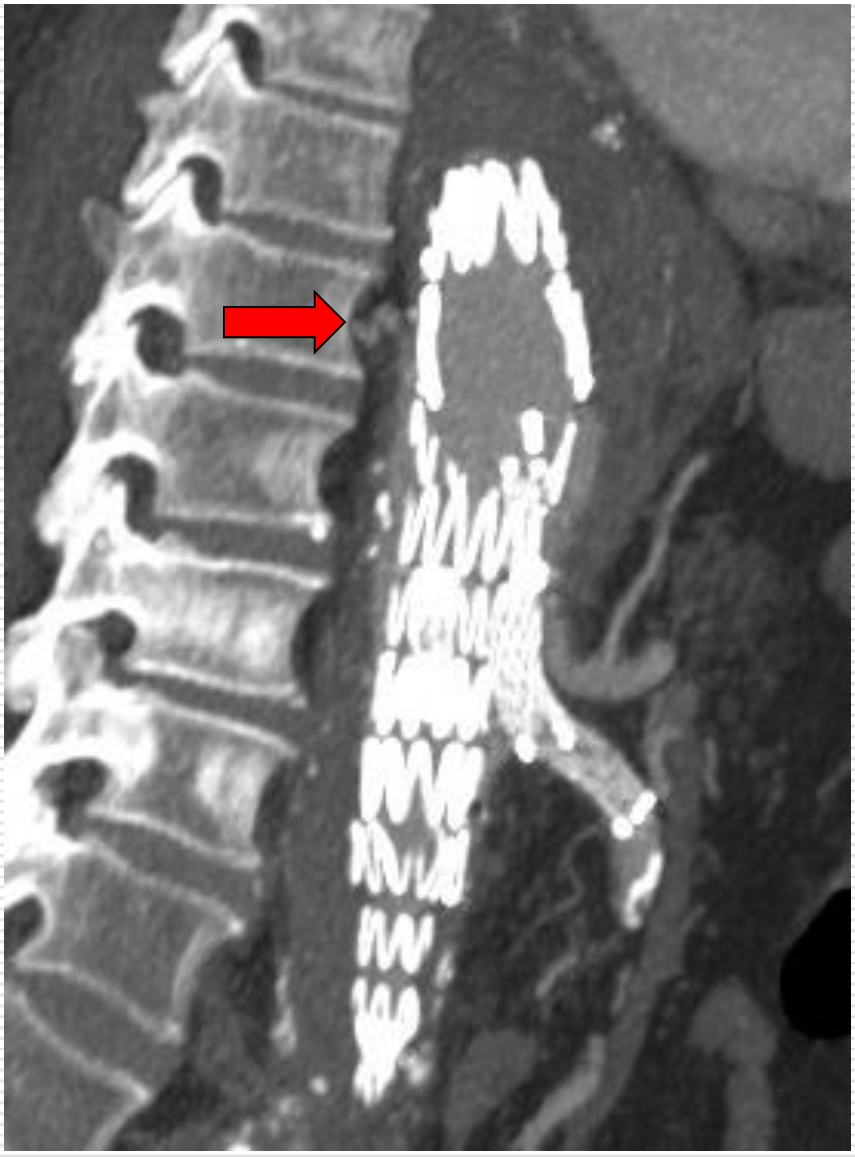
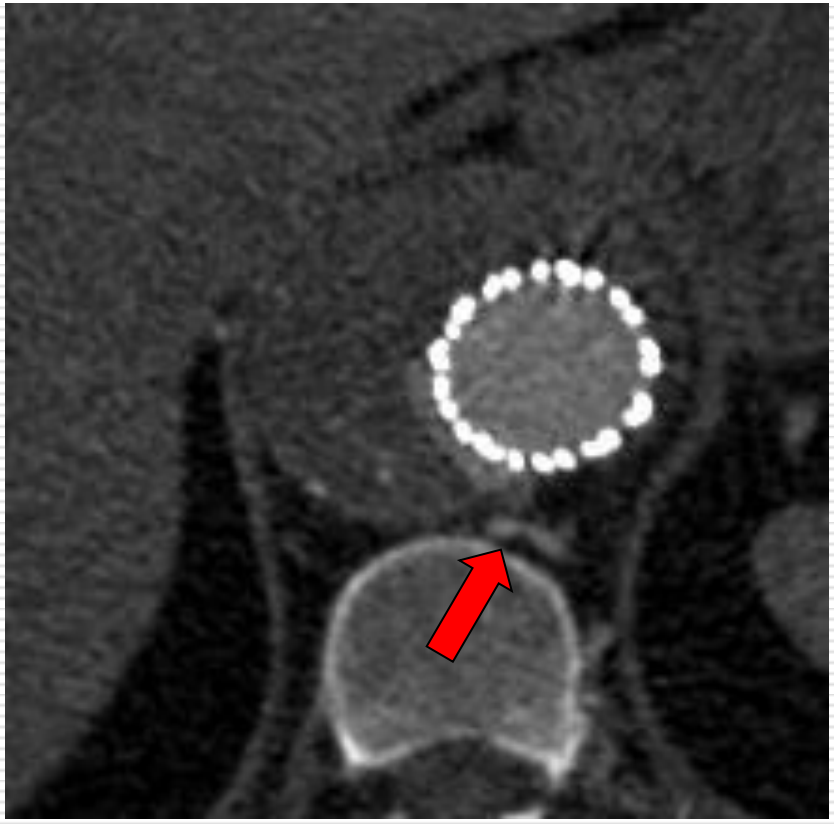
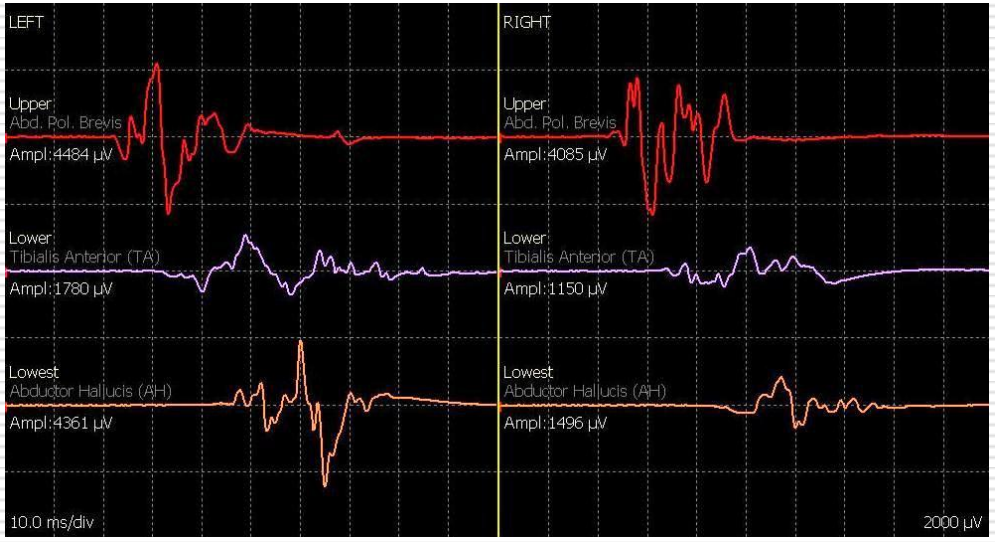




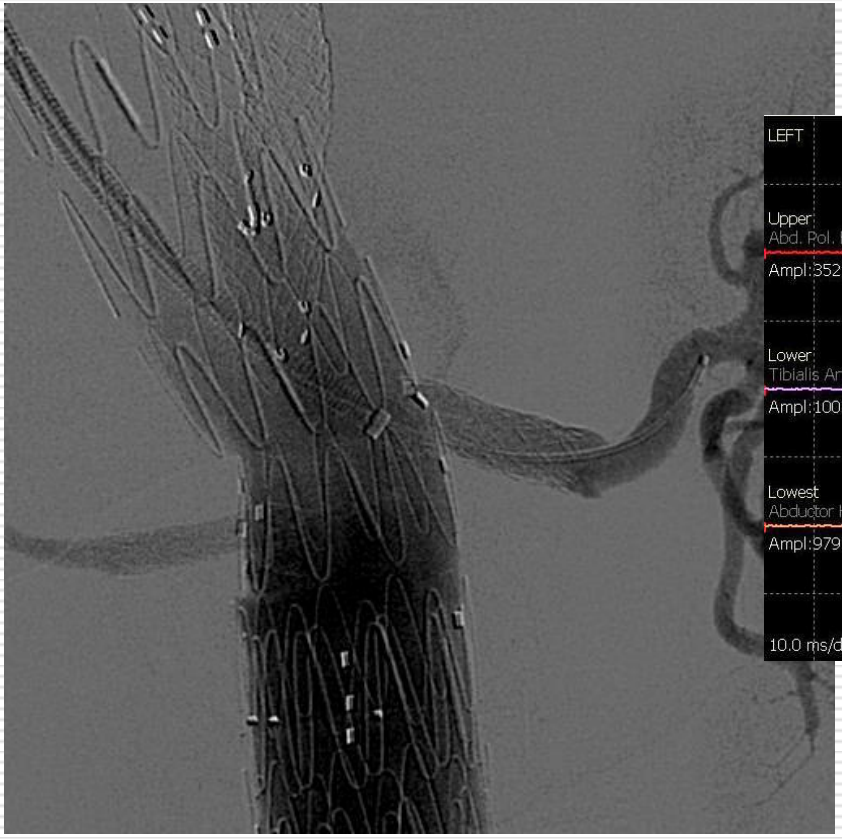
MEP baseline



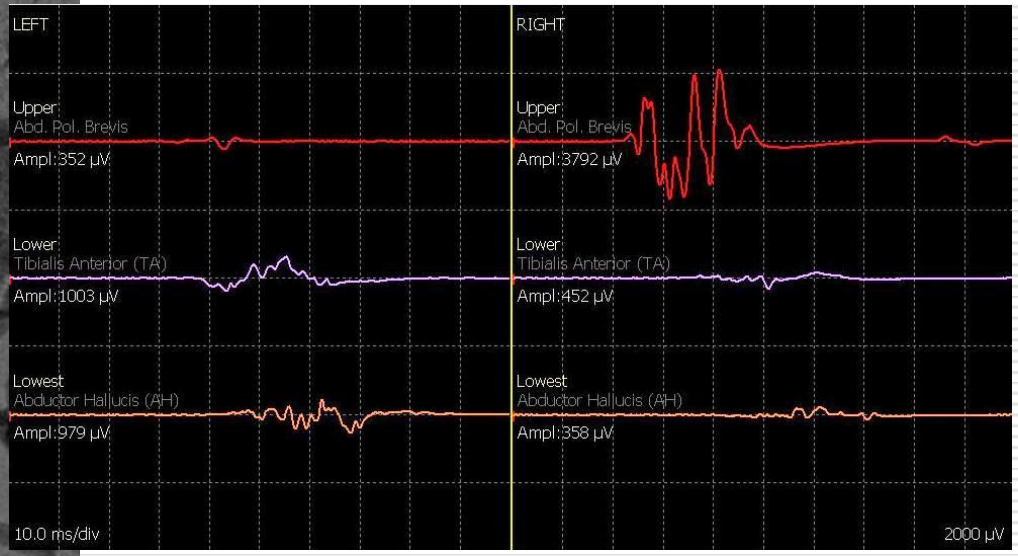
Angio before last groin stent

MEP after stent deployed

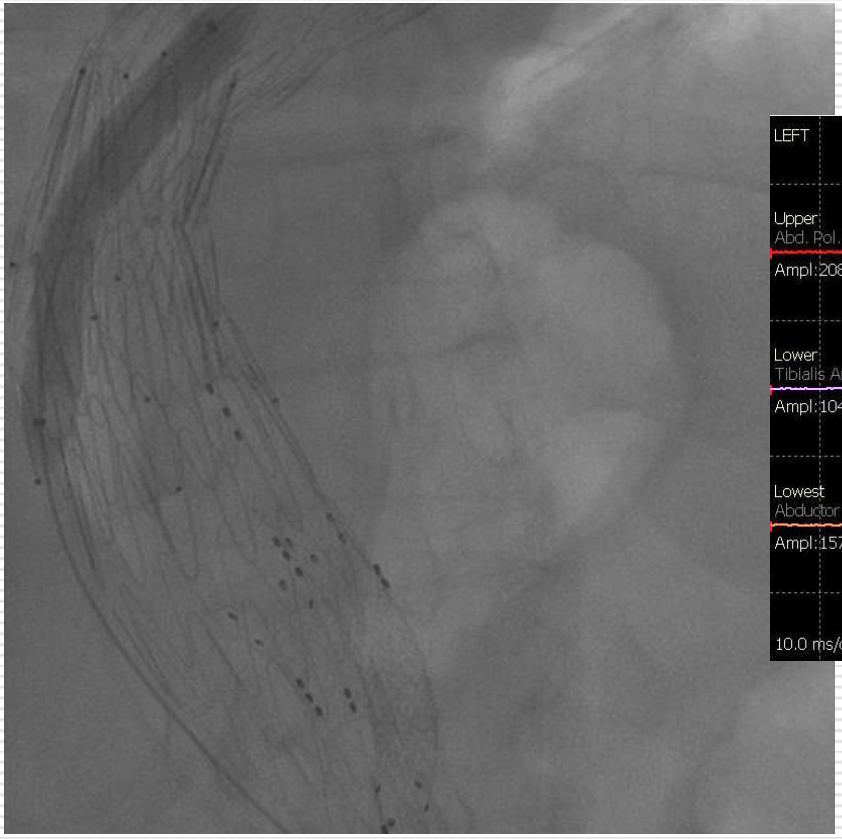
LRA endoleak



MEP after endoleak closed

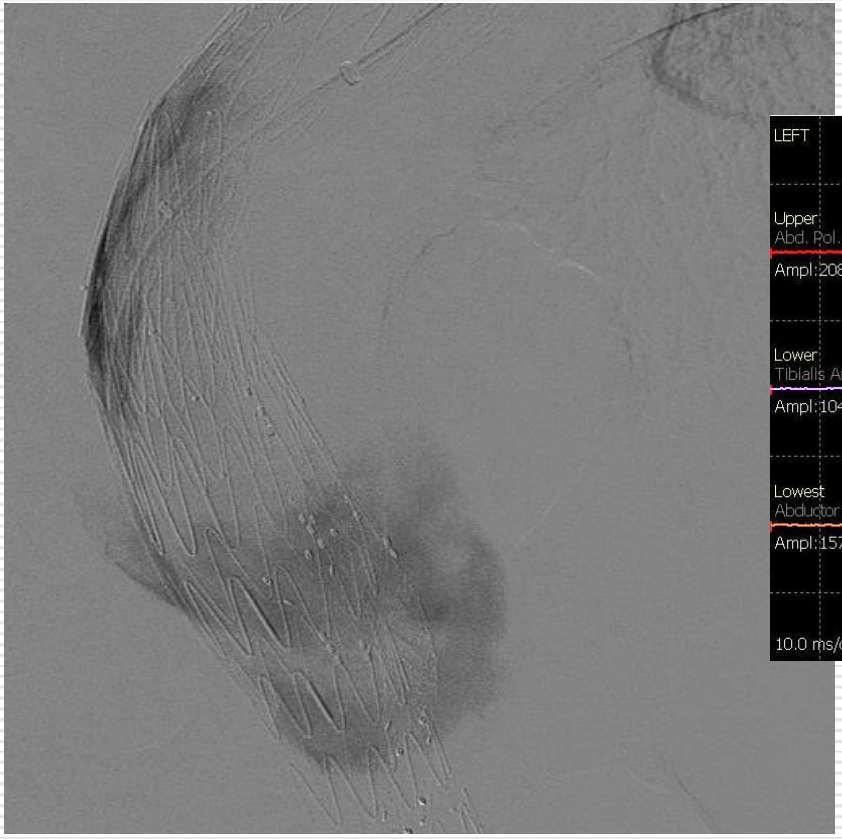


Endoleak created



MEP after endoleak created

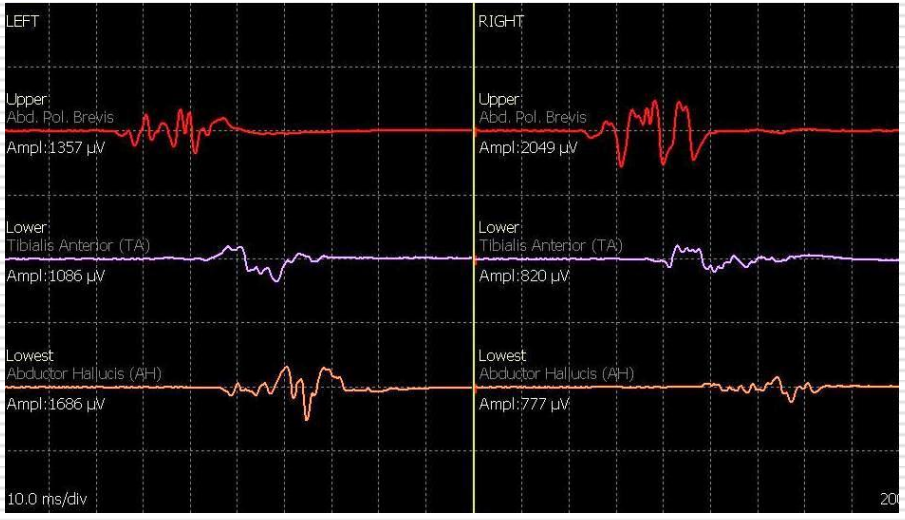
Endoleak created



MEP after endoleak created

MEP baseline

MEP final



Conclusions

Prevention of SCI

Graft planning

Optimise spinal cord blood supply

Maintain spinal cord perfusion pressure

Neuromonitoring to guide procedure?