WHEN SECONDS COUNT: BEVAR FOR RUPTURED TAAA

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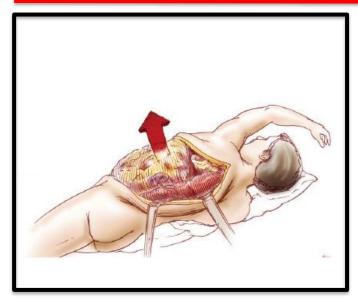


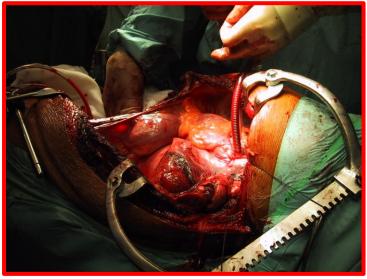
Disclosures

Proctoring/speakers fees
Cook Medical
WL Gore
Maquet

Grant Support
Cook Medical
Medtronic

Ruptured TAAA: Open Repair

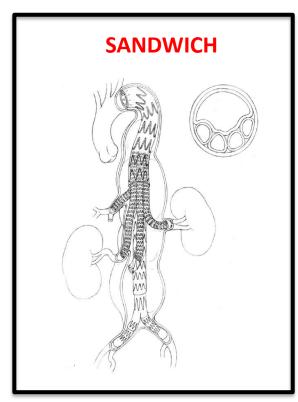


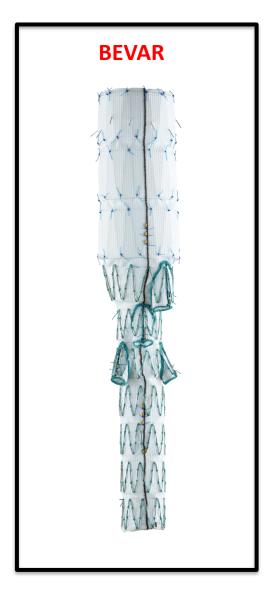


	Overall	50-59 years	60-69 years	70-79 years	80-89 years
Elective					
Patients (n)	797	77	273	392	55
30 day (%)	19.2	10.4	17.2	21.2	27.3
31-365 (%)	11.7	7.8	9.9	13.5	12.7
365 day (%)	30.9	18.2	27.1	34.7	40.0
Ruptured					
Patients (n)	213	9	63	109	32
30 day (%)	48.4	33.3	47.6	50.5	46.9
31-365 (%)	13.1	22.3	9.5	11.9	21.9
365 day (%)	61.5	55.6	57.1	62.4	68.8

Endovascular Solutions for Ruptured TAAA



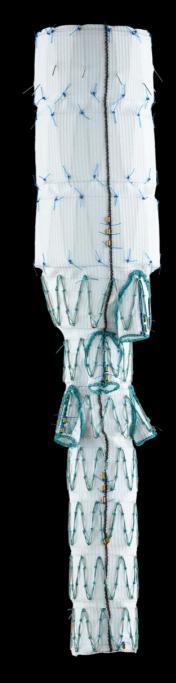




Off the Shelf Solutions







34 mm 202 mm



Diameter: 8 mm Clock: 1:00

Left Renal Branch

Diameter: 6 mm Length: 18 mm Clock: 3:00



22F

18 mm



Right Renal Branch

SMA Branch

Diameter: 8 mm Clock: 12:00

Diameter: 6 mm Clock: 10:00

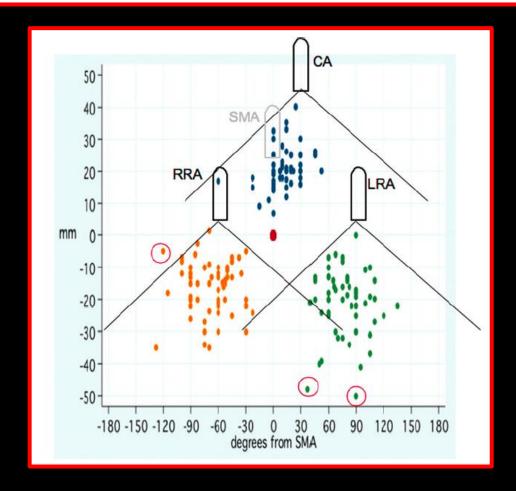


◆ ISES ENDOVASCULAR RESEARCH COMPETITION, SECOND PLACE —

A Standardized Multi-Branched Thoracoabdominal Stent-Graft for Endovascular Aneurysm Repair

Matthew P. Sweet, MD, MS¹; Jade S. Hiramoto, MD¹; Ki-Hyuk Park, MD, PhD²; Linda M. Reilly, MD¹; and Timothy A.M. Chuter, DM¹

¹Department of Surgery, Division of Vascular Surgery, University of California at San Francisco, California, USA. ²Department of Surgery, Division of Vascular Surgery, Daegu Catholic University School of Medicine, Daegu, Korea.





From the Vascular and Endovascular Surgery Society

Standard off-the-shelf versus custom-made multibranched thoracoabdominal aortic stent grafts

Charlene C., Fernandez, BS, Julia D. Sobel, BS, Warren J. Gasper, MD, Shant M. Vartanian, MD, Linda M. Reilly, MD, Timothy A. M. Chuter, MD, and Jade S. Hiramoto, MD, San Francisc, Calif.

Objective: The complex aortic branch anatomy in thorsconbdominal aortic aneuryum (TAAAs) and paraenal CONCERN: The complex aorts: branch austomy in thorscondominal aorts: aneurysms (TAAs) and paremai aneurysms (PRAAs) presents a challenge for endorsteadur repair. The multibrended endorstoals endorsteadur repair. aortic aneurysens (FRAAs) presents a challenge for endorsacular repair. The multibranched endorsacular device has durable midterm results with use of a custom branch stent graft (CGG) configuration. The midterm results with use of a custom branch stent graft (CGG) configuration. has gurance mustern results with use of a custom branch stent graft (CNG) configuration. The nideren results with use of the standard branch stent graft (SNG) configuration are unknown, but it has the advantage of off the shelf schoology. UR THE STARTLEFF TWENCH SECTO (SMAL) CONSEQUENCES OF UNEXNOVA, BUT IT HAS THE SECTION OF THE GOAD OF THIS STUDY WAS TO CONSEQUE THE INSTITUTE OF CONSEQUENCES OF CSG and SSG multiherached endorsescale desires. The goal of this study was to compare the mistrern outcomes of CSG and SSG multibranched endorwacular devices.

Melbode: From July 2005 to September 2014, 135 patients underwear decirie endorwacular repair of TAAA and FRAA in

agranger From July 2003 to September 2014, 138 patients underwent elective endovascular required a prospective trial. Beginning in December 2008, SSGs were used in those with suitable manning. a prospective trial, negimning in December 2008, SSGs were used in those with suitable automy.

Results: Fufty partients (mean age, 71 ± 7 years; 11 women [22%]) were treated using SSGs, and 83 partients (mean age, 71 ± 7 years; 12 women [22%]) were treated using SSGs, and 8.5 partients (mean age, 71 ± 7 years; 12 women [22%]) were treated using SSGs. REFIRM: Fully patients (mean age, 71 ± 7 years; 11 women [225]) were treated using SSGs, and 83 patients (mean age, 74 ± 9 years; 22 women [26.5%]) underwent repair using CSGs. The SSG and CSG groups were similar with repair 74 x y years; 22 women [26,3%] underwent repair using CSGs. The SGI and CSG groups were similar with report to ancuryon size, aneutywa extent, and medical comorbidities, with the safe exception of lung disease, which was necessarily an extended of the complex o aneurywa sase, aneurywa extent, and medical consorbidities, with the usie exception of lung disease, which was more a common in the SSG group. All stent grafts were deployed as intended, with no convenient to open replif. Acta 7 and and deviation follows on (Acces) was 694 ± 515 for the SSG group and 942 ± 764 for the CSG group (# = .045). common in the SSG group. All stent grafts were deployed as intended, with no convenient to open repair. Man ± 1.00 to the SSG group and 942 ± 704 for the CSG group (# = .045).

**The SSG group of the SSG group and 942 ± 704 for the CSG group and 942 ± 70 standard deviation follow-up (days) was 694 ± 525 for the SSG group and 942 ± 764 for the CSG group (P = .045).

There were no significant difference in aneutysm related death, read failure requiring dislays, strake, resideab, vicently and have the contraction of the contract of the co There were no significant differences in ancuryon-related death, rend failure requiring dishvis, stroke, englotek, viveral or renal branch occlusions, hower extremity weakness, or reintervention (P> 0.5 for each). The volume of contrast natural owners almost on the property of the prop or rettal branch occlusion, lower extremity weakness, or reintervention (P>.05 for each). The volume of contrast natural was significantly lower in those with SSGs compared with CSGs (P=.016), but there were no significant difference in an extraction of the state o was significantly lower in those with SSGs compared with CSGs (P = .016), but there were no significant difference in operative or fluoroscopy times. Time to treatment (days from consent to surgery) was significantly lower in SSG patents of the consent of th compared with CSG patients (P = 0.1).

Conclusions: For patients with suitable anatomy, the use of SSGs for TAM and PRM requirements in significantly the state of the midstern communication of the subserver waits risease as surveyers and is as easier, effective, and durable in the midstern communication (CSGs. (1 Var. Some Absorber waits risease as surveyers and is as easier.

Conclusions: For patients with suitable anatomy, the use of SSGs for TAAA and PRAA remit results in significantly abover wait times us surgery and is as safe, effective, and durable in the militerin compared with CSGs. (I Viae Surg 2016-6-8). 1208-18.)

2016;63:1208-15.)

Open repair of thoracoabdominal aortic aneurysm (TAAA) is a secciated with significant morbidity and more alignificant morbidity and morbidity a even in contemporary series at centers of excellence. Main even in contemporary sens at centen of excellence. Moli-branched endowscellar ancurysm repair (MREVAR) avoids unancines ensurvacions ancupan repair (sane-vak) arinna extensive aorise exposure, aorise eras damp, and sisteral extensive aorise exposure, aorise erose camps, and rucera ischeriila. However, these potential advantages apply only

ischemia. However, these potential advantages apply on to those putients with the appropriate anatomic substrate. o those patients with the appropriate anatomic substrate.

The early experience with MBEVAR employed. The early expenence with MBEVAR employed custom made stent grafts (CSGs) in which the distribution

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of branch attachment sites (ruffs) reflected the distribution or branch arrenal onlines in patients with TAAN and para-renal aortis ancuryons (PRAA). This approach proved to renal sortic ancurrenta (17648), 118 approuch proced to
the sale, effective, and durable, despate considerable variaor saw, energies, and dirante, despite considerate variation in the relative positions of the cults and their core unn in the restate positions of the carls and their core appointing arrenal orifices. Variation in the length and aponium, arteriai orinces. Variation in the length and orientation of the arent graft's axially oriented modular orientation or one stem grants axiony continue enough branches accommodated errors in stem gran manufacture

impaintaion.

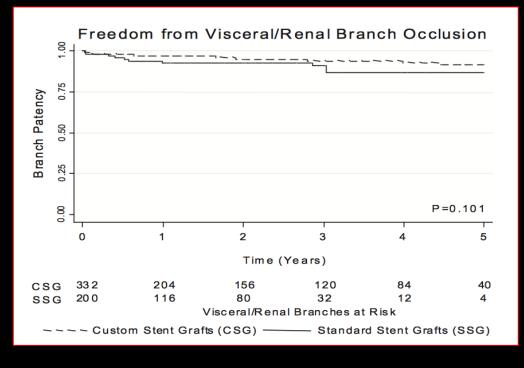
The original restricted of symptomatic patients who The urgent treatment of symptomistic patterns who could not wait for individualized numberature of a CNG. cound not want for individualized manufacture of 2 Coci-supported that this form of intraportative commentation. suggested that this norm of intrasperative customarations would also permit successful MREVAR using a permit successful MREVAR using a permit successful MREVAR using a permit successful manufacture of the permit successful manufactur would also permit successful MBAVAR using a premite successful manufacture analysis of premit statistics are set graft (SGG), Resources analysis of premite statistics are set graft (SGG), Resources and top a \$4.0 minute above to a set of the standard seen graft (SSG). Remorphetic analysis of breast distribution in cases of TAAA and TAAA seemed the basis distribution in cases of TAAA and RAA's intered the basis for the design of 4 single design SQS for use in combination that the state of the design of 4 single design SQS for use in combination and the state of th for the design of a single design NGG for use in combination with standard proximal and distrib extensions in a

wide range of patients.
The first case of MBEVAR using an off the shelf SSG. The first case of MBEVAR using an off the shell SGG

The first case of MBEVAR using since then, SGG hard

Took place in December 2008. MBEVAR cases it for
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The first case of MBEVAR using it for the sheet cases in the sheet case been used in more than helf of all MBFAR cases at the versity of California. San Pennission (UCSE) subsect any versity of California. San Pennission (UCSE) versity of California, San Francisco (UCSF) without any application of the company of the company of the company of the application of the company of the co apparent effect on short term reight, Meanwhile, refaire termers and the commend to expand the state of the contract and termes and the contract and termers are termers are termers are termers and termers are termers. ments in stem graft design have continued to explore to be potential application of this technique. The current sum of supplication of this technique, and the supplication of the technique and the supplication of the technique and the supplication of the technique and the supplication of the supplication was undertaken to compare SSG and C. ber of partients with longer follow-up.



Custom-made versus off-the-shelf multibranched endografts for endovascular repair of thoracoabdominal aortic aneurysms

Theodoxios Bisdas, MD, Konstantinos P. Donas, MD, Michel J. Bosiers, MD, Giovanni Torsello, MD, and Martin Austermann, MD, Muenster, Germany

Objective: This study compared early outcomes between the custom made and the new off the shelf multibranched endograft (mbEVAR, t-branch; Cook Medical, Bloomington, Ind) for the endoracular repair of thoraconblominal

aortic aneutysms (TAAAs).

Methode: Between January 2010 and January 2013, 46 consecutive partients with TAAs underwent endorsacular sortic aterioris: netween jamaary 2011 and jamaary 2013, 46 consecutive patients with TAAAs underwent enfortacular aerice.

To pair with mbEVARA. A custom made device was used in 24 patients (group A, 52%), with Crawford dissillation type I,

To pair the manufacture of the patients of the patients of the patients (group A, 52%), with Crawford dissillation type I,

To pair the manufacture of the patients of the patient repair with mbl/VARs. A custom made device was used in 24 patients (group A, 52%), with Crawford disatification type I, 2 (8%); type II, 4 (17%); type III, 9 (38%); and type IV/V, 9 (38%), and the a L-branch endograft was used in 22 patients. 4 (8%); type 11, 9 (17%); type 111, 9 (88%); and type 1V/V, 9 (88%), and the a torach entograft was used in 22 quiests (8700) B, 47%), with type (11, 9) (41%); type (11, 12) (5%); and type (1V/V, 1) (48). The main outcome measure was a supervised of the substance of the half-time entograft are exact to (8700) and (8700) and (8700) and (8700) and (8700) are (8700) and (8700) and (8700) and (8700) are (8700) and (8700) and (8700) and (8700) are (8700) and (8700) and (8700) are (8700) and (8700) and (8700) are (8700) and (8700) are (8700) and (8700) and (8700) are (8700) are (8700) and (8700) are (8700) and (8700) are (8700) are (8700) and (8700) are (8700) are (8700) and (8700) are (87Igroup B, 47%), with type H, 9 (41%); type III, 12 (88%); and type IV/V, 1 (4%). The main outcome measure was received as successful target revascularization without occlusion of the bridging endografts or type I of the state of the bridging endografts or type I of the bridging endografts or the bri tecnnical success, defined as successful target revascularisation without occlusion of the bridging endografts or type I or III endotesk at the completion angiography. Secondary end points were mortality, annhanned enterventions, beand

occlusion, paraplegia, and persistent (after discharge) paraparesis.

Renulæ: Technical success was 10% in both groups. The 30 day mortality was 5% in group A (n=2) and 0% in group B in the B in the B is the B in the B in the B in the B in the B is the B in the B in the B in the B in the B is the B in the B is the B in AFRIEN: Lectronical success was 100% in both groups. The 30 day mortality was 8% in group A (n = 2) and 0% in group 8 (P = -3). Survival rates at 6 months were 71% in group 8 (mean follow up. 13 = 11 months) and 94% in group 8 (mean follow up. 13 = 11 months) and 94% in group 8 (P = -31). There was only one reconstructed death caused by cerebral Mending and 15 months were 10 months were 10 months were 10 months were 10 months and 10 months with 15 months and 15 months with 15 months and 15 months were 10 months were 10 months with 15 months with 15 months and 15 months with 15 months were 10 months were 10 months were 10 months with 15 months with 15 months with 15 months with 15 months were 10 months were 10 months were 10 months with 15 months with 15 months with 15 months were 10 months we (P=.51). Survival rates at 6 months were 71% in group A (mean follow up, 13 ± 11 months) and 94% in group B (near follow up, 15 ± 11 months). A property of the property of 15 ± 11 months and 94% in group B (near procedure related death caused by corrected before 15 ± 11 months and 15 ± 11 month follow-up, 6 \pm 3 months; (P=.04). There was only one procedure related death caused by cerebral bleeding and laberination in group A. (The freedom from reintervention rate at 6 nonths was 100% in group A (mean follow up, 12 \pm 13 months). No branch occlusions were observed in 13.5 months and 60% in group B. In herniation in group A. The freedom from geintervention rate at 6 months was 100% in group A (mean follow up. 12 ± 1.5 months) and 90% in group B (mean follow-up. 6 ± 3.9 months) and 90% in group B (mean follow-up. 6 ± 3.9 months). The state of the bidding endough for the property of th 11.5 months) and 90% in group B (mean follow up, 6 ± 3.9 months; P = 07). No branch occlusions were observed in group A whereas a branch occlusion occurred in three patients in group B (in all cases the bridging endograf for the group). The reconstruction occurred in three patients in group B (in all cases the bridging endograf for the patients in group B (in all cases the bridging endograf for the patients in group B (in all cases the bridging endograf for the patients in group B (in all cases the bridging endograf for the patients). group A, whereas a branch occlusion occurred in three patients in group is (in all cases the bridging endograft for the recent arrey). In two patients, the possible reason for branch occlusion was a thomshophilic disorder, whereas in one carried a recent arrey). In two patients, the possible reason for branch occlusion was a thomshophilic disorder, whereas in one our or of the recent fermion of the possible reason for branch occlusion was a thomshophilic disorder. renal artery). In two patients, the possible reason for branch occlusion was a thrombophilic disorder, whereas in one patients, the reason remains unknown. Paraplegia was observed in one patient in each group $y_i \in Y_i$ group $y_i \in Y_i$. The reason remains unknown. Paraplegia was observed in one patient (i.e., $y_i \in Y_i$), in group $y_i \in Y_i$. Parient, the reason remains unknown. Paraplegia was observed in one patient in each group (group A, 4% group it S). P = .5.1) and persistent paraparents in two patients in group A (8%) and in one patient (5%) in group (P = .4).

Constitution of the state of the parameters of the state P = 51) and persistent paraparesis in two patients in group A (8%) and in one patient (5%) in group B (P = 94). Conclusione: The t-branch device, with the unique advantage of direct implantation without any delay for annufacturing the property of the Conclusions: The 1 branch device, with the unique advantage of direct implantation without any delay for manufacturing, the showed 100% technical success and comparable dinical outcomes to the traditional custom made mbl/VAR. Further the state of the s

anowed 1047% rectinical success and comparable clinical ourcomes to the tender term evaluation remains mandatory. () Vacc Surg. 2014;60::186-95.)

The first clinical evaluation of the custom-made multiand the transcal evaluation of the custom made multi-branched endograft used for endovascular aneuryan reput OPENING CHAOGEAN MAD NO CHARTSCHAFF CHAOCEAN (INDEVAR) showed very promising outcomes in electric ITIDE VAR, snowed very promising outcomes in encure cases and may be the approach of choice in mulamental patients due to the minimally invasive character (no surrie camping, no visceral iscinenta). However, the custom-made design has two considerable limitations. Firstly, it mane design has two consocrative immeations, firstly, it has no searchard branch configuration applicable to all types nas no standard praint cumpguration applicable to all types of sortic anatomy, and secondly, i.e. The latter excludes culents up to 8 to 10 weeks.

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Sept. 2014.

5.7, 2014.

Supplier requests: Theodoses Budes, MD, Department of Vaccial Superior.

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symptomatic and reputed theracondecental aeric symptomatic and reptures theracondominal acute ancurpants (TAMs), which still have to be repaired. anxiety (17040), were not report through conventional surgery or off the skell reconstruct. travenges convenienta surgery or our the sacit techniques.
This delay also poses the risk of sortic enpirer in asymp

on panerna wanting for the service.

1 overcome these limitations, a new off-the-shell the conference of the service of the se tomatic patients waiting for the device. nbEVAR (themeh, Cook Medical, Blandmann, and mnevAs (cornet), Cook Medical, Bioministical, Indiana been manufactured and is now available for use in the large state of the nas ocea numeracured and is now available for use in Europe. The main characteristics are the sandard decide and the first for the sandard decide. Europe. The man consistence are the standard design and the fixed position of the branches, suitable for it can be supported to the branches. and the three pagement of the contents, materials for the sea in 50% of TAMs treated with a custom study made and seasons. in airs of AAAs treated with a outcom made most VAX.
The first clinical evaluation of rechnical success and perior, 1 on mine currical evaluation of securical success and period, earlier conference confirmed the safety and effectiveness on the currical security and effectiveness of the safety and effectiv

we cover, whether the new standard design with the However, whether the new standard design with the first benches configuration is as equally efficience a first transformation custom make transformation custom make the configuration of the conducted this analy to commerce the efficacy of the first conducted this analy to commerce the efficacy of the conducted this analy to commerce the efficacy of the first conducted this analy to commerce the efficacy of the first conducted this analy to commerce the efficacy of the first conducted this analy to commerce the efficacy of the first conducted this analysis of the first conducted the first conducted this analysis of the first conducted this analysis of the first conducted the first conducted this analysis of the first conducted traditional costons state version results questionable We conducted this study to compare the efficiency of the world conducted this study to compare the charge of the conducted this study to compare the charge of the conducted this study to the conducted the conducted to the c We constanted this study to compare the efficient of the observed with the study to compare the efficient of the observed with the study of the observed with the study of the observed with the study of the observed with the obse s was areas was the maintain custom transce. Framework of a single-center experience.

Off shelf vs custom made

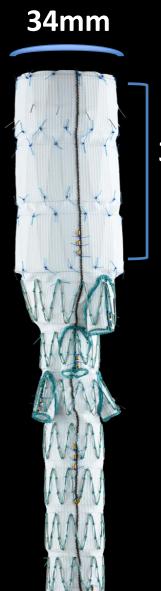
Survival: 94% vs 71%

Paraplegia: 5% vs 4%

Re-intervention: 10% vs 0%

Anatomical Considerations

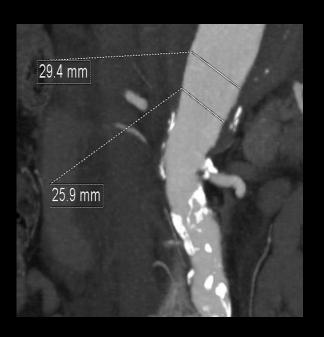
- Luminal diameter
- Orientation and trajectory of target vessels
- Proximal seal
- Distance coeliac → caudal renal
- Aortic angulation
- Access



3 sealing stents

Renal vessels.....the good, the bad, the ugly













72 male **COPD Previous MI**

04/10/2016 4:08 PM Kern:FC08 СТА C:NIOPAM 300 100ML

000000030 1024x1024 Filter:None

5mm/div





FOV:393.75 mm HELICAL_CT 80 kV 354 mA Tilt:0.00 LAO 0: CAU 90



W:1345 L:236

5mm/div





Se:6 04/19/2016 10:48 AM Kern:B C:CONTRAST

R

FOV:474.00 mm HELIX 120 kV 108 mA Tilt:0.00 RAO 90: CAU 90



W:1696 L:163

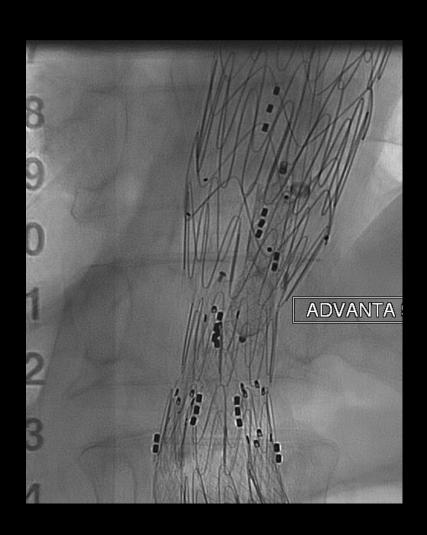
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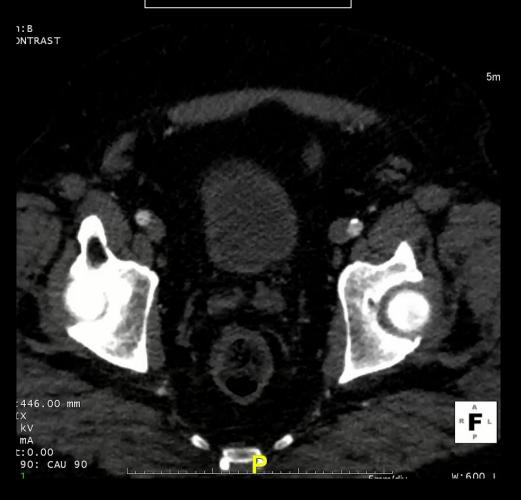
SUBTRACTION COOK 40 X 30 X 161mm COOK 34 X 18 X 202mm AORTA/ILIACS IA BARD-E 7mm X 60mm FLUENCY 7mm X 40mm FLUENCY 7mm X 40mm ADVANTA 9mm X 38mm FLUENCY 9mm X 60mm EVERFLEX 6mm X 60mm FLUENCY 7mm X 60mm COOK 13mm X 74mm

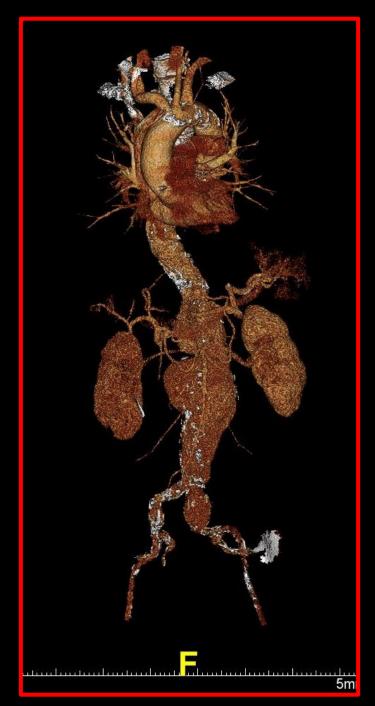
Every second counts.....

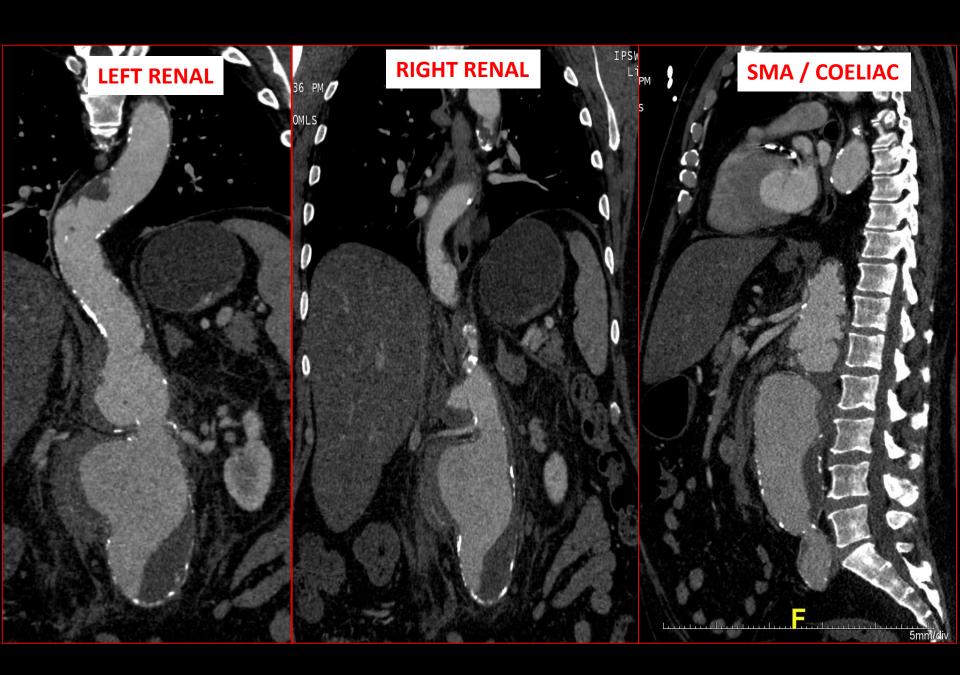




67 male
Type 2 DM
COPD
Osteoarthritis
High BMI









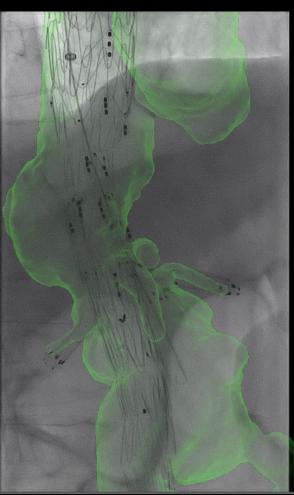


Post-operative day 4



Every second counts.....









- Skåne University Hospital, Malmö
- Uppsala University Hospital, Uppsala
- St Thomas' Hospital, London

BEVAR for Ruptured TAAA: 2008-2016

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Total number of patients 21
Age 76 (34-82)
Crawford classification
Type 1 (n=2)
Type 2 (n=10)
Type 3 (n=5)
Type 4 (n=4)
Previous aortic surgery 9
Shock 4
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Aneurysm exclusion
Target vessels stented
Tar
```

Summary

- Management of ruptured TAAA remains challenging
- BEVAR extends treatment options
- Planning and patient specific approach is key
- Some flexibility in anatomical criteria
- Adjuncts /ancillary tools / experience required
- True utility more apparent as experience grows

