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ABSTRACTS

VS ASM 2024 prize winning Abstracts

The Vascular Societies' Annual Scientific Meeting 2024, in conjunction with the VSGBI, BACPAR, SVN and CSVS, took place at DoubleTree by Hilton, Brighton, on the 27th-29th November 2024. Here are the 2024 prize winning abstracts.

VS - Sol Cohen Founders Prize

The Natural History of Splenic Artery Aneurysms: A Decade's Experience of Surveillance and Management at a Large Tertiary Vascular Unit

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Background
Splenic artery aneurysms (SAAs) are the commonest visceral artery aneurysm. Their natural history is poorly defined and guidelines for their surveillance and management provide weak recommendations based on moderate quality evidence. We present one of the largest retrospective SAA series.

Methods
All patients reported to have a SAA between 2012 and 2021 inclusive at a single centre were identified through a search of radiology records. These data were combined with clinical electronic patient records and follow-up scans to determine a natural history.

Results
162 patients with SAA were identified, 73% female with a mean age of 71 years (SD 14) at index scan. The mean maximal SAA diameter in any plane was 15.7mm (range 6-62mm), 88% were calcified, 1% pseudo-aneurysmal. The morphology for 88% was saccular, 4% fusiform and 8% indeterminate.

Sixty-five patients underwent further imaging, 20 within a formal SAA surveillance programme. The mean time between index and final scan was 3 years and 5 months with a mean SAA growth of 0.33 mm/year (Figure 1&2).

Five SAAs underwent intervention, 1 under surveillance, 4 de-novo: 2 for rupture. Four underwent coil embolisation (1 requiring repeat embolisation with N-butyl-cyanoacrylate) and one underwent splenectomy. There were only 2 ruptures in the cohort, neither under surveillance, both were treated successfully. There were no SAA related deaths.

Figure 1 Splenic Artery Aneurysm Growth.

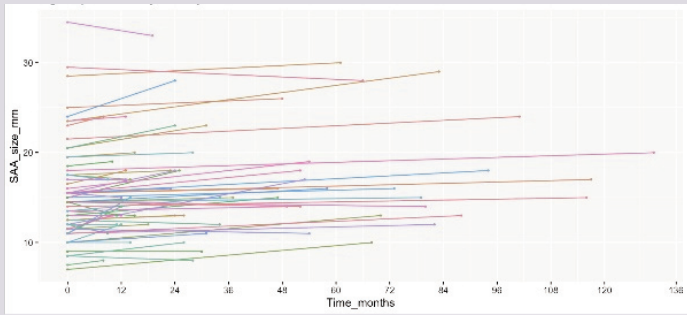
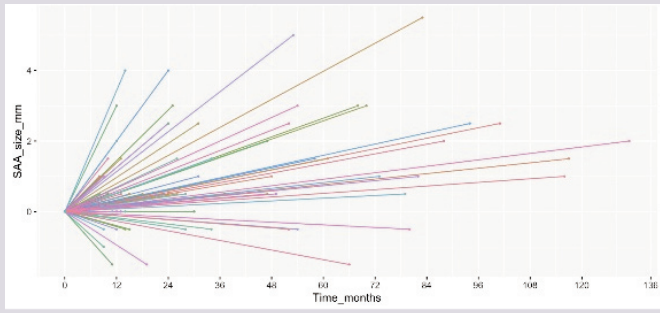


Figure 2 Relative Splenic Artery Aneurysm Growth.



Conclusion
SAAs predominate in an elderly female cohort, rarely rupture and demonstrate a slow rate of growth at 0.33mm per year. Consideration should be given to lengthening the surveillance interval in stable SAAs to 3-5 years.

VS - BJS Prize

Surgical Site Infections in Major Lower Limb Amputation: An International Multicentre Audit (SIMBA).

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Introduction

Surgical Site Infection (SSI) after major lower limb amputation (MLLA) significantly affects function, mobility, morbidity and mortality alongside broader impacts on healthcare services. Limited data exists on incidence, prevention and management. Improving clinical outcomes and wound healing have been identified as research priorities for MLLA patients.

Methods

SIMBA is an international, prospective, collaborative audit. Data were collected for consecutive patients undergoing MLLA over 8 months, with 30-day follow-up. Outcomes included comparing current practice against published recommendations, incidence of SSI, wound dehiscence, revision, mortality, adjunct use, and SSI predictors.

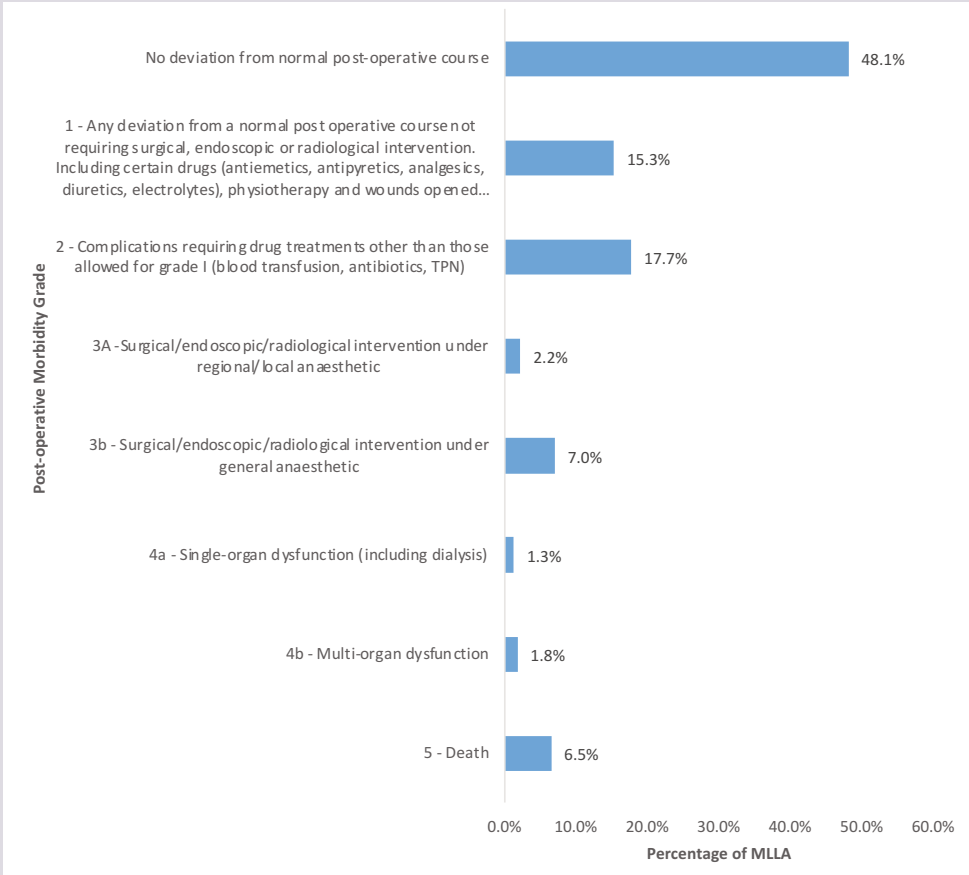
Results

Validated data for 940 MLLA from 33 centres (UK (24), Europe (7), Australasia (1) and Asia (1)) were collected, comprising 48.0% above-knee, 3.2% through-knee and 48.6% below-knee amputations. The indications for amputation included ischaemia (52.8%), uncontrolled infection (24.1%), breakdown of previous amputation (6.4%), extensive tissue loss (13.3%) and other (3.2%). 66.2% received prophylactic post-operative antibiotics, with a mean duration of 5.8 days. The incidence of SSI and wound breakdown were 10.0% and 14.7%, respectively. Within those who developed SSI(n=94); 31.6% resulted in sepsis, and 15.8% required critical care. In total, only 48.1% of MLLA experienced no deviation from normal post-operative course, with 9.2% requiring further intervention. 30-day mortality was 6.5% (Figure 1).

Conclusion

SSI and wound breakdown after MLLA are frequent complications with significant sequelae, resulting in high rates of re-intervention, increased morbidity and mortality. SIMBA, which to our knowledge is the largest international collaborative study of its kind, highlights the need for strategies to minimise the incidence of SSI, to improve patient outcomes and reduce burden on healthcare systems.

Figure 1 Post-operative morbidity grade as per the Clavien-Dindo scale within 30 days of surgery



VS - Poster Prize

The incidence of surgical site infection following major lower limb amputation: A systematic review

Miss Nina Al-Saadi[1], Mr. Khalid Al-Hashimi[2], Mr. Matthew Popplewell[1], Miss Ismay Fabre[3], Mr. Brenig Gwilym[3], Miss Louise Hitchman[4], Professor Ian Chetter[4], Mr. David Bosanquet[3], Mr. Michael Wall[1]

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Introduction

Surgical site infections (SSIs) following major lower limb amputation (MLLA) in vascular patients are a major source of morbidity. The objective of this systematic review was to determine the incidence of SSI following MLLA in vascular patients.

Method

This review was prospectively registered with the International Prospective Register of Systematic Reviews (CRD42023460645). Databases were searched without date restriction using a pre-defined search strategy.

Results

The search identified 1427 articles. Four RCTs and 21 observational studies, reporting on 50 370 MLLAs, were included. Overall SSI incidence per MLLA incision was 7.2% (3628/50370). The incidence of SSI in patients undergoing through-knee amputation (12.9%) and below-knee amputation (7.5%) was higher than the incidence of SSI in patients undergoing above-knee amputation, (3.9%), p<0.001. The incidence of SSI in studies focusing on patients with peripheral arterial disease (PAD), diabetes or including patients with both was 8.9%, 6.8% and 7.2%, respectively.

Conclusion

SSI is a common complication following MLLA in vascular patients. There is a higher incidence of SSI associated with more distal amputation levels. The reported SSI incidence is similar between patients with underlying PAD and diabetes. Further studies are needed to understand the exact incidence of SSI in vascular patients and the factors which influence this.

VS - The Richard Wood Memorial Prize

Anxiety levels in men in Abdominal Aortic Aneurysm (AAA) surveillance: a cross-sectional survey to investigate the prevalence of psychosocial consequences of AAA in men in surveillance.

Ms. Jane Hughes[1], Mr. Akhtar Nasim[2], Mr. Alan Elstone[4], Dr Jo Hall[3], Mrs Elizabeth Lumley[1], Mr. Niall Macgregor-Smith[1], Professor Jonathan Michaels[1], Mr. Stephen Radley[2], Dr Phil Shackley[1], Professor Gerry Stansby[5], Dr Emily Wood[1], Professor Alicia O'Cathain[1]

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Introduction

Abdominal Aortic Aneurysm (AAA) is a potentially fatal condition. There are approximately 3500 deaths annually in England and Wales following AAA rupture. The NHS AAA Screening Programme undertakes surveillance on men with small AAA's. There are potential harms as well as benefits associated with screening. This study investigates the prevalence of the psychosocial consequences of AAA in men in surveillance, and how these consequences vary by characteristics of men, their AAA and their screening frequency, using generic and AAA-specific measures of quality of life.

Methods

We conducted a cross-sectional postal survey of 1161 men in surveillance with five providers in England. The survey comprised the ePAQ-AAA, the Psychological Consequences of Screening Questionnaire (PCSQ), the EQ-5D-5L, socio-demographic questions and a free text section.

Results

The response rate was 64% (734/1161). Anxiety levels related to AAA varied by size, rate of growth, screening frequency and men's characteristics. For example, mean scores for the ePAQ-AAA scale measuring anxiety ranged from 15.1 for a small AAA (3.0 - 4.0cm) to 28.1 for a AAA over 5.0cm in diameter (p<0.001). Men with fast growing AAA's had higher mean scores than those with slow or non-growing AAA's (40.7 vs 13.1) (p<0.001). Men from the most socially deprived areas had higher anxiety scores than those in the least deprived areas (25.1 v 17.3) (p<0.001).

Conclusion

Any intervention aimed at managing anxiety can be targeted at men in three monthly surveillance or with fast growing AAA's and must be acceptable to men from socially deprived areas.

VS – Venous Prize

Characterising variations in venous thromboembolism prophylaxis practice in orthopaedic surgery: a cross-sectional survey

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Orthopaedic surgery can predispose patients to venous thromboembolism, however literature highlights the limited prescribing of guideline-appropriate thromboprophylaxis.[1–7] Differing physician opinions and controversies in evidence creates variation in guidance, potentially challenging unified prescribing. This study aims to characterise variability in thromboprophylaxis prescribing within orthopaedics.

A scenario-based survey was designed on Qualtrics.com, comprising five total knee arthroplasty (TKA) scenarios and five knee arthroscopy scenarios. The survey was distributed to surgeons and haematologists via professional associations to elicit routine thromboprophylaxis practices. Responses were collated over six weeks. Descriptive statistics and Fisher's exact tests evaluated the impact of risk factors on thromboprophylaxis strategy.

30 responses were analysed. Most respondents prescribed mechanical prophylaxis for TKA (83.3%, n=25) and knee arthroscopy (70.4%, n=19), with variability in the type and duration selected. Pharmacoprophylaxis use varied in knee arthroscopy, with further debate regarding the duration selected. In TKA, respondents were more likely to modify thromboprophylaxis for a history of deep vein thrombosis (DVT) or low platelet count than for other risk factors ($p<0.05$). In knee arthroscopy, thromboprophylaxis changes were more likely for a history of DVT ($p<0.01$).

Variation in the type and duration of thromboprophylaxis was documented, which may be associated with the conflicting evidence supporting certain prophylactic agents.[8–15]

Question		TKA Scenario 1 of 5: No additional risk factors n,(%)	Knee Arthroscopy Scenario 1 of 5: No additional risk factors n,(%)
Mechanical Prophylaxis			
	No Mechanical Prophyalxis	5 (16.7)	8 (29.6)
	Prophylaxis Until Patient is Ambulating	7 (23.3)	8 (29.6)
	Prophylaxis Until Discharge	12 (40.0)	10 (37.0)
	Inpatient Prophylaxis and Post-Discharge	6 (20.0)	1 (3.7)
	Total Responses	30	27
Type?			
	Anti-Embolism Stockings	17 (51.5)	12 (54.5)
	Intermittent Pneumatic Compression Device	15 (45.5)	10 (45.5)
	Foot Impulse Device	1 (3.0)	-
	Other	-	-
	Total (more than one option could be chosen)	33	22
Time of Initiation?			
	Pre-Operatively	13 (52.0)	12 (63.2)
	Intra-Operatively	8 (32.0)	6 (31.6)
	Post-Operatively	4 (16.0)	1 (5.3)
	Total Responses	25	19
Pharmacological Prophylaxis			
	No Pharmacological Prophylaxis	-	16 (59.3)
	Aspirin	7 (23.3)	3 (11.1)
	Low Molecular Weight Heparin	19 (63.3)	8 (29.6)
	Fondaprinux	-	-
	Rivaroxaban	3 (10.0)	-
	Apixaban	-	-
	Dabigatran	-	-
	Other	1 (3.3)	-
	Total Responses	30	27
Time of Initiation?			
	Pre-Operatively	1 (3.3)	-
	1-5 Hours Post-Operatively	2 (6.7)	1 (9.1)
	6-12 Hours Post-Operatively	26 (86.6)	10 (90.9)
	13-24 Hours Post-Operatively	1 (3.3)	-
	>24 Hours Post-Operatively	-	-
	Total Responses	30	11
Duration?			
	Until Patient is Ambulating	1 (3.3)	2 (18.2)
	Duration of Inpatient Stay	-	3 (27.3)
	7 Days Post-Operatively	-	-
	14 Days Post-Operatively	24 (80.0)	4 (36.4)
	28 Days Post-Operatively	4 (13.3)	2 (18.2)
	Other	1 (3.3)	-
	Total Responses	30	11
Post-Discharge Agent? (Those that selected 7, 14 or 28 days post-op duration)	Aspirin	11 (39.3)	3 (50.0)
	Low Molecular Weight Heparin	5 (17.9)	2 (33.3)
	Fondaprinux	-	-
	Rivaroxaban	9 (32.1)	1 (16.7)
	Apixaban	3 (10.7)	-
	Dabigatran	-	-
	Total Responses	28	6

Abbreviations- TKA:Total Knee Arthroplasty

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VS – Medical Student Prize

Using Thromboelastography to compare post-operative anticoagulation: Rivaroxaban and Apixaban demonstrate similar clot strengths in Peripheral Arterial Disease patients.

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Introduction

The VOYAGER trial demonstrated that adding low-dose Rivaroxaban improves peripheral arterial disease (PAD) post-revascularisation outcomes but did not study the effect of other anticoagulants. This study utilised Thromboelastography with Platelet Mapping (TEG-PM) to objectively compare the impact of Rivaroxaban and Apixaban on clot strength (MA-ADP) to determine if there was a difference between medication regimens.

Methods

Patients with PAD undergoing a revascularisation procedure between 2021-2023 were prospectively evaluated. TEG-PM samples taken one-month post-operatively were compared based on patient anticoagulation (Apixaban and Rivaroxaban) and antiplatelet regimen. Descriptive statistics characterised the anticoagulant groups, with Chi-square or Fisher's exact tests comparing discrete data such as demographics and co-morbidities. Mann-Whitney U testing compared MA-ADP values between groups where Gaussian distribution was not seen, and Welch's t-test was used where Gaussian distribution was seen.

Results

Sixty-eight samples were analysed. 32% were on Rivaroxaban, and 68% were on Apixaban. No significant difference in the MA-ADP was noted between Rivaroxaban and Apixaban groups when antiplatelet use was not controlled for (46.9mm (IQR 34.5) vs 45.1mm (IQR 34.2), p= 0.7). Similarly, no significant difference was noted between Rivaroxaban and Apixaban when patients were taking dual antiplatelet therapy (37.8mm ±16.7 vs 42.8mm ±19, p=0.5), Aspirin monotherapy (46.4mm ±20.8 vs 44.3mm ±14.2) or Clopidogrel monotherapy (58.3mm (IQR 43.2) vs 45.9mm (IQR 42.8), p>0.9).

Conclusion

No significant difference was noted in clot strengths between PAD patients taking Apixaban vs Rivaroxaban. This is clinically useful when considering post-operative thromboprophylaxis prescribing, as both medications are equally efficacious.

Supplemental Material

Table 1: Comparison of demographics, co-morbidities and procedure type in Apixaban and Rivaroxaban patients.

Table 1. Comparison of baseline characteristics in the Rivaroxaban and Apixaban groups

Characteristic	Rivaroxaban group (N= 22)	Apixaban group (N=46)	*P* value
Age (years), median (IQR)	69 (16.3)	71 (15.3)	0.767[a]
Male gender, n (%)	15 (68).	36 (78)	0.369[b]
Race, n (%)			
Caucasian participants	19 (86)	37 (80)	0.549[b]
Other	3(14)	9(20)	0.549[b]
Medical Co-morbidities, n (%)			
Diabetes mellitus	13 (59)	30 (65)	0.624[b]
Hypertension	18 (82)	41 (89)	0.456[c]
Hyperlipidaemia	19 (86)	38 (82)	>0.999[c]
Renal Status (Normal)	11 (50)	15 (33)	0.167[b]
BMI, median (IQR)	26.9 (7.2)	26.0 (7.8)	0.699a
Procedure type (Endovascular), n (%)	11 (50)	24 (52)	0.867[b]

[a] Statistics by Mann Whitney U test
[b] Statistics by Pearson's Chi-squared test.
[c] Statistics by Fisher's exact test
Abbreviations used: IQR – interquartile range

Table 2: Comparison of MA_{ADP} between Rivaroxaban and Apixaban patients separated by antiplatelet regimen

Table 2. Comparison of MA_{ADP} between Rivaroxaban and Apixaban groups separated by antiplatelet regimen

Anti-platelet Regimen	Rivaroxaban group	Apixaban group	*P* value
DAPT OR MAPT, Median (IQR)	49.6 (34.5)	45.1 (34.2)	0.743[a]
Aspirin + Clopidogrel, mean ± SD	37.8 ± 16.7	42.8 ± 19.0	0.487[b]
Aspirin, mean ± SD	46.4 ± 20.8	44.3 ± 14.2	0.827[b]
Clopidogrel, median (IQR)	58.3 (43.2)	45.9 (42.8)	>0.999[a]

[a] Statistics by Mann Whitney U test
[b] Statistics by Welch's t-test
Abbreviations used: MAPT – Mono antiplatelet therapy, DAPT – Dual antiplatelet therapy, SD – standard deviation, IQR – Interquartile range

Table 3: Comparison of MA_{ADP} between antiplatelet regimens within Rivaroxaban and Apixaban groups

Table 3. Comparison of MA_{ADP} values between antiplatelet regimens within Rivaroxaban and Apixaban groups.

Anti-coagulant Regimen	MAPT	DAPT	*P* value
Rivaroxaban	46.0 ± 20.5	37.8 ± 16.7	0.339[a]
Apixaban	43.4 ± 17.3	42.8 ± 19.0	0.919[a]

[a] Statistics by Mann Whitney U test
abbreviations used: MAPT – Mono antiplatelet therapy, DAPT – Dual antiplatelet therapy

SVN - James Purdie Prize

Empowering Patients: A Project for Raising Awareness of Peripheral Arterial Disease (PAD) and the Development of the Claudication Pathway

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This project aims to address the under diagnoses and under treatment of PAD and its associated symptom, intermittent claudication, by engaging patients, healthcare professionals, and the broader community in awareness-raising activities. Through education, patient empowerment, and advocacy, we aspire to improve early detection, management, and outcomes for individuals living with PAD.

The vision the Vascular Nursing Team had was:

- To raise awareness about PAD and its associated symptom, claudication, among both the general population and healthcare professionals.
- Establish a clear pathway for the diagnosis, management, and treatment of PAD and claudication.
- Empower patients with PAD to actively participate in their healthcare journey and advocate for improved access to resources and support.

We established areas of waste within the current service and conducted audits of the current clinic set up to identify areas of improvement. Patient forums were introduced for them to share their views and ideals. Surveys were taken and feedback was welcomed. Patient focus groups shall continue as the team recognises that patients provide valuable insights into the usability, appropriateness, and impact of the service on their experiences and outcomes.

The long-term benefits in terms of improved patient outcomes by preventing disease progression, reducing hospitalisations, and minimising the need for invasive procedures results in reduced healthcare costs. By reducing waste within the previous service, along with reducing wait times for initial appointments for patients, the clinical capacity has increased by more than 150% resulting in a financial gain of over £50,000 per year for the Trust.

Feedback from Patient Surveys.

Are there any other comments or feedback you would like to give the team?
You do a brilliant job

What have you found valuable during your vascular assessment and education sessions?
found the group meeting very informative. Group very friendly and many eager to participate in exercises and fundraising activities. Would personally rather for exercises and advice if allowed.

What have you found valuable during your vascular assessment and education sessions?
being able to talk about my symptoms and learning new exercises that will help me. Also talking to other people with similar symptoms it comforting

What have you found valuable during your vascular assessment and education sessions?
Nice to know I am not alone and talking to other people

What have you found valuable during your vascular assessment and education sessions?
Knowing I'm not alone with this. predicament. Understanding that exercising regularly can seriously improve the symptoms

What do you think could be included to improve the experience for vascular patients in the future?
The continuous meetings eg today this will achieve in more participants to help in the future matters. I help each other. This way one can have a better understanding on symptoms to help the experience of other patients.

SVN - Poster Prize

Multicomponent interventions to support adherence to guideline-recommended therapy in patients with peripheral arterial disease

Mrs Smaragda Lampridou[1,2], Miss Tania Domun[1], Miss Javiera Rosenberg[1], Professor Alun Huw Davies[1,2], Professor Mary Wells[1,2], Dr Gaby Judah[1]

[1]Imperial College London, [2]Imperial College Healthcare NHS Trust

Introduction

Adherence to guideline-recommended therapies in peripheral arterial disease (PAD) patients remains low. Single-component interventions addressing either smoking, exercise or medication adherence have demonstrated some efficacy. However, given the complexity of the PAD treatment plan, multi-component interventions are essential for comprehensive patient management. This scoping review systematically synthesized information on multi-component interventions for PAD patients.

Methods

A systematic search was conducted in Embase, MEDLINE, Cochrane Library, APA PsycINFO, CINAHL, Web of Science Core Collection, ProQuest and Google Academic, to identify primary research describing multicomponent interventions to support treatment adherence in PAD patients, published between 2007-2024. A narrative synthesis was reported using the Template for Intervention Description and Replication (TIDieR) checklist and the Behavioural Change Techniques (BCT) Taxonomy.

Results

This review included 15 studies including 2,462 PAD patients (60.4% male). Only two interventions targeted all PAD therapies. Key intervention components included structured exercise (12/15) and education programmes (10/15). Most interventions were delivered by multidisciplinary teams in hospital settings over three months. Only one study reported employing behavioural theories in its development, and most interventions (14/15) focused on the BCT "instruction on how to perform a behaviour" rather than diverse BCTs. No interventions significantly increased adherence to all PAD therapies.

Conclusion Few interventions target all behaviours; with no evidence of holistic support. Not enough studies measured the intervention's impact on adherence, hindering recommendations on effective intervention characteristics. Most interventions lacked behavioural science approaches and were not designed to address specific adherence determinants. Future interventions should incorporate behavioural strategies to maximise patient benefit.

CSVS - Best Scientific Abstract

Ultrasound based turbulence quantification can predict intimal hyperplasia development in arteriovenous fistula.

Mr. Matthew Bartlett[1]

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Introduction

Imaging surveillance does not offer significant improvements to long term arteriovenous fistula (AVF) patency, but the haemodynamic information obtained using Doppler ultrasound, may hold the key to developing improved monitoring techniques.

Objectives

- Develop a simple tool for analysing the complex haemodynamic data contained within a Doppler spectrogram and quantify the level of turbulence present.
- Validate the tool using patient specific in-silico simulations, and in-vivo trials.

Materials & Methods:

Patients with newly created AVF underwent duplex scanning post-surgery. Cardiac gated audio recordings of the Doppler shifted frequency spectrum were obtained and an ensemble averaging technique was employed to extract the frequencies relating to turbulent components of the flow field. Ultrasound Turbulence Intensity Ratio (USTIR) was calculated in different regions of the flow circuit and compared with distribution of oscillatory shear index (OSI) on the computational simulations, and with neointimal hyperplasia (NIH) development on the 10-week maturation scan.

Results & Summary

Distribution of ultrasound-based turbulence intensity ratio corresponds with regions of elevated oscillatory shear stress and accelerated NIH formation. ROC curve analysis found a USTIR >6.4 of the pre-maturation scans, could predict development of haemodynamically significant NIH at 10 weeks with a sensitivity of 87.5% and a specificity of 80%.

CSVS - Best Case Study Abstract

Think Zebras: Identification and Investigation of Vascular Mimics

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Pathologies of the peripheral vascular system, especially those involving venous disease, usually present with symptoms including generalised or localised pain and oedema. When patients present with these symptoms, it is often prudent to exclude vascular pathology such as venous thrombosis or peripheral arterial disease using duplex ultrasonography.

However, there are occasions in which these phenomena are caused by other types of pathology that mimic vascular symptoms. Vascular ultrasound operators are likely to encounter these pathologies throughout their practice, and in these instances, it can be difficult to know how best to scan and report these findings.

In this talk I will present a few such case studies from my own recent practice, and discuss how to image, assess and describe vascular mimics using sonographic terminology in order to ensure that the patient receives the most efficient and appropriate management.

BACPAR - Highest scoring abstract

A quality improvement project to improve the provision of emotional support for patients following major lower limb amputation

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Major lower limb amputation (MLLA) is a lifesaving but life-altering vascular procedure. Psychological distress is common in the acute post-operative period, but despite the documented negative impact that poor psychological functioning can have on long-term physical health outcomes, there is a lack of high-quality guidance outlining how to best support the psychological needs of individuals post-MLLA. The aim of this project was to develop a practical and feasible protocol for improving the provision of emotional support for all patients on the vascular ward post-MLLA. The protocol was adapted from the Holistic Needs Assessment framework used within oncology services to provide holistic care to their patients. The primary intervention involved developing a model for an 'emotionally supportive conversation' (ESC) which was delivered by a dedicated member of the vascular team under the supervision of a Clinical Psychologist. During the six-month implementation phase, 27 patients received an ESC, an average of eight days post-MLLA. The secondary intervention involved in-house training for vascular ward staff, led by a Clinical Psychologist. Pre-ESC protocol and staff training implementation, 43% of patients reported receiving sufficient information from hospital staff on how they would feel post-operatively and 57% stated they had received sufficient support from staff during their stay. Post-implementation these figures increased to 86% and 71% respectively. This project represents a novel and creative way for psychological services to add value to the quality of care provided to vascular patients during the inpatient phase post-MLLA.