2005 ANNUAL MEETING

President
Mr Patrick Magee (2004-2006)

Honoured Guests

Professor A Wechsler

Pennsylvania USA

Professor W Weder

Zurich Switzerland

The Society of Cardiothoracic Surgeons of Great Britain and Ireland
Annual Scientific Meeting 2006 will be held at the RDS, Dublin
13th-16th March 2006

Programme sponsors

Edwards

Medtronic
When Life Depends on Medical Technology

SORIN GROUP
AT THE HEART OF MEDICAL TECHNOLOGY

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GENERAL INFORMATION

The 2005 Annual Meeting of the Society will be held at the Olympia Conference Centre Kensington London from Saturday 5th March to Tuesday 8th March 2005.

CONTINUING PROFESSIONAL DEVELOPMENT

The Senate of Surgery of Great Britain and Ireland has awarded 24 credits for attendance at the whole meeting.

The Annual Meeting of The Society of Cardiothoracic Surgeons of Great Britain & Ireland is accredited by The European Accreditation Council for Continuing Medical Education (EACCME) to provide the following CME activity for medical specialists: a maximum of 24 hours of European external CME credits. Each medical specialist should claim only those hours of credit that he/she has actually spent in educational activity. EACCME is an institution of The European Union of Medical Specialists (UEMS) www.uems.be.

ANNUAL SOCIAL EVENT

The SCTS annual social event will take place on Tuesday 8th March between 19.30hrs and 23.00hrs at the Royal College of Surgeons Lincolns Inn Fields. It will take the form of a black tie dinner with entertainment and transport will be provided leaving the Hilton London Olympia at 18.40hrs. Tickets are £50 per head and can be purchased from the registration desk until18.00hrs on Sunday 6th March.

BUSINESS MEETING 1 AND 2

Annual Business Meeting 1 will be held on Saturday 5th March 2005 between 18.00 - 19.30hrs.
Annual Business Meeting 2 will be held on Monday 7th March 2005 between 13.45 - 15.15hrs.
Please note that the Business Meetings are open to Society members only.

NATIONAL HEART RESEARCH FUND LECTURE

Professor Andrew Wechsler will deliver his lecture on Monday 7th March 2005 at 11.45hrs

THE PULSE SURGICAL LECTURE

Professor Walter Weder will deliver his lecture on Sunday 6th March 2005 at 11.45hrs

MESSAGES

Messages may be left and collected from the registration desk. To leave a message from outside the meeting (between 5th and 8th March 2005 only):

Tel: 020 7598 6595 and ask for the cardiothoracic surgeons' meeting.

REFRESHMENTS AND LUNCH

Complimentary tea and coffee will be provided during the official breaks in the exhibition hall. A buffet lunch is included in the registration fee and will also be served in the exhibition hall. Coffee will be available to purchase from 08.30hrs – 09.00hrs every morning.

REGISTRATION

Saturday 5th March	16.00 - 20.00hrs
Sunday 6th March	08.30 - 18.00hrs
Monday 7th March	08.30 - 18.00hrs
Tuesday 8th March	08.30 - 12.00hrs

POSTERS

All posters should be mounted in their indicated space before 08.30hrs on Sunday 6th March and should be removed between 15.15hrs and 16.00hrs on Tuesday 8th March. Any posters not collected after 16.00hrs will be discarded.

KEY TO BADGES

White - attending entire conference
Yellow – attending Sunday only
Red - attending Monday only
Blue – attending Tuesday only

SATELLITE MEETINGS

Saturday 5th March

19.30 – 19.45hrs
Presentation Assessors & Session Chairmen Briefing
Auditorium
Chairman: Mr Graham Cooper

Sunday 6th March

16.00 – 17.00hrs
Scholarship Award Meeting
Seminar room 305
Chairman: Mr Patrick Magee
(attending: Honorary Secretary, President-elect, Cardiothoracic Dean & Chairman of the SAC)

Monday 7th March

08.30 – 18.00hrs (excluding breaks)
Thoracic Skills Assessment
Seminar room 305
Prof John Pepper

Tuesday 8th March

10.45 – 11.45hrs
Exhibitors Meeting
Conference room 2
Chairman: Mr Simon Kendall
(attending: Mr Graham Cooper & Mrs Rachel Woolf)

17.00 – 17.30hrs
Presentation Grading Meeting
Seminar room 305
Chairman: Mr Graham Cooper
(attending: President, President-elect, Chairman of the Intercollegiate Board, Chairman of the SAC & Cardiothoracic Dean)

SPEAKER'S ROOM

All presenters are requested to review their audio-visual material in the Speaker's room at the following times:

Morning presentations – by 15.00hrs on the day before presentation

Afternoon presentations – by 09.30hrs on the day of presentation

TRADE EXHIBITION

The Annual Trade Exhibition will be held in conjunction with the Meeting and will be open from 08.30hrs Sunday 6th March to 16.00hrs on Tuesday 8th March 2005.

WELCOME RECEPTION

There will be a Welcome Reception in the registration area on the evening of Saturday 5th March 2005 between 19.30 - 21.00hrs. The Welcome Reception is included in the registration fee.

SCTS 2004 Prize Winners

Ronald Edwards Medal	V Avlonitis
John Parker Medal	R Motallebzadeh
Society Thoracic Medal	M Shackcloth

The winners will be presented with their medals at the annual dinner

SCTS 2005 Awards

Ronald Edwards Medal	-	best oral presentation
John Parker Medal	-	best interactive presentation
Society Thoracic Medal	-	best thoracic presentation

The winners will be announced at the annual dinner

SCTS 2004 Scholarships

St Jude Scholarship	-	I Ahmed
Society Thoracic Scholarship	-	K Brown

SCTS 2005 Scholarships

St Jude Scholarship
The Marian & Christina Ionescu Travelling Scholarship
Society Thoracic Scholarship

The winners of the 2005 scholarships will be announced at the annual dinner

COMMITTEES

Executive Committee 2004 – 2005

Mr Patrick Magee	*President*	2004-2006
Prof Sir Bruce Keogh	*President elect*	2004-2006
Mr James Roxburgh	*Honorary Secretary*	2004-2009
Mr Babulal Sethia	*Honorary Treasurer*	2004-2009
Mr Graham Cooper	*Meeting Secretary*	2002-2007
Mr Peter Goldstraw	*Chairman of the SAC*	2002-2005
Mr Andrew Murday	*Chairman of Inter-Collegiate Board – demitted May 2004*	2001-2004
Mr Leslie Hamilton	*Chairman of Inter-Collegiate Board – commenced May 2004*	2004-2007
Mr Leslie Hamilton	*Cardiothoracic Dean – demitted September 2004*	1999-2004
Mr Steven Hunter	*Cardiothoracic Dean – commenced September 2004*	2004-
Mr Sunil Ohri	*Publishing Secretary*	2004-
Mr Jonathan Hyde	*Young Consultant's Representative*	2002-2005
Mr Jonathan Hyde	*Cardiothoracic Tutor – commenced November 2004*	2004-2007
Mr Christopher Munsch	*Cardiothoracic Tutor- demitted October 2004*	2001-2004
Mr Freddie Wood	*Representing the Republic of Ireland*	2003-
Mr Michael Lewis	*Trainee representative*	2002-2005
Mr Alan Faichney	*Elected member*	2002-2005
Mr Steven Hunter	*Elected member*	2002-2005
Mr Richard Page	*Elected member*	2003-2006
Mr Simon Kendall	*Elected member*	2003-2006
Mr Graham Venn	*Elected member*	2004-2007
Mr Steven Livesey	*Elected member*	2004-2007

Working Group Chairs

Prof Tom Treasure	*Thoracic Surgical audit*	2001 - continuing
Mr James Roxburgh	*Consultant Contracts*	2001 - continuing
Mr David Richens	*NHS Ombudsman/SCTS (Cardiothoracic consent)*	2004 - continuing
Mr Graham Cooper	*Review of the Constitution and working of the Executive*	2004 - continuing
Mr Graham Venn	*Bloodborne Infection*	2004 - continuing
Mr Steven Livesey	*NCEPOD study (1st time CABG mortality)*	2004 - continuing

Programme Committee 2005 Meeting

		Lead Reviewers	
Mr Graham Cooper	*Meeting Secretary*	Mr Robert Bonser	*Transplantation*
		Mr Steven Livesey	*Adult Cardiac*
		Mr Richard Page	*Thoracic*
		Mr Samer Nashef	*Adult Cardiac*
		Mr Victor Tsang	*Congenital*
		Mr Malcolm Underwood	*Experimental & Miscellaneous*

Abstract Reviewers 2005 Meeting

Adult Cardiac	Mr Samer Nashef (lead)	*Thoracic*	Mr Richard Page (lead)
	Mr Steven Livesey (lead)		Mr John Duffy
	Mr Malcolm Dalrymple-Hay		Mr David Waller
	Mr Brian Fabri		Mr David Jenkins
	Mr Russell Millner		
	Mr Ulrich von Oppell		
Congenital	Mr Victor Tsang (lead)	*Transplantation*	Mr Robert Bonser (lead)
	Mr David Barron		Mr Steven Tsui
	Mr Andrew Parry		Mr Nizar Yonan
Experimental	Mr Malcolm Underwood (lead)		
	Mr Jonathan Hyde		
	Mr Adrian Marchbank		

Specialist Advisory Committee in Cardiothoracic Surgery 2004-2005

(A Sub-committee of the Joint Committee for Higher Surgical Training)

Prof Peter Goldstraw	*Chairman – SCTS representative*	2002-2005
Mr Leslie Hamilton	*Cardiothoracic Dean – demitted September 2004*	1999-2004
Mr Steven Hunter	*Cardiothoracic Dean – commenced September 2004*	2004-2009
Mr Andrew Murday	*Chairman of the Intercollegiate Board – demitted May 2004*	2001-2004
Mr Leslie Hamilton	*Chairman of the Intercollegiate Board – commenced May 2004*	2004-2007
Mr James Roxburgh	*Secretary, Society of Cardiothoracic Surgeons*	2004-2009
Mr James McGuigan	*Joint Royal College Representative*	2003-2008
Mr Frank Wells	*Society of Cardiothoracic Surgeons*	2001-2006
Mr Timothy Graham	*Royal College of Surgeons of Edinburgh*	2001-2006
Mr Christopher Munsch	*Royal College of Surgeons of England*	2000-2005
Mr Aonghus O'Donnell	*Royal College of Surgeons in Ireland- demitted September 2004*	1999-2004
Mr James Pollock	*Royal College of Physicians & Surgeons of Glasgow*	2001-2006
Dr David Sowden	*Lead Dean*	For term of office
Mr Michael Lewis	*SpR Representative*	2002-2005

Intercollegiate Board in Cardiothoracic Surgery 2004-2005

Mr Andrew Murday	*Chairman (2001-2004) and Representative of the Royal College of Surgeons of England*	2000-2005
Mr Leslie Hamilton	*Secretary and Representative of the Society of Cardiothoracic Surgeons*	1999-2004
Prof Sir Bruce Keogh	*Representative of the Society of Cardiothoracic Surgeons*	1999-2004
Prof Peter Goldstraw	*Chairman SAC in Cardiothoracic Surgery*	2002-2005
Mr David Luke	*Representative of the Royal College of Surgeons in Ireland*	1999-2004
Mr Kenneth MacArthur	*Representative of the Royal College of Physicians and Surgeons of Glasgow*	2001-2006

MEETING HISTORY

List of Presidents of the Society since 1934

1934	Mr H Morrison Davies
1936	Mr J R H Roberts
1938	Mr A Tudor Edwards
1945	Mr J B Hunter
1947	Mr W M Anderson
1948	Mr R B Purse
1950	Mr A Graham Bryce
1952	Sir Clement Price Thomas
1954	Mr H Reid
1956	Mr B Dick
1958	Sir Russell Brock
1959	Mr G A Mason
1961	Sir Thomas Holmes Sellors
1963	Mr R F J Henry
1964	Mr N R Barrett
1966	Mr V C Thompson
1968	Mr P R Allison
1969	Mr A L d'Abreu
1970	Mr A Logan
1971	Mr O S Tubbs
1972	Mr F R Edwards
1973	Mr J L Collis
1974	Mr R H R Belsey
1975	Mr R S Barclay
1976	Mr W P Cleland
1977	Mr H R S Harley
1978	Mr R Abbey Smith
1979	Mr R P Moore
1980	Mr J R Belcher
1981	Mr M Bates
1982	Mr J M Hill
1983	Mr J F Dark
1984	Mr D N Ross
1985	Mr M Paneth
1986	Mr M V Baimbridge
1987	Sir Keith Ross
1988	Professor W H Bain
1989	Mr W G Williams
1991	Professor D I Hamilton
1992	Professor G H Smith
1994	Mr B Ross
1995	Mr J Bailey
1996	Professor H Matthews
1997	Professor D Wheatley
1999	Mr J Dussek
2001	Mr J Monro
2003	Mr C Hilton
2005	Mr P Magee

SCTS Annual Meeting's 10 Year History

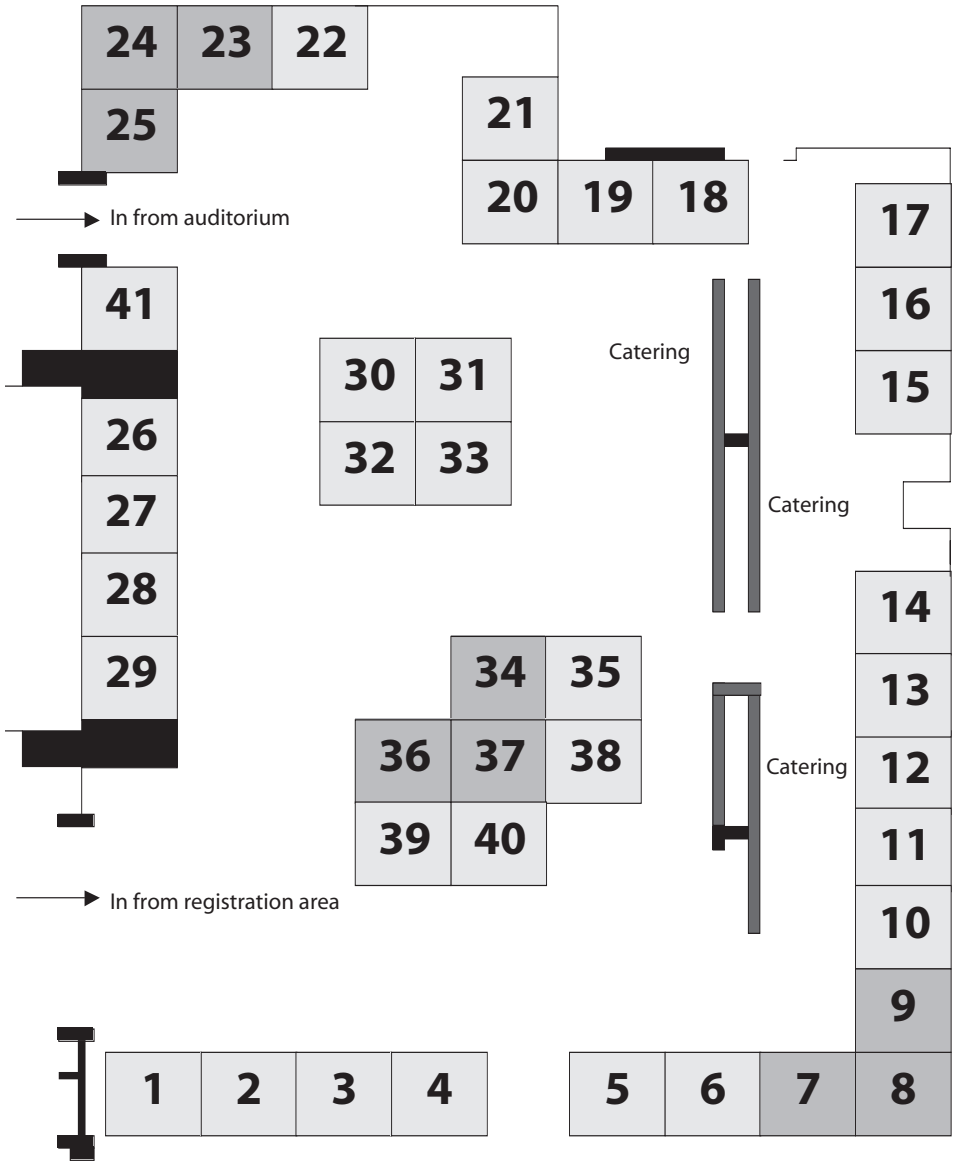
1996	*North Wales Conference Centre*	Llandudno
1997	*Royal College of Surgeons*	Dublin
1998	*Edinburgh International Conference Centre*	Edinburgh
1999	*East Midlands Conference Centre*	Nottingham
2000	*Business Design Centre*	London
2001	*East Midlands Conference Centre*	Nottingham
2002	*Bournemouth International Centre*	Bournemouth
2003	*Edinburgh International Conference Centre*	Edinburgh
2004	*Beau Sejour Centre*	Guernsey
2005	*Olympia Conference Centre*	London

SOCIETY OF CARDIOTHORACIC SURGEONS OF GREAT BRITAIN AND IRELAND

2005 ANNUAL MEETING

EXHIBITION CATALOGUE

EXHIBITION FLOOR PLAN (EAST HALL)



ALPHABETICAL LIST OF EXHIBITORS

Stand	Company Name	Stand	Company Name
17	Atrium Medical International	18	Koehler Medical Ltd
13, 14	Baxter Healthcare Ltd	27	Medi-Stim
22	Bayer PLC	23, 24, 25	Medtronic Ltd
3	Brownes GU	38	Pulse Surgical Ltd
20	Caledonian Medical Ltd	7, 8, 9	Sorin Biomedica Cardio Ltd
14	Cardiologic Ltd	30, 31	St Jude Medical Ltd
2	Cryolife Europa Ltd	28, 29	Teleflex Medical
15	Datascope Medical Co Ltd	19	Terumo-Europe
10, 11	Dendrite Clinical Systems	41	Tomcat Clinical Systems
34, 36, 37	Edwards Lifesciences	33	Tyco Healthcare Ltd
35	Ethicon Ltd	32	UK Medical Ltd
4	Exim Holland	5	Vascular Perspectives
40	Karl Storz Endoscopy Ltd	16	Vascutek Ltd
26	KCI International	12	W L Gore & Associates Ltd
39	Keymed	1	Wisepress Online Bookshop Ltd

CATALOGUE OF EXHIBITORS

ABIOMED BV — Stand 21

ABIOMED B.V, Ekkersrijt 4006, 56
Tel: +44 (161) 209 3675
Fax: +44 (161) 209 3676
Email: atriumuk@atriummed.com ,www.atriummed.com

Focus on the Heart
ABIOMED is a leading developer, manufacturer and marketer of medical products designed to assist or replace the pumping function of the failing heart. ABIOMED, which currently sells the BVS® 5000 Biventricular Support System and the AB5000™ Circulatory Support System, is the market leader in devices for the temporary support of patients with failing but potentially recoverable hearts.

The BVS®5000 and the AB5000 Circulatory Support System provide temporary support for one or both sides of the natural heart in circumstances where the heart has failed, giving the patient's heart the opportunity to rest and potentially recover – and giving surgeons the therapeutic flexibility necessary to determine the best option for treatment

ABIOMED applied for initial FDA market approval for the AbioCor Implantable Replacement Heart to treat a defined subset of irreversible end-stage heart failure patients under a Humanitarian Device Exemption.

ATRIUM MEDICAL INTERNATIONAL, LLC — Stand 17

Peter House, Oxford Street, Manchester, M1 5AN, United Kingdom
Tel: +44 (161) 209 3675
Fax: +44 (161) 209 3676
Email: atriumuk@atriummed.com ,www.atriummed.com

Atrium Medical has 24 years of experience and true innovations in cardiothoracic drainage, emergency chest trauma and postoperative autotransfusion, now available and **directly represented in the United-Kingdom** by a knowledgeable and highly motivated team.

Visit us at **stand 17** and experience for yourself the variety in our range of systems and innovative ideas from pre-packaged water for ease of set-up, easy-to-read markings for better monitoring, to efficient patient safety features.

Discover the **new Mobile Drainage Technology** with the wearable Express Mini™ 500, a complete waterless operation system, and the Pneumostat™ chest drain valve for enhanced early ambulation.

Atrium is also dedicated in bringing you the **best education resources and support** with our continuously updated website www.atriummed.com , nursing education videos and handbooks, and quarterly Clinical Updates newsletters.

It is truly a good time to (re)discover Atrium!

BAXTER HEALTHCARE LTD — Stands 13, 14

Baxter Healthcare Ltd, BioScience, Wallingford Road, Compton, Newbury, Berkshire, RG20 7QW

Tel: 01635 206074

Baxter Healthcare Ltd invites you to discover their spectrum of products for perioperative haemostasis - Tisseel, FloSeal and CoSeal.

BAYER PLC — Stand 22

Strawberry Hill, Newbury, Berkshire RG14 1JA
Tel: +44 (0) 1635 563000
Fax: +44 (0) 1635 563662
Email: bernard.murray.bm@bayer.co.uk

Contact: Bernard Murray, Marketing Manager, Trasylol UK

Bayer has long had a presence in the UK pharmaceutical market with brands such as Adalat LA (nifedipine once-daily) and Ciproxin (ciprofloxacin). The Biological Products Division is well known for its activity in the haemophilia market with Kogenate and most recently Kogenate Bayer.

Trasylol (aprotinin) is promoted for patients at high risk of major blood loss during open heart surgery with extracorporeal circulation and is the subject of research into other areas associated with cardiac surgery.

BROWNES GU — Stand 3

Pincents Kiln Industrial Park, Calcot, Reading RG31 7SB
Tel: 0118 930 5300
Fax: 0118 930 5111
E-mail: enquiries@bmbrowne.co.uk

Contact: Lesley Foley

Brownes GU (formerly known as GU Medical) is a leading supplier of Quality re-usable Surgical Instruments.

We offer a wide range of Specialist Cardiac, Thoracic and Perfusion instrumentation, along with a selection of single-use related products.

Brownes GU is a member of ABHI, and part of the Pasa Framework Agreement.

Please visit us on Stand 3.

CALEDONIAN MEDICAL LTD — Stand 20

Unit 1, Phoenix Crescent, Strathclyde Business Park, Bellshill, Scotland ML4 3NJ
Tel: +44 (0) 1698 845511
Fax: +44 (0) 1698 845456
Email: **info@calmed.co.uk**
Website: **www.calmed.co.uk**

Contact: Gordon R Wright, Managing Director

Caledonian Medical Limited have now been established for 12 years. We manufacture custom procedure trays at our facility in Scotland. We are able to do this for all surgical disciplines to hospitals throughout the UK.

We also distribute a range of cutting edge technology products for Cardiovascular Surgery.

These include:

ATS Medical – the only open pivot bileaflet heart valve
Guidant – who manufacture a range of products for OPCAB
3F – a new technology equine pericardial stentless valve
A&E – who have a vein artery harvesting system, as well as a range of sternal wires

CARDIOLOGIC LTD — Stand 14

Cardiologic Ltd, Hillside House, Cowesby, Thirsk, North Yorkshire, YO7 2JL
Tel: +44(0) 1845537870
Mobile: 07870 255 758
Fax: +44(0) 1845537872
E-mail: andrewcoane@cardiologic.co.uk
Website: www.cardiologic.co.uk

Contact: Andrew Coane, Sales and Marketing Director

Cardiologic specialise in leading edge technology such as Atricure which is the most widely used ablation system in the USA. Atricure has been used in over 5000 patients in the USA alone. This bi-polar RF ablation system features a hand piece with parallel closure of the clamp and narrow electrodes to allow focussed and very safe delivery of the energy. The console measures conductance of the tissue between the electrodes and alerts the operator when transmurality is achieved (usually between 5-10 seconds). No adjustment or initial energy setting of the system is necessary – it is just plug in and go.

Also on display is the Triumph aortic occlusion cannula, which allows atraumatic occlusion of the aorta but is very easy to insert and use.

CRYOLIFE EUROPE LTD — Stand 2

Europa House, Fareham Heights, Standard Way, Fareham, Hampshire, PO16 8XT
Tel: 01329 229800
Fax: 01329 229801
Email: Europa@cryolife.com

CryoLife Europa Ltd announces the arrival of the BioGlue Syringe System. The easiest just got easier. Clinically proven in over 150,000 procedures worldwide.

BioGlue Surgical Adhesive is now available in a fully disposable syringe system in 5ml and 2ml volumes in addition to the established reusable delivery device system.

A smaller profile improves site access and visualization. All-inclusive packaging saves time and storage space. BioGlue Surgical Adhesive is CE marked for cardiothoracic, pulmonary, vascular and general surgical applications including dura mater repair.

CryoLife Europa Ltd will also be demonstrating the CryoLife O'Brien Porcine Bio- prosthesis. With over 10 years clinical experience this composite design Porcine Bio- prosthesis demonstrates exceptional haemodynamic performance and longevity. The supra-annular position and single suture line techniques offer many benefits to both surgeons and patients.

DATASCOPE — Stand 15

Datascope Medical Co Ltd, Lakeview Court, Ermine Business Park, Huntingdon, Cambs, PE29 6XR
Tel: 01480 423600
Fax: 01480 423638

Datascope is pleased to announce the launch of the Linear 7.5Fr IAB Catheter

The linear 7.5Fr features a 'Durathane Membrane' for significantly increased abrasion resistance, no step down from membrane to catheter, significantly reduced force of insertion compared to previous IAB catheters and better tracking and handling, particularly in tortuous vessels. The true 7.5Fr gives the Linear IAB a 12% reduction in in-dwelling cross-sectional area compared with previous 8Fr products.

Datascope also produce the CS100 Intra-Aortic Balloon Pump. This is the first fully automatic pump produced by Datascope, the most advanced pump of its kind, and set a higher standard of care for patients who require IAB support. Operation of the new pump is extraordinarily simple. Its one-button start-up provides faster initiation of therapy, which is particularly valuable in cardiac emergencies.

Importantly, because the CS100 is fully automated, it frees up healthcare staff from unnecessary pump management, allowing them more time for patient care. Also, using a new, proprietary software program, called IntelliSync, the CS100 gives patients more consistent therapy with greater continuity.

DENDRITE CLINICAL SYSTEMS — Stands 10, 11

Dendrite Clinical Systems Ltd, 59A Bell Street, Henley-on-Thames, Oxfordshire, RG4 9QT
Tel: 01491 411 288
Fax: 01491 411 377
E-mail: info@e-dendrite.com
Website: www.e-dendrite.com

Contact: Dr Peter K H Walton, Managing Director

Visit our exhibition stand to see Dendrite's new web-based database system. Register with us for your *free* copy of Dendrite's Funnel Plot Generator for isolated AVR Surgery. Meet the team to see the latest developments and discuss your requirements.

EDWARDS LIFESCIENCES — Stands 34, 36, 37

Edwards Lifesciences, 2 Toomers Wharf, Canal Walk, Newbury, Berkshire RG14 1DY
Tel: 0870 606 2040
Fax: 0870 606 2050
Website: www.edwards.com/europe

Edwards Lifesciences is a global leader in products and technologies to treat advanced cardiovascular disease and **the number one heart valve company in the world.** Edwards continues to lead in the promotion of education for valve repair techniques and to innovate in valve replacement solutions. Visit our stand to learn more about the Carpentier-Edwards Perimount Magna™ aortic valve with Thermafix™.

ETHICON LIMITED — Stand 35

JOHNSON & JOHNSON, The Braccans, London Road, Bracknell, Berkshire, RG12 2AT
Tel: 0800 864060
Fax: 01344 864122

Contact: Gill Jamieson

The JOHNSON & JOHNSON family of companies would like to welcome all visitors to their stand to discuss their full range of products.

Exhibiting will be ETHICON Products, CARDIOVATIONS and ETHICON ENDO-SURGERY Divisions.

ETHICON Products will introduce the first antibacterial suture Coated VICRYL* *Plus* as well as the New Cardiac Needle technology BV MultiPass.

On display will be the latest OPCAB device EMBRACE from CARDIOVATIONS and ETHICON ENDO-SURGERY will be available to discuss their full range of instruments for VATS procedure.

Please visit our stand No.35 to discuss your cardiothoracic healthcare requirements.

EXIM HOLLAND — Stand 4

Exim Holland B.V., Cardiac Products, Amersfoortsestraat 70d, 3769 AL - Soesterberg, The Netherlands
Tel: +31 346 353858
Fax: +31 346 353990
Email: info@eximholland.com
Website: www.hearthugger.nl

Contact: Mr Rainier van Beek

Heart Hugger - Sternum Support Harness is a patient operated support harness applied post-op to splint thoracic surgical wounds. Benefits include better patient compliance with respiratory therapy, faster return to pre-morbid respiratory levels, fewer wound complications and better post-op mobility.

KARL STORZ ENDOSCOPY (UK) LTD — Stand 40

392, Edinburgh Avenue, Slough, Berkshire SL1 4UF
Tel: 01753 503 500
Fax: 01753 578 124
Email: customerservice@karlstorz.com

Contact: Steve Anderson

Karl Storz GmbH & Co. is the world's premier surgical endoscopy company with an established and acknowledged reputation for producing the finest quality surgical endoscopes and accessories. We shall be displaying a wide range of cardio-thoracic instruments for endoscopic procedures. These include the following *new* additions to the product range:-

- Multifunctional retractor for Thoracic and Heart Surgery
- Endoscopic Saphenous Vein Harvesting System
- Video-Mediastinoscope

So please visit the Karl Storz stand, No 40, and we shall be pleased to discuss all your endoscopic requirements.

KCI INTERNATIONAL (UK) LTD — Stand 26

KCI Medical Ltd, Two Rivers, Station Lane, Witney, OX28 4LA
Tel: +44 (0) 1993 707350
Fax: +44 (0) 1993 776799
Mobile : +44 (0) 7966 321109
Email: wbartrip@kci-medical.com

Contact: William Bartrip, Marketing Specialist, Wound Management Division

KCI is a leader in the development of therapeutic medical devices that help promote wound healing, prevention of wounds and for treating the complications of immobility.

A large number of wounds treated by healthcare providers around the world every year are complex, life threatening or difficult to treat. Our proprietary wound closure system, V.A.C.® or Vacuum Assisted Closure Therapy, has radically changed the way that healthcare providers deal with acute and chronic wounds.

V.A.C.® Therapy™ is the Dynamic and Unique System for Accelerated Wound Healing. It has been used effectively in treating thousands of wounds of different aetiologies in all care settings.

KCI have introduced two systems that use our V.A.C.® Technology - the V.A.C.® ATS and V.A.C.® Freedom™.

KEYMED — Stand 39

KeyMed Ltd, KeyMed House, Stock Road, Southend on Sea, Essex SS2 5QH

Tel: 01702 616 333

Olympus will be exhibiting their outstanding VISERA camera system. This camera can be used in conjunction with both conventional telescopes and their EndoEYE Video Laparoscopes. EndoEYE offers the user vastly superior image quality over conventional laparoscopes, due to the distally mounted CCD chip. In addition, EndoEYE is lightweight, ergonomic and completely integrated aiding set up and usage. As no lens system is employed and the working length contains purely electronics, EndoEYE offers improved durability over standard telescopes helping to reduce repair costs.

Also on display will be Olympus' range of Energy products including diathermy, ultrasonic dissector and aspirator - visit the Olympus stand to find our more about all the exciting products available.

KOEHLER MEDICAL LTD — Stand 18

Koehler Medical Ltd, Astley Lane, Swillington, Leeds, LS26 8XT
Tel: 0113 287 1122
Fax: 0113 287 3087
Email: www.koehler-medical.com -

Contact: John McKenna

Koehler Medical Ltd. - Celebrating 25 years of valve manufacture in Leeds.

Koehler Medical is the only company to manufacture heart valves in the UK. Our **Aspire Porcine Stented Valve** is sourced locally, which allows the company to offer a unique method of manufacture…Fresh Mounting. The valve tissue is still elastic and fresh and so can be mounted exactly as it was aligned in the donor, thus providing durability and strength for purpose. The results of this manufacturing method are confirmed in the recent 10-year paper on the Aspire Valve published in January 2005.

The Elan Stentless Valve with its "tissue only" construction again highlights an innovative and precise reproduction of the host haemodynamics and durability. The elimination of artificial cloth and buttressing allows an easy flexible valve for working in the tight native root. The stentless Elan range is available as a sub coronary scalloped valve, a small root and as a full root with the anterior cusp of the mitral valve attached for total root replacement.

The MRS mitral valve repair system continues to be the only such system manufactured in the UK

The Ultracor Tilting disc mechanical valve continues its unbroken record of durability since its introduction.

MEDI-STIM — Stand 27

Medi-Stim ASA, PO Box 4744 Nydalen, N-0421 Oslo, Norway
Tel: 0047 23 05 96 64

Contact: Beate N Brandt

Search - Detect - Verify

The VeriQ quality control system by Medi-Stim is a valuable tool in cardiac and vascular surgery as well as during liver transplants and neurosurgery. The surgeon can locate intra mural vessels, detect and quantify stenosis using the X-Plore Doppler probe as well as the conventional Graft Patency verification utilizing the QuickFit TTFM probe. The VeriQ system from Medi-Stim is the first system to combine velocity and volume flow measurement for these applications.

MEDTRONIC LTD — Stands 23, 24, 25

Cardiac Surgery Division, Sherbourne House, Croxley Business Park, Watford WD18 8WW
Tel: +44 (0) 1923 212213
Fax: +44 (0) 1923 241004
Website: www.medtronic.com and www.heartvalverepair.net

Contact: Mrs Bettina Fitt

Medtronic offer a comprehensive range of tissue and mechanical valves, repair products, OPCAB products and Atrial Fibrillation pens and generators. We offer the latest tissue technology in the 3rd generation Stented Mosaic and the unstented Freestyle valves as well as unparalled 20-year data on our second-generation Hancock 11 stented tissue valves. In addition, we have built on the outstanding results of the MedHall valve to bring you the latest technology in a bileaflet valve, The Advantage, available in both standard and supra-annular with the Advantage Mitral valve being released in April 2005.

Please visit our stand where the team will be happy to show you all of the above, along with our new anastomotic devices and some other exciting new products.

PULSE SURGICAL LTD — Stand 38

32A Station Road, Chinnor, Oxon OX39 4PZ
Tel: +44 (0) 1844 352220
Fax: +44 (0) 1844 354322
Email: steve@pulsesurgical.co.uk
Website: www.pulsesurgical.com

Contact: Mr Steve Chaplin

Pulse remains one of the most focussed cardiac companies in the UK, and as independent distributors, can offer a unique mix of complimentary products. These include the On-X heart valve range, Boston Scientific bipolar and unipolar ablation systems, two specialist haemostatic sealant products, Vivostat autologous fibrin and Arista microspheres for acute bleeds, Procol grafts for coronary bypass use, Flothru shunts and Estech stabiliser devices (with and without vacuum), mitral retractors and long instruments for minimally invasive surgery.

We also promote Keeler loupes, German surgical instruments and many unique niche products to assist you in surgery.

RAVEN DEPARTMENT OF EDUCATION, THE ROYAL COLLEGE OF SURGEONS OF ENGLAND — No Stand

35-43 Lincoln's Inn Fields, London, WC2A 3PE
Tel: 020 7869 6340
Fax: 020 7869 6329
Email: pmaden@rcseng.ac.uk

Contact: Pauline Maden

The Wetlab Project

The value of skills training in skills lab setting is now well recognised, and many cardiac surgical units are now setting up their own training facilities. With support from the DoH and St Jude Medical we have produced an educational package to support the development of your skills lab. The package includes a guide to establishing and running a permanent skills lab, a series of DVDs illustrating common cardiac surgical procedures and a workbook for trainees to record their self directed learning. It is hoped that this package will enable the development of skills training in every cardiac surgical unit across the country. This package is available at the RCS booth and is FREE to all trainee and consultant members of the society.

SORIN GROUP UK — Stands 7, 8 & 9

6 & 8 Sabre Close, Green Farm Business Park, Quedgeley, Gloucester, GL2 4NZ.
Tel: +44 (0) 1452 887700
Fax: +44 (0) 1452 887730

Contact: Mr Mark Woolley

Sorin Group Cardiovascular Division has been at the forefront of world heart valve design and manufacture since 1977. Unique CarbofilmTM technology, coupled with state of the art, innovative technological advancement, allows Sorin Biomedica Cardio to offer an unrivalled portfolio of heart valve replacement and repair products.

At the beginning of 2003 Sorin Group purchased Carbomedics. This means we can now offer the largest choice of heart valves.

To evaluate the very latest products from Sorin Group, please visit us at booth numbers 7, 8 & 9, where the Sorin team will be available to discuss your requirements.

ST JUDE MEDICAL UK LTD — Stands 30, 31

Capulet House, Stratford Business & Technology Park, Banbury Road, Stratford upon Avon, CV37 7GX
Tel: +44 (0) 1789 207618
Fax: +44 (0) 1789 207602
Email: atranter@sjm.com
Website: www.sjm.com

Contact: Adele Tranter

Progressive change to the profile of patients presenting for surgery are reflected in the developing product portfolio from St Jude Medical's Cardiac Surgery Division.

This year's meeting will focus on the new Epic Supra™ stented porcine tissue valve which complements the growing clinical appreciation of St Jude Medical's Regent supra annular mechanical prosthesis. Epic Supra evolves from the 17-year track record of the well-established Epic valve, with triple composite construction and Linx anticalcification treatment. The Epic Supra™ valve offers a remarkably low anatomical profile for a stented supra annular tissue valve, along with easy implantability.

Toronto Root and TSPV complete the line-up of valve products where haemodynamic performance, implantability and durability are key features. St Jude Medical's Tailor, Seguin and the recent launch of the new Tailor 'C' Band repair ring systems have new market leading implant tool sets to facilitate both open and minimal access approaches.

Visit the St Jude Medical stand to collect details of the educational programme, wet lab facilities and support on offer to customers throughout 2005.

TELEFLEX MEDICAL — Stands 28, 29

Teleflex Medical (Surgical Division), Stirling Road, Cressex Business Park,
High Wycombe HP12 3ST

Contact: Tim O'Dwyer

TERUMO HEART, INC. — Stand 19

Siemensstr. 1, 46325 Borken, Germany
Tel: +49-2861-80 80
Fax: +49-2861-60 50 10
E-mail: Ingrid.craninckx@terumo-europe.com

Contact: Ingrid Craninck

Terumo Heart, Inc. is a global leader in the development and design of Ventricular Assist Devices (VADs). With the DuraHeartTM LVAS the company has successfully entered this market with the only actively magnetically levitated, third generation system centrifugal LVAD. This unique design allows for no contact points within the blood chamber, thereby further minimizing the risk of mechanical wear and thrombus formation.

The DuraHeartTM LVAS is currently in clinical trials in Europe, and is expected to initiate commercial sales in Europe in the near future.

TOMCAT CLINICAL SYSTEMS — Stand 41

BT3 Business Centre, Dargan Crescent, Belfast BT3 9JP, Northern Ireland
Tel: +44 (0) 2890 774228
Fax: +44 (0) 2890 776906
Mobile +44 (0) 7966 594073
E Mail: info@tomcat.co.uk
Web: www.tomcat.co.uk

Contact: Peter Corscadden, Marketing Executive

The TOMCAT Cardiothoracic Information system is widely regarded as the leading system of its kind in the UK, with clinical and administrative modules to cover the entire Cardiothoracic Directorate. Linking to a full range of clinical equipment, imaging, and reporting systems, TOMCAT provides the surgeon with instant access to the patient's complete cardiac record.

The cardiothoracic surgery modules are fully compliant with the new SCTS / CCAD minimum dataset. Data entry in TOMCAT is fast and the information can be quickly uploaded directly to CCAD. Once integrated with other modules for the catheter lab, pacing, non-invasive cardiology, CCU and continuing cardiac care, TOMCAT could potentially become your complete cardiac electronic patient record.

Come and see the latest version of this innovative system on Stand 41.

TYCO HEALTHCARE (UK) LTD — Stand 33

Tyco Healthcare (UK) Commercial Ltd, 154 Fareham Road, Gosport, Hampshire, PO13 0AS
Tel: 01329 224411
Fax: 01329 224390
Email: uksales@emea.tycohealthcare.com
Website: www.tycohealthcare.co.uk

Contact: Matthew Silver-Vallance, Field Marketing Manager

Syneture, the new Suture division of Tyco Healthcare, will be exhibiting two revolutionary sutures, SURGIPROTM and VASCUFILTM.

SURGIPROTM is produced with NuCoatTM needle technology that dramatically enhances the initial and maintained sharpness of the needle. This needle will start sharper, and maintain its sharpness throughout the anastomosis. NuCoatTM needles won't lose their sharpness halfway through an anastomosis (often the most crucial stage around the 'toe') like the old technology that you might still be using. This new suture was designed to provide extraordinary performance for vascular procedures and anastomosis techniques.

Our stand will have a specially designed penetration tester, which will give you the opportunity to compare the sharpness of our NuCoatTM needle to our competitor's needles.

VASCUFILTM is coated with PolytribolateTM a unique material, which dramatically decreases the tissue drag of the strand during surgery. This provides the surgeon with minimal suture hole bleeding and less chance of trauma during the parachuting step of an anastomosis. VascufilTM provides increased strength and flexibility while possessing very little memory, making it easier to handle from the time it leaves the package until you tie the final knot.

Please also ask about our new rapidly absorbing monofilament: CAPROSYNTM

UK MEDICAL — Stand 32

UK Medical Ltd, Albreda House, Lydgate Lane, Sheffield S10 5FH
Tel: 0114 2688 880
Email: lg@ukmedical.com

2005 sees the launch of UK Medical Surgery Division (formerly CLS Medical Division). You will notice several changes at the exhibition and we hope to see you there and at our sponsored Satellite Symposium, "Endocarditis: Surgical Strategies."

VASCULAR PERSPECTIVES — Stand 5

Vascular Perspectives Ltd, 127 Styal Road, Gatley, Cheadle, Cheshire, SK8 3TG
Tel: 0161 998 5632
Fax: 0161 998 8479
E mail: chris@vascularperspectives.com

Contact: Chris Brown, Managing Director

We will be delighted to show you the features and benefits of the FLEXIGRIP Sternal Closure System and the unique benefits that these THERMOREACTIVE NITINOL clips provide especially in HIGH RISK patients.

VASCUTEK — Stand 16

VASCUTEK, a TERUMO Company, Newmains Avenue, Inchinnan, Renfrewshire PA4 9RR, Scotland, UK
Tel: +44 141 812 5555
Fax: +44 141 812 7170
Website: www.vascutek.com

Gelweave Valsalva™ - the world's first custom designed aortic root graft

Significant advances in vascular graft design are rare, however, Gelweave Valsalva™ a radically new design of sealed woven polyester aortic graft that is indicated for aortic root repair using valve sparing or replacement techniques, is without doubt an exception.

Until now, only cylindrical grafts have been available which do not reflect the natural anatomy. Unlike these grafts, Gelweave Valsalva™ is shaped so as to mimic the geometry and, therefore, blood flow patterns of the natural sinuses of Valsalva. The product consists of 3 sections, a body, bulged skirt and a collar. The skirt, that reflects the natural anatomy, bulges under blood pressure.

In contrast to conventional cylindrical grafts used in valve sparing procedures, the design minimises the chance of damage to the valve leaflets, provides secure annular stability and offers the potential to reduce tension on the coronary artery attachments. Historically, some "valve sparing" procedures have involved complex graft reshaping in an attempt to achieve natural anatomy - Gelweave Valsalva™ removes this need.

Gelweave Valsalva™ also readily lends itself to biological and mechanical valve replacement techniques.

This unique graft offers the potential to increase the durability of the repair and improve long-term patient outcomes.

A variety of CDs/DVDs featuring clinical implantation procedures for the product are available through the Vascutek Education Programme.

WL GORE & ASSOCIATES — Stand 12

Kirkton South Road, Kirkton Campus, Livingston, West Lothian EH54 7BT
Tel: 00800 633 44673
Fax: 01506 460 492
Email: ptait@wlgore.com

Contact: Phyllis Tait

For 30 years, Gore has provided clinicians and patients with many of the most innovative expanded polytetrafluoroethylene (ePTFE) solutions for complex vascular and cardiovascular problems. That's why Gore's comprehensive product line covers

Cardiovascular Patch for intracardiac applications and the advanced technology of Acuseal cardiovascular patch for extracardiac applications. A membrane, which has been proven not only to be effective as a pericardial substitute.

A non-memory, non-elastic fixing device for Chordae Tendineae Repair. GORE-TEX Vascular Grafts have provided the performance that Paediatric Cardiac Surgeons trust for use in the modified Blalock-Taussig Shunt. Now we have taken that one step further.

At Gore, we're working to help you maintain the vital intersections in your patients.

Visit us on Stand 12 or call us on

WISEPRESS ONLINE BOOKSHOP LTD — Stand 1

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London SW19 2JL, UK
Tel: 00 44 (0) 208 715 1812
Fax: 00 44 (0) 208 715 1722
Email: Bookshop@wisepress.co.uk
Web: www.wisepress.co.uk

Contact: Nadia Ahmed.

Wisepress Online Bookshop is pleased to present a display of publications chosen especially for the Society of Cardiothoracic Surgeons of GB & Ireland Meeting from the world's leading publishing houses. All the books on display can be ordered/bought directly at the stand or via our website. We can also order you free sample copies of the journals on display and take subscription orders. Whatever your book requirements, Wisepress will be happy to help - whether you are an author seeking a publisher or having difficulty obtaining a title, our professional staff will assist you.

SOCIETY OF CARDIOTHORACIC SURGEONS OF GREAT BRITAIN AND IRELAND

2005 ANNUAL MEETING

MEETING PROGRAMME

Saturday 5 March 2005

17:00 – 18:00 **Trainees Meeting**

Auditorium
Chairman: Mr Mike Lewis
In attendance: Cardiothoracic Dean
Chairman of the Inter-Collegiate Board
Chairman of the SAC

18:00 – 19:30 **Annual Business Meeting I**
Auditorium

19:30 – 21.00 Welcome Reception
Foyer

Sunday 6 March 2005

08:30 - 18:00 **Exhibition**
East Hall

09:00 - 10:00 **Session 1: Oral Presentations**

Auditorium
Supported by: Sorin Biomedica Cardio UK Ltd
Chairmen: Mr Patrick Magee
Professor Andrew Wechsler

09:00 1 **Median Sternotomy Versus Thoracotomy for Right Extrapleural Pneumonectomy in Malignant Pleural Mesothelioma**
A Martin-Ucar[1]; D Stewart[1]; J Edwards[1]; K West[2]; D Waller[1]
[1]Department of Thoracic Surgery, Glenfield Hospital, Leicester, United Kingdom [2]Department of Anaesthesia, Glenfield Hospital, Leicester, United Kingdom

09:10 2 **Acute Haemodynamic Lung Damage Caused by Donor Brain Death Determines Reperfusion Injury after Lung Transplantation**
V Avlonitis; J Kirby; J Dark
University of Newcastle upon Tyne, Newcastle upon Tyne, United Kingdom

09:20 3 **Gluteraldehyde-fixed Bioprosthetic Heart Valves Fail due to Xenograft Rejection**
R Manji; N Nijjar; L Zhu; D Rayner; R Rajotte; A Koshal; D Ross
University of Alberta, Edmonton, Canada

09:30 4 **Therapeutic Potential of Epidermal Growth Factor Tyrosine Kinase Inhibitor Iressa in Reflux Induced Oesophageal Tumour Cell Lines**
P Bonde; G Sui; S Dhara; A Broor; G Marti; M Ferguson; M Duncan; E Montgomery; A Maitra; J Harmon
Johns Hopkins University School of Medicine, Baltimore, USA

09:40 5 **Surgical Intraoperative Left Atrial Ablation using Linear Cryolesions for the Treatment of Atrial Fibrillation**
S Cerny; P Neuzil; M Taborsky; D Tichacek; J Benedik; M Benesova; M Jelinkova
Na Homolce Hospital, Prague, Czech Republic

09:50 6 **Patient Prosthesis Mismatch in Aortic Valve Replacement – Size Does Not Matter**
N Howell; E Coby; S George; V Barnet; R Bonser; B Keogh; T Graham; S Rooney; I Wilson; D Pagano
Department of Cardiothoracic Surgery, University Hospital Birmingham, Birmingham, United Kingdom

10:00 - 10:45 Tea/Coffee
East Hall

10:45 - 11:45 Session 2: Interactive Presentations

Auditorium
Supported by: Vascular Perspectives Ltd
Chairmen: Professor Sir Bruce Keogh
Mr Malcolm Underwood
Mr David Waller

10:45 7 **Octogenarians Undergoing Cardiac Operations Outlive their Peers**
S Stoica; F Cafferty; J Kitcat; R Baskett; M Goddard; L Sharples; F Wells; S Nashef
Papworth Hospital, Cambridge, United Kingdom

10:55 8 **Does The Method of Lung Preservation Influence Outcome following Transplantation? – An Analysis of 681 Consecutive Procedures**
J Ganesh; C Rogers; N Banner; R Bonser
On behalf of the Steering group UK Cardiothoracic Transplant Audit Clinical Effectiveness Unit, The Royal College of Surgeons of England, London, United Kingdom

11:05 9 **Appropriateness of VATS versus Bedside Talc Slurry Pleurodesis in Patients Dying of Cancer**
C Tan; T Treasure
Guys Hospital, London, United Kingdom

11:15 10 **Cardiac Arrest in the Organ Donor Does Not Negatively Influence Recipient Survival after Heart Transplantation**
A Ali; M Thanikachalam; E Lim; C Sudarshan; M Feccia; P White; J Parameshwar; S Large
Papworth Hospital, Cambridge, United Kingdom

11:25 11 **Counterpulsation from Skeletal Muscle Ventricles and Intra-aortic Balloon Pumps in the Normal and Failing Circulations**
I Ramnarine; Z Ashley; H Sutherland; F Li; M Russold; N Summerfield; S Salmons; J Jarvis
Liverpool University, Liverpool, United Kingdom

11:35 12 **Combined Off-Pump Left Ventricular Aneurysm Plication and Multivessel Coronary Revascularization in Patients with Ischaemic Cardiomyopathy**
A El-Gamel; O Wendler; L John; M Marrinar; J Desai
Kings College Hospital, London, United Kingdom

11:45 - 12:30 **Pulse Lecture: Emphysema-a hopeless disease? A surgeon's view**
Auditorium
Chairman: Professor Sir Bruce Keogh
Speaker: Professor Walter Weder

12:30 - 13:45 Lunch
East Hall

13:45 - 15:15 **Overview of UK Cardiothoracic Activity and Practice**
Auditorium

15:15 - 16:00 Tea/Coffee
East Hall

16:00 - 17:00 Session 3: Oral Presentations

Auditorium
Supported by: Sorin Biomedica UK Ltd
Chairmen: Mr Stephen Edmondson
Mr Ian Wilson

16:00 13 **Cardiac Xenotransplantation: Early Success In The Orthotopic Position**
C McGregor; W Davies; G Byrne; K Oi; V Rao; H Tazelaar; R Walker; C Gostout; J Logan
Mayo Clinic, William J von Liebig Transplant Centre, Rochester, MN, United States of America

16:10 14 **To Investigate the Role of Stem Cells in Tumour Angiogenesis**
K Redmond; J Wang; H Redmond
University College, Cork, Ireland

16:20 15 **Total Arterial Revascularisation is Safe: Multicentre 10-year Study of 71470 Isolated CABG Procedures**
R Baskett[2]; F Cafferty[1]; S Powell[1]; R Kinsman[3]; B Keogh[4]; S Nashef[1]
[1]Papworth Hospital, Cambridge, United Kingdom [2]Dalhousie University, Halifax, Canada [3]Dendrite Clinical Systems, Reading, United Kingdom [4]University College, London, United Kingdom

16:30 16 **Competitive Flow in Arterial Composite Grafts; The Crucial Role of Interactions of Sequenced Anastomotic Sites**
H Nakajima; J Kobayashi; O Tagusari; K Bando; K Niwaya; T Yagihara; S Kitamura
National Cardiovascular Centre, Osaka, Japan

16:40 17 **A Comparison of Transit-time Flowmetry and Intraoperative Fluorescence Imaging for Assessing Coronary Artery Bypass Graft Patency**
L Balacumaraswami; Y Abu-Omar; B Choudhary; D Pigott; D Taggart
John Radcliffe Hospital, Oxford, United Kingdom

16:50 18 **Heart Transplantation in Adults with Congenital Heart Disease: Analysis of a National Cohort**
J Ganesh; C Rogers; R Bonser; N Banner
On behalf of the Steering Group, UK Cardiothoracic Transplant Audit Clinical Effectiveness Unit, The Royal College of Surgeons of England, London, United Kingdom

17:00 – 18:00 **St Jude Postgraduate Session 1 – Ventricular Restoration Surgery**
Auditorium
Chairman: Mr Peter Braidley
Speaker: Professor Andrew Wechsler
Discussant: Mr Stephen Large

08:30 - 09:30 **Exhibition**
East Hall

09:00 - 10:00 Session 4: Oral Presentations

Auditorium
Supported by: Vascular Perspectives Ltd
Chairmen: Professor Walter Weder
Mr Babulal Sethia

09:00 19 **Intrauterine Course and Postnatal Evaluation and Management of Congenital Bronchopulmonary Anomalies**
G Shanmugam; J Pollock; K Macarthur
Royal Hospital for Sick Children, Glasgow, United Kingdom

09:10 20 **Impact Of Antioxidative Treatment On Nuclear Factor Kappa-b Regulation In Patients Subjected To CABG**
U Fischer[1]; P Tossios[1]; W Bloch[2]; U Mehlhorn[1]
[1]Clinic for Cardiothoracic Surgery, University of Cologne, Cologne, Germany
[2]German Sports University, Cologne, Germany

09:20 21 **Tumour Necrosis Factor Alpha (TNF?) Gene Polymorphism A-308G Influences the Inflammatory Response after Coronary Revascularisation Surgery**
M Bittar[1]; J Carey[1]; J Barnard[1]; I Hutchinson[2]; N Yonan[1]
[1]Department of Cardiothoracic Surgery, Wythenshawe Hospital, Manchester, United Kingdom [2]School of Biological Sciences, University of Manchester, Manchester, United Kingdom

09:30 22 **Comparison of Activity of Renin-Angiotensin-Aldosterone System and ANP in Patients with Stented or Stentless Aortic Valve Prosthesis**
A Szafranek[1]; M Jasinski[2]; M Kolowca[2]; M Gemel[2]; S Wos[2]
[1]Department of Cardiac Surgery, University Hospital of Wales, Cardiff, United Kingdom [2]II Department of Cardiac Surgery, Silesian School of Medicine, Katowice, Poland

09:40 23 **Potential for Biventricular Repair of Unbalanced Atrioventricular Septal Defect with Common Atrioventricular Junction**
M Kanani; E Kocyldirim; R Anderson; M Elliott
Great Ormond Street Hospital, London, United Kingdom

09:50 24 **Intestinal Ischaemia Following Cardiac Surgery: A Preoperative Risk Model and Prognosis in a Propensity-matched Cohort**
N Chaudhuri; J James; A Sheikh; A Grayson; B Fabri
Cardiothoracic Centre, NHS Trust Liverpool, United Kingdom

10:00 - 10:45 Tea/Coffee
East Hall

10:45 - 11:45 Session 5: Interactive Presentations

Supported by: Sorin Biomedica UK Ltd
Auditorium
Chairmen: Mr Richard Steyn
Mr Stephen Westaby
Mr Alan Wood

10:45 25 **Metal Time-bombs in the Chest. Complications Of Metal-expandable Stents**
C Clarke; S Knight; S Seevanayagam
Austin Health, Heidelberg, Australia

10:55 26 **Randomized Trial of Low Dose versus Medium Dose Aspirin versus Clopidogrel on Platelet Aggregation after Cardiac Surgery**
E Lim; J Cornelissen; T Routledge; A Ali; S Kirtland; L Sharples; K Sheridan; S Bellm; H Munday; S Large
Papworth Hospital, Cambridge, United Kingdom

11:05 27 **Aprotinin is Effective and Safe in Paediatric Cardiac Surgery: A Meta-analysis and Systematic Review of Randomized Clinical Trials**
A Gogbashian[1]; K Taylor[1]; A Sedrakyan[2]
[1]Hammersmith Hospital, London, United Kingdom
[2]The Royal College of Surgeons of England, London, United Kingdom

11:15 28 **Safety Efficacy and Cost of Intraoperative Cell Salvage and Autotransfusion following OPCAB Surgery: A Randomised Trial**
G Murphy; W Lansdowne; I Channon; H Alwair; A Cohen; M Caputo; G Angelini
Bristol Heart Institute, Bristol, United Kingdom

11:25 29 **The Role Of Activated Recombinant Factor VII in the Management of Intractable Perioperative Haemorrhage after Cardiac Surgery**
S Iyengar; D Pontefract; C Lloyd; T Velissaris; R Gill; M Herbertson; S Ohri
Wessex Cardiothoracic Unit, Southampton, United Kingdom

11:35 30 **Negative Bronchoscopy Results in a Significant Delay in Treatment of Lung Cancer Patients: Results of a Prospective Tracking Study**
M Devbhandari; R Jain; P Quinnell; P Barber; M Jones
Wythenshawe Hospital, Manchester, United Kingdom

10:45 - 12:30 **Ethicon Nurses' Forum**
Conference room 2
Chair: Ms Jacqueline Nicol

11:45 - 12:30 **National Heart Research Fund Lecture: Our former President has a Heart Operation**
Conference Room 2
Chairman: Mr Patrick Magee
Speaker: Professor Andrew Wechsler

12:30 - 13:45 Lunch
East Hall

13:45 - 15:15 **Annual Business Meeting 2**
Auditorium

13:45 - 15:15 **Ethicon Nurses Forum**
Conference room 2
Chair: Ms Jacqueline Nicol

15:15 - 16:00 Tea/Coffee
East Hall

16:00 - 17:00 Session 6: Interactive Presentations

Auditorium
Supported by: Vascular Perspectives Ltd
Chairmen: Professor Peter Goldstraw
Mr Steve Livesey
Mr Victor Tsang

16:00 31 **Comparison of Risk Adjusted Mid-term Survival following Coronary Artery Bypass Grafting Between Four Hospitals in the United Kingdom**
A Grayson[1]; M Jackson[1]; J Au[2]; R Millner[2]; G Grotte[3]; D Keenan[3]; B Bridgewater[4]; M Jones[4]; B Fabri[1]; on behalf of NWQIP[1]
[1]The Cardiothoracic Centre, Liverpool, United Kingdom [2]Blackpool Victoria Hospital, Blackpool, United Kingdom [3]Manchester Royal Infirmary, Manchester, United Kingdom [4]Wythenshawe Hospital, Manchester, United Kingdom

16:10 32 **Failure of Preconditioning to Protect the Neonatal Heart: Are Free Radicals the Missing Link?**
M Baghai[1]; D Anderson[2]; C Austin[2]; N Alphonso[2]; M Shattock[1]
[1]The Rayne Institute, London, United Kingdom [2]Guys Hospital, London, United Kingdom

16:20 33 **Changes In Intramyocardial Amino Acids during Paediatric Cardiac Surgery: A Randomised Study of Three Cardioplegic Techniques**
P Modi; M Suleiman; B Reeves; A Pawade; A Parry; G Angelini; M Caputo
Bristol Heart Institute, Bristol, United Kingdom

Monday 7 March 2005

16:30 34 **Optimal Myocardial Protection Strategy for Coronary Artery Bypass Grafting (CABG) Without Cardioplegia: Prospective Randomised Trial**
M Codispoti; T Sundaramoorthi; R Saad; A Reid; C Sinclair; P Mankad
Royal Infirmary, Edinburgh, United Kingdom

16:40 35 **Heat Shock Protein 27 Protects the Heart from Ischaemia-reperfusion Injury**
C Efthymiou; M Mocanu; D Yellon
The Hatter Institute and Centre For Cardiology, University College London Hospitals and Medical School, London, United Kingdom

17:50 36 **Objective Assessment of Technical Skills in Cardiac Surgery**
J Hance; on behalf of ImpACTS Group
Imperial College, London, United Kingdom

17:00 - 18:00 **St Jude Post Graduate Session 2 – Multimodality therapy for malignant mesothelioma**
Auditorium
Chairman: Mr John Duffy
Speaker: Professor Walter Weder
Discussant: Mr Kieran MacManus

18:00 - 21:15 **UK Medical Ltd Surgery Division Symposium: Endocarditis; Surgical Strategies**
Conference Room 2
Chairmen: Mr Chris Bond
Speakers: Professor Marko Turina
Mr Andrew Owens
Mr Steve Edmondson
Mr Andrzej Sosnowski
Mr Henryk Siniawski
Mr Peter Gilbert

Tuesday 8 March 2005

08:30 - 18:00 **Exhibition**
East Hall

09:00 - 10:00 Session 7: Oral Presentations
Auditorium
Supported by: Sorin Biomedica UK Ltd
Chairmen: Professor Marko Turina
Professor David Wheatley

09:00 37 **Statistical Process Control Charts for Measuring Morbidity and Mortality in Coronary Artery Bypass Surgery**
A Grayson[1]; M Jackson[1]; J Au[2]; R Millner[2]; G Grotte[3]; D Keenan[3]; B Fabri[1]; M Jones[4]; B Bridgewater[4]; on behalf of NWQIP[1]
[1]The Cardiothoracic Centre, Liverpool, United Kingdom [2]Blackpool Victoria Hospital, Blackpool United Kingdom [3]Manchester Royal Infirmary, Manchester United Kingdom [4]Wythenshawe Hospital, Manchester, United Kingdom

09:10 38 **Tissue Engineering of Vascular Conduits: Development and Characterisation of an Acellular Human Umbilical Vein Matrix**
S Ganti[3]; S Mirsadree[1]; Q Huang[3]; J Kearney[3]; J Fisher[2]; S Vanniasinkam[1]; K Watterson[1]; E Ingham[2]
[1]Yorkshire Heart Centre, Leeds, United Kingdom [2]Institue of Medical and Biological Engineering, Leeds, United Kingdom [3]National Blood Service, Sheffield, United Kingdom

09:20 39 **Systemic and Local Delivery of Adenoviral Interleukin-10 in a Mouse Vein Graft Model**
E Soo; J Johnson; S White; A Newby
Bristol Heart Institute, Bristol, United Kingdom

09:30 40 **Pressure Mediated Intraoperative Gene Delivery of Antisense-DNA: A Potential Method of Preventing Neointimal Hyperplasia in Patients Undergoing Myocardial Revascularization**
B Kumar; S Shah; R Sadaba; D Beech; C Munsch
Yorkshire Heart Centre, Leeds, United Kingdom

09:40 41 **Transepicardial Implantation of Autologous Bone Marrow Mononuclear Cells to Ungraftable Coronary Territories for Patients with Ischemic Cardiomyopathy**
R Akar[1]; S Durdu[1]; M Arat[2]; O Kucuk[3]; M Kilickap[4]; N Eren[1]; G Aras[3]; O Ilhan[2]; T Corapcioglu[1]; U Ozyurda[1]
[1]Department of Cardiovascular Surgery [2]Department of Haematology [3]Department of Nuclear Medicine, [4]Department of Cardiology, University Medical Faculty, Ankara, Turkey

09:50 42 **A Prospective Study of Conduit Flow in On-pump and Off-pump Coronary Artery Bypass Grafting**
L Balacumaraswami; Y Abu-Omar; D Pigott; D Taggart
John Radcliffe Hospital, Oxford, United Kingdom

10:00 - 10:45 **Tea/Coffee**
East Hall

10:45 - 11:45 Session 8: Interactive Presentations

Auditorium:
Supported by: Vascular Perspectives Ltd
Chairmen: Mr Colin Hilton
Mr Samer Nashef
Professor Tom Treasure

10:45 43 **Developing a VATS Lobectomy Programme: The Captain's Log and the Next Generation**
J Ferguson; W Walker
Royal Infirmary of Edinburgh, Edinburgh, United Kingdom

10:55 44 **Effect of Risk Adjusted Non-dialysis Dependent Renal Dysfunction on Mortality And Morbidity Following Coronary Artery Bypass Surgery: A Multi-centre Study**
M Devbhandari[1]; A Duncan[1]; A Grayson[2]; B Fabri[2]; D Keenan[3]; B Bridgewater[4]; D Sharpe[1]; J Au[1]; on behalf of NWQIP[2]
[1]Blackpool Victoria Hospital, Blackpool, United Kingdom [2]The Cardiothoracic Centre, Liverpool, United Kingdom [3]Manchester Royal Infirmary, Manchester, United Kingdom [4]Wythenshawe Hospital, Manchester, United Kingdom

11:05 45 **Glucose-Insulin-Potassium and Tri-iodothyronine Individually Improve Cardiovascular Performance and Systemic Oxygen Delivery Post-CABG without Increasing Systemic Oxygen Consumption**
A Ranasinghe; D Quinn; T Graham; B Keogh; J Mascaro; S Rooney; I Wilson; D Pagano; R Bonser
Department of Cardiothoracic Surgery, University Hospital Birmingham, Birmingham, United Kingdom

11:15 46 **Extrapleural Pneumonectomy or VATS Debulking Pleurectomy / Decortication for Early Stage Malignant Mesothelioma? A Case Control Study**
J Edwards; D Stewart; A Martin-Ucar; K West; D Waller
Glenfield Hospital, Leicester, United Kingdom

11:25 47 **Drug Eluting Stents and the Potential Impact on Elective Coronary Artery Bypass Grafting Waiting Lists**
A Turley; N Halmey; M de Belder; S Hunter; J Wallis; A Harcombe
Cardiothoracic Unit, The James Cook University Hospital, Middlesbrough, United Kingdom

11:35 48 **Cost Implications of Off-pump and On-pump CABG Surgery. A Propensity Matched Study of a High Volume Off-pump Practice**
S Reddy[1]; A Grayson[2]; M Pullan[1]; M Shaw[2]; A Oo[1]; W Dihmis[1]; B Fabri[1]
[1]Cardiothoracic Centre, Liverpool, United Kingdom [2]Research and Development Unit, Cardiothoracic Centre, Liverpool, United Kingdom

11:45 - 12:30 **Crash Call – What happens when Teams Fail. Lessons from Aviation**
Supported by: Terema
Speakers: Professor Roger Kirby
Captain Phillip Higton
Chairman: Mr Patrick Magee

12:30 - 13:45 **Lunch**
East Hall

13:45 - 15:15 **Symposium: Staffing the Cardiothoracic Unit of the Future**
Auditorium
Chairman: Professor Peter Goldstraw
Speakers: Mr Lesley Hamilton
Mr Charles Gilbe
Ms Jacqueline Younger

15:15 - 16:00 **Tea/Coffee**
East Hall

16:00 - 17:00 Session 9: Oral Presentations

Auditorium
Supported by:
Chairmen: Mr Richard Page
Mr Robert Jeffrey

16:00 49 **Neural Networks and Bootstrap Simulation in Prediction of Outcome of Non-small Lung Cancer Patients after Complete Lobectomies and Pneumonectomies**
O Kshivets
Surgery Department, Siauliai Cancer Centre, Siauliai, Lithuania

16:10 50 **Pre-treatment with Hyperbaric Oxygen - Neurocognitive Dysfunction and Inflammatory Response following Cardiopulmonary Bypass – A Prospective Randomised Double Blind Trial**
J Alex; G Laden; A Cale; S Bennett; L Guvendik; P McCollum; S Griffin
Castle Hill Hospital, Hull, United Kingdom

16:20 51 **A Prospective Randomised Study of Neurocognitive Function and Cerebral Microemboli after On-pump and Off-pump Coronary Artery Surgery**
R Motallebzadeh[1]; M Bland[3]; R Kanagasabay[1]; H Markus[2]; J Carlos Kaski[4]; M Jahangiri[1]
[1]Department of Cardiac Surgery, St Georges Hospital and Medical School, London, United Kingdom [2]Department of Clinical Neurosciences, St Georges Hospital and Medical School, London, United Kingdom
[3]Department of Medical Statistics, York University, York, United Kingdom
[4]Department of Cardiological Sciences, St Georges Hospital and Medical School, London, United Kingdom

16:30 52 **Peri-operative Hyperglycaemia Associated with Glucose Insulin Potassium therapy in CABG Does Not Affect Neurological Outcome**
A Ranasinghe; A Walker; D Quinn; T Graham; B Keogh; J Mascaro; S Rooney; I Wilson; D Pagano; R Bonser
Department of Cardiothoracic Surgery, UHB NHS Trust, Birmingham, United Kingdom

16:40 53 **Head CT in the Unconscious Cardiac Surgical Patient. A Dangerous Waste of Time?**
A Rostron; A Menon; C Searl; J Dark
Regional Cardiothoracic Centre, Freeman Hospital, Newcastle upon Tyne, United Kingdom

16:50 54 **The use of Gabapentin for Post-operative and Post-traumatic Pain in Cardiothoracic Surgery Patients**
A D. L. Sihoe; T Lee; A P. C. Yim
Division of Cardiothoracic Surgery of the Chinese University of Hong Kong, Hong Kong, China

19:30 - 24:00 **Annual Social Event**
Royal College of Surgeons of England

SOCIETY OF CARDIOTHORACIC SURGEONS OF GREAT BRITAIN AND IRELAND

2005 ANNUAL MEETING

ABSTRACTS

Median Sternotomy versus Thoracotomy for Right Extrapleural Pneumonectomy in Malignant Pleural Mesothelioma

A Martin-Ucar[1]; D Stewart[1]; J Edwards[1]; K West[2]; D Waller[1]
[1]*Department of Thoracic Surgery, Glenfield Hospital, Leicester, United Kingdom*
[2]*Department of Anaesthesia, Glenfield Hospital, Leicester, United Kingdom*

Objectives: Based on our experience in the management of lung cancer and to minimize observed wound related morbidity after extrapleural pneumonectomy (EPP) we have adopted a median sternotomy approach for right-sided Malignant Pleural Mesothelioma (MPM).

Methods: We present a retrospective non-randomized review of the 43 patients undergoing right EPP for MPM in our unit over 5 years and compared their peri-operative course according to the surgical approach: median sternotomy (n=21) and two-level posterolateral thoracotomy (n=22).

Results: In 17 out of the scheduled 21 cases the whole procedure was completed via sternotomy (81%). There were two (9.5%) postoperative deaths in the sternotomy group and three (13.6%) in the thoracotomy group. Median sternotomy achieved equal clearance of the tumour to thoracotomy but was associated with shorter operative time less postoperative pain and less use of analgesics. There have been no recurrence in the sternotomy wounds and 7 recurrences in the thoracotomy or drain-site wounds (p=0.05). The effects of a learning curve affected postoperative mortality (only one death within the most recent 20 cases) and conversion to thoracotomy (three of the first 8 attempted cases required additional thoracotomy) but not in the operative time.

Conclusions: We believe that sternotomy is the preferred route of access for right EPP in MPM due to reduced anaesthetic time and postoperative pain. Although the follow-up is limited this approach does not appear to compromise oncological objectives or to increase technical complications. Sternotomy may be associated with reduced wound recurrence.

Median (range)	Sternotomy (n=21)	Thoracotomy (n=22)	p value
Operative time	190 (160-380) min	269 (165-365) min	0.02
Epidural use 72 hours	99 (40-260) ml	240 (160-430) ml	0.001
Follow-up	10 (1-24) months	37 (13-61) months	0.001
R0 resection	15 (72%)	16 (73%)	0.6

Acute Haemodynamic Lung Damage Caused by Donor Brain Death Determines Reperfusion Injury after Lung Transplantation

V Avlonitis; J Kirby; J Dark
University of Newcastle upon Tyne, Newcastle upon Tyne, United Kingdom

Objectives: Sympathetic discharge and hypertensive crisis accompany brain death causes hydrostatic injury to the capillary-alveolar membrane and neurogenic pulmonary oedema. Progressive inflammation develops later which is amplified by ensuing neurogenic hypotension. We investigated the separate contribution of the early donor haemodynamic injury and the later developing inflammation to reperfusion injury after lung transplantation.

Methods: Brain death was induced by intracranial balloon inflation in anaesthetised ventilated rats. Group A (n=7): balloon inflation was followed by hypertensive crisis. Group B (n=7): received phentolamine (?-adrenergic blocker) before balloon inflation to prevent hypertension. Group C (control, n=7): sham procedure without balloon inflation. Lungs were retrieved 15 min after brain death and transplanted into recipient rats. Group D (n=9): lungs retrieved 5h after brain death and transplanted.

Results: Post-transplantation lungs from Group A donors had inferior oxygenation higher airway pressure and vascular resistance (PVR) and at 2h higher water index and bronchoalveolar lavage (BAL) concentration of neutrophils and proinflammatory cytokines/chemokines than those from control donors. Lungs from Group B donors had better oxygenation lower airway pressure and lower BAL concentration of neutrophils and cytokines/chemokines than Group A. Lungs from Group D donors had similar function and inflammation with those from Group A donors but lower PVR.

Conclusions: Lungs retrieved early before an inflammatory state is established in the donor demonstrate poor function and enhanced inflammation post-transplantation. Blockade by phentolamine confirms haemodynamic aetiology. Delaying lung retrieval does not have an adverse effect. On the contrary lower PVR after reperfusion of lungs retrieved late indicates improvement with time after the initial sympathetic injury in the donor.

Gluteraldehyde-fixed Bioprosthetic Heart Valves Fail due to Xenograft Rejection

R Manji; N Nijjar; L Zhu; D Rayner; R Rajotte; A Koshal; D Ross
University of Alberta, Edmonton, Canada

Objectives: Gluteraldehyde (G) fixation decreases but probably does not eliminate antigenicity of bioprosthetic (xenograft) heart valves. Rejection may be a method of valve failure especially in young patients who have a more competent immune system than the old. We wanted to determine if there is evidence of cellular/ humoral rejection by using a syngenic/ xenogenic model with non-G/ G-fixed aortic valve/ aorta.

Methods: Ascending aorta/ valve (from Lewis rat (R) – syngenic or guinea pig (GP) – xenogenic) were harvested and transplanted (fresh or after 48 hours of G-fixation) into the infrarenal aorta of young R recipients for three weeks. Histology and immunohistochemistry (IHC) for anti-rat IgM/ IgG was performed. There were three groups: fresh R to R (FRR) – control for surgery induced immune injury G-fixed R to R (GRR) – syngenic negative control and G-fixed GP to R (GGPR) – xenograft experimental group. The valves and adventitia were scored blindly by a pathologist for inflammation (0-4). IHC was scored (0-4) in blinded fashion and background staining was subtracted to get a final IHC score. Non-parametrical statistics were used. Data are expressed as median with range.

Results: Inflammatory cells were mononuclear cells/macrophages. The GGPR group had more eosinophils than the other groups.

Conclusions: G-fixed xenograft group had significantly more valve and adventitial inflammation with more eosinophils as well as more anti-rat IgG deposition compared to the G-fixed syngenic group. Macrophages eosinophils and other leukocytes may bind to IgG via their Fc receptors and lead to xenograft rejection and valve destruction.

Group	Valve Inflammation	Adventitial Inflammation
FRR	n=3 m=0.0 r=(0.0-0.5)	n=3 m=1.0 r=(1.0-1.0)
GRR	n=5 m=0.0 r=(0.0-1.5)	n=9 m=1.5 r=(1.0-2.5)
GGPR	n=7 m=1.5 r=(0.0-4.0)	n=9 m=3.0 r=(2.0-4.0)
	p=0.05 GRR vs. GGPR	p=0.003 GRR vs. GGPR
Group	Anti-rat IgM	Anti-rat IgG
FRR	n=3 m=-1.7 r=(-1.7-1.8)	n=2 m=-1.1 r=(-2.1-0.1)
GRR	n=3 m=1.8 r=(0.3-1.8)	n=4 m=1.1 r=(-0.1-1.4)
GGPR	n=7 m=1.3 r=(-1.7-2.3)	n=5 m=2.0 r=(2.0-2.0)
	p=0.83 GRR vs. GGPR	p=0.016 GRR vs. GGPR
n=sample size	m=median value	r=range

Comparison of Syngenic and Xenogenic Groups

Therapeutic Potential Of Epidermal Growth Factor Tyrosine Kinase Inhibitor Iressa in Reflux Induced Oesophageal Tumour Cell Lines

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Relationship Disclosure: Pramod Bonde is supported by St Jude Scholarship from Society of Cardiothoracic Surgeons of Great Britain and Ireland and Countess Dowager Eleanor Peel Medical Foundation fellowship

Objectives: Epidermal growth factor (EGF) has been implicated in carcinogenesis of various epithelial malignancies. Oesophageal mucosa demonstrates abundant expression of EGF receptors. Modulation of these receptors may play an important role in malignant progression in oesophageal cancer. We aimed to investigate the role of EGF receptor inhibition by tyrosine kinase inhibitor Iressa (geftinib) on oesophageal carcinogenesis on reflux derived oesophageal tumour cell lines.

Methods: Surgically induced bilious reflux was achieved by oesophago–jejunostomy in male Sprague Dawley rats. Two cell lines (JA and JB), which were established from the reflux induced tumors capable of in vitro and in vivo growth were used for the current experiment. Growth inhibition was assessed using standard MTS assay at 48 and 96 hours. Activated targets of the EGF receptor pathway phospho-ERK1/2 and phospho-MEK levels were confirmed by Western blot method.

Results: Iressa (geftinib); an EGF receptor inhibitor caused significant growth inhibition in both cell lines (JA>JB) compared to mock-treated cells in a dose dependant fashion ($p<0.05$). Maximum inhibitory effect was observed at 5?m concentration. This growth inhibition was mirrored functionally by down regulation of activated targets of the EGFR pathway phospho-ERK1/2 and phospho-MEK levels in the EGFR-inhibited cells from JA and JB cell lines.

Conclusions: Down regulation of EGF receptor pathway by Iressa leads to significant growth inhibition in reflux induced oesophageal tumour cell lines. This has significant implications for chemo-preventive strategies for reflux induced oesophageal cancers.

Surgical Intraoperative Left Atrial Ablation using Linear Cryolesions for the Treatment of Atrial Fibrillation

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Na Homolce Hospital, Prague, Czech Republic

Objectives: Various energy sources are now widely used for intraoperative surgical left atrial ablation. The application of linear cryolesions using an argon cryoprobe (Surgifrost® CryoCath) has been introduced recently. This report describes a single centre experience with this technique over a period of nearly 24 months.

Methods: Between December 2002 and October 2004, 127 patients with recurrent forms of atrial fibrillation (AF) underwent left atrial cryoablation in combination with other surgical procedures. There were 53 female and 74 male with an average age of 68.7±8.5 years. Mean duration of AF was 6.1±5.2 years 92 patients (72.4%) had permanent AF. 97 valvular and 30 non-valvular procedures were performed in combination with left atrial cryoablation.

Results: 30-day mortality in this group was 5.6 % (7/127). In the early postoperative period 76.3% (97/127) of patients experienced at least one episode of supraventricular arrhythmia 76.3% (97/127) required anti-arrhythmic medication and 40.2% (51/127) DC cardioversion. 120 patients were discharged from hospital 60% out of them (72/127) in sinus rhythm (SR). The mean follow-up was 7.9±6.1 months (range 3–22). At 6 months the restoration of SR was 76.5 % (38/50). 19 out of 21 patients (90.5%) who have been followed up for 12 months and longer are currently in SR.

Conclusions: Surgical intraoperative left atrial ablation using linear cryolesions is effective for the treatment of AF. The intraoperative application is convenient and easy. Long-term follow-up is necessary to evaluate further rhythm outcome.

Patient Prosthesis Mismatch In Aortic Valve Replacement – Size Does Not Matter

N Howell; E Coby; S George; V Barnet; R Bonser; B Keogh; T Graham; S Rooney; I Wilson; D Pagano
Department of Cardiothoracic Surgery, University Hospital Birmingham, Birmingham, United Kingdom

Objectives: Prosthesis mismatch (PPM) has been reported to increase perioperative mortality and reduce postoperative survival in patients undergoing aortic valve replacement (AVR). We analysed the effect of PPM on survival following AVR in our unit.

Methods: Prospectively collected data on patients who had undergone AVR (±coronary artery revascularisation) since 1997 were analysed. Functional in vitro valve effective orifice area (EOA) and geometric prosthesis internal orifice area assuming a circular orifice shape (GOA) were evaluated. The values were indexed to body surface area (cm^2/m^2). PPM was defined as EOAI <0.6 (EOAM) and/or GOAI <1.1 (GOAM). Survival data from hospital discharge was obtained from the Institute of National Statistics.

Results: Twelve per cent of patients (137/1119) had severe PPM. There were 52/1119 in-hospital deaths (overall mortality 4.65%) with no difference between the groups (10/137 PPM vs. 42/982 Controls p=0.13). Survival data (median 36 months; interquartile range 17-55 months) was available on 909 out of 1067 patients discharged from hospital. There were 85 deaths (8/105 PPM vs. 77/727 Controls). The 5-year survival estimate was similar for both groups (90.7% PPM (98 survivors); 85.7% (660 Survivors) Control; p=0.37). Cox-hazard analysis identified advanced age as the only predictor of reduced survival (age >80 RR 2.43 95% CI 1.28-4.586 p=0.007)

Conclusions: In this study PPM at values previously considered severe did not affect perioperative mortality or mid-term survival.

Octogenarians Undergoing Cardiac Operations Outlive Their Peers

S Stoica; F Cafferty; J Kitcat; R Baskett; M Goddard; L Sharples; F Wells; S Nashef
Papworth Hospital, Cambridge, United Kingdom

Objectives: Our hospital operates on the oldest population in the country. We aimed to determine: 1) recent trends in referral; 2) hospital mortality and interaction with treatment factors; 3) long-term survival of octogenarians.

Methods: Data were prospectively collected on 12461 consecutive patients (706 over 80 years) between April 1996 and October 2003. Base hospital mortality was risk-stratified using logistic EuroSCORE. Logistic regression was used to determine the interaction between predicted risk of death and two treatment factors: length of cardiopulmonary bypass time and clinical priority (elective/ urgent/ emergency). Long-term survival was determined through the NHS Strategic Tracing Service and was compared with interim life table's data from the Government Actuary's Department.

Results: The proportion of operations in octogenarians increased from 4.1% in 1996 to 9.8% in 2003 (p<0.001). Hospital mortality was significantly lower than predicted (p<0.001) for all patients (3.9% vs. 6.1%) and for octogenarians only (9.8% vs. 14.1%). Emergency operations accounted for 7% of all procedures in both groups but octogenarians had proportionately more urgent operations (21% vs. 14% p<0.001). In multivariate analysis bypass time and higher priority were independent predictors of death over and above EuroSCORE. The proportion of patients staying in ITU for more than 24 hours was 37.1% in octogenarians vs. 23.0% for younger patients (p<0.001). Actuarial 5-year survival for octogenarians having cardiac surgery was 82.1% versus 55.9% in the general age/sex-matched population (p<0.001).

Conclusions: Cardiac surgery in octogenarians has acceptable mortality and morbidity and may improve life expectancy. Elective referrals should be encouraged.

Does the Method of Lung Preservation Influence Outcome following Transplantation? – An Analysis of 681 Consecutive Procedures

J Ganesh; C Rogers; N Banner; R Bonser
On behalf of the Steering group, UK Cardiothoracic Transplant Audit Clinical Effectiveness Unit, The Royal College of Surgeons of England, London, WC2A 3PE, United Kingdom

Objectives: Despite 50 years of lung preservation research the optimal technique is undefined and the incidence of primary graft failure remains unchanged. Using data from a national prospective cohort we investigated outcomes with different preservation methods after adult lung transplantation (LTx).

Methods: Early (30 days) late (30 days to 3 years) and overall (3 years) mortality adjusted for differences in donor and recipient characteristics were compared using Cox regression. Length of stay in ITU and number of rejection episodes were secondary outcomes.

Results: 681 eligible LTx between 07/95 and 06/03 were preserved with Eurocollins (EC n=284) Blood-albumin (BA n=139) Core cooling (CC n=107) or low potassium dextran (LPD n=151). LPD use increased over time and EC declined ($p<0.001$). Unadjusted 3-year survival was similar across the groups ($p=0.7$) with the highest survival in LPD (62% 95% CI 51% to 72%) and lowest in the BA (49% 95% CI 39% to 58%). Risk-adjusted early ($p=0.8$) late ($p=0.3$) and overall ($p=0.8$) survival was also similar across the groups and was not affected by ischaemic time. The median ITU stay was 3 days (IQR 1 to 8 days) with no difference between groups ($p=0.3$). An increased incidence of rejection was apparent with increasing ischaemic time ($p=0.02$).

Conclusions: The method of lung preservation does not affect early or mid-term survival or ITU stay following transplantation but increasing ischaemic time may pre-dispose to rejection.

Appropriateness Of VATS Versus Bedside Talc Slurry Pleurodesis in Patients Dying of Cancer

C Tan; T Treasure
Guys Hospital, London, United Kingdom

Objectives: The UK Thoracic Surgery Register records about 1000 malignant effusions annually treated by VATS talc pleurodesis. We have evidence of effectiveness from a systematic review of randomised trials but some patients derive no benefit and are exposed to the risk of an unavailing invasive procedure. A consensus on appropriateness seemed to be timely.

Methods: The RAND/UCLA Appropriateness Method (RAM) was developed in the 1980s to assess over or under use of procedures. This was exemplified in the UK study of coronary interventions (NEJM 2001; 344:645-54). Our panel comprised three respiratory physicians three thoracic surgeons and two oncologists chaired by a RAM expert. Factors considered included: anticipated survival know/ unknown tissue diagnosis dyspnoea score response to trial aspiration and evidence of trapped lung. This yielded 300 permutations. To test each set of circumstances by RCT would require an impossible number of RCTs.

Results: Bedside slurry and VATS were deemed appropriate in 27 and 78 scenarios respectively (of 300). For example the longer the expected survival the more appropriate was either intervention. When the tissue diagnosis was unknown VATS was more appropriate than bedside talc slurry.

Conclusions: While some of the conclusions had face validity there were serious incongruities. For instance the worse the dyspnoea the less likely the physicians were to recommend VATS while the surgeons judged severe breathlessness to be an indication to intervene. While the outcome was sometimes flawed the process was revealing in exploring and making explicit the various thought processes and value judgements that might be employed in the lung cancer MDT.

Cardiac Arrest in the Organ Donor Does Not Negatively Influence Recipient Survival after Heart Transplantation

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Papworth Hospital, Cambridge, United Kingdom

Objectives: Cardiac arrest in the organ donor raises concerns about the possibility of ischemic cardiac damage. We evaluated the outcome of heart transplantation in patients receiving an organ from donors who had suffered a period of cardiac arrest.

Methods: Demographics, operative details and outcome data were obtained retrospectively. Actuarial survival was reported using Kaplan Meier analysis and compared with the log rank test. Cox proportional hazards regression used to model risk-adjusted survival.

Results: Between January 1st 1991 and November 1st 2004, 38 patients were transplanted with hearts from multiorgan donors who were resuscitated after a cardiac arrest. The mean (SD) duration of cardiac arrest was 15 (8) mins. The interval between donor cardiac arrest and organ excision was 69 (5) hours. The 30-day mortality was 2.6% (1/38). In the same interim 566 patients underwent cardiac transplantation with hearts from organ donors without a cardiac arrest. Median time to follow up was 61 months (IQR 15-166). One and five-year survival comparing the arrest and non-arrest groups was 94.2 versus 83.6% and 79.8 versus 74.5% respectively (p=0.35). Donor cardiac arrest was not an adverse predictor of mortality on multivariate analysis the adjusted odds ratio was 0.86 (95% CI 0.60 to 1.25 p=0.42)

Conclusions: With appropriate case selection there is no evidence that survival after cardiac transplantation is worse following a period of cardiac arrest in the organ donor. A history of cardiac arrest in the organ donor should not exclude an organ from being considered for transplantation.

Counterpulsation from Skeletal Muscle Ventricles and Intra-Aortic Balloon Pumps in the Normal and Failing Circulations

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Relationship Disclosure: The British Heart Foundation Programme Grant RG/2001003 funded this work. We are grateful to Datascope Corporation for the provision of intra-aortic balloon pump equipment for the study

Objectives: Cardiac-assist from skeletal muscle is potentially more attractive than from mechanical assist devices because haemodynamic benefits may be provided at lower cost. A skeletal muscle ventricle (SMV) was configured to produce cardiac assist by providing counterpulsation, an action similar to that of the intra-aortic balloon pump (IABP). The haemodynamic benefits of an IABP and an SMV in both the normal and failing circulations were assessed.

Methods: SMVs were connected via a single conduit to the aorta and IABPs (25ml) were placed in the thoracic aorta of each of 12 pigs. Each assist-device was activated during every third cardiac diastole while the other device was inactive. Haemodynamic parameters during the IABP or SMV-assisted beat (Assist) were compared (paired t-test) with those during the preceding beat (Preassist). In 6 pigs the left anterior descending coronary artery (LAD) was then snared to induce acute heart failure. The haemodynamic effects of the IABP and SMV were reassessed.

Results: Mean SMV ejection volume was 27.5 +/- 4.0 ml (maximum ejection fraction =90%). SMV and IABP-assist produced counterpulsation by significantly increasing mean aortic diastolic pressures mean diastolic LAD flows and endocardial viability ratios in both the normal and failing circulations (Table). After LAD snaring, both devices increased LAD blood flow proximal to the snare.

Conclusions: In both the normal and failing circulations the SMV was an effective counterpulsator providing cardiac assist that was at least equal to that available from an IABP. The SMV therefore offers the potential for providing the known benefits of an IABP in ambulant patients.

	Mean Aortic Diastolic Pressure			Mean Diastolic LAD			Endocardial Viability Ratio	(EVR)
	Pre-assist (mmHg)	Assist (mmHg)	p value	Pre-assist (ml/min)	Assist (ml/min)	p value	% increase	p value
The normal circulation								
SMV (n=12)	43.4 ± 3.8	54.9 ± 5.0	<0.0001	43.4 ± 4.4	63.4 ± 6.1	<0.0001	31.6 ± 3.8	<0.0001
IABP (n=12)	42.9 ± 3.8	51.6 ± 4.8	<0.0001	43.6 ± 4.4	59.66.5	<0.0001	21.4 ± 3.0	<0.0001
p value (SMV vs IABP)	0.89	0.46		0.94	0.46		0.04	
Acute heart failure conditions								
SMV (n=6)	39.5 ± 2.8	46.5 ± 2.5	0.01	17.5 ± 4.9	22.9 ± 5.5	0.003	16.7 ± 5.9	0.01
IABP (n=4)	40.5 ± 3.5	49.7 ± 5.2	0.03	16.4 ± 6.4	27.6 ± 9.8	0.049	19.7 ± 4.4	0.02

SMV vs IABP

Combined Off-Pump Left Ventricular Aneurysm Plication and Multivessel Coronary Revascularization in Patients with Ischaemic Cardiomyopathy

A EL-Gamel; O Wendler; L John; M Marrinar; J Desai
Kings College Hospital London United Kingdom

Objectives: Left ventricular aneurysmectomy is associated with an increased mortality and morbidity compared to isolated coronary artery bypass (CABG). Off pump CABG seems to improve hospital mortality in high-risk patients. We present the results of a new operative technique, which combine off pump CABG and left ventricular aneurysm plication (LVAP).

Methods: Between September 2000 and September 2004 a total of 44 patients received a combined procedure of LVAP and CABG without extracorporeal circulation. Age was 67±10.5 years, 20% were females and mean ejection fraction was 21±4%. The mean NYHA was 2.7± 0.9, 15 patients had spontaneous ventricular arrhythmias and AICD was implanted in 12 patients. Reversible ischaemia was identified in all patients none had intra-ventricular thrombus.

Results: Operative time was 110±23 min. Patients received a mean of 3.5 grafts with 83%(n=35) internal mammary artery use; 40%(n=17) received a second arterial graft. There were no re-explorations for bleeding and there were no strokes. All patients were extubated within 8 hours following surgery; length of hospital stay was 8±2.3 days. Observed 30-day mortality was 2.2 %(n=1). Post-op EF improved to 32±5.2%, $p>0.04$ at 6 months. Mean NYHA was 1.2±0.8 at one year (preoperative 2.6, $p<0.001$); follow up was 94% complete at one year. One-year survival was 95%. Freedom from cardiac readmission was 90%.

Conclusions: We conclude that off-pump revascularization and left ventricular aneurysm plication in patients with severe left ventricular dysfunction is a safe and effective alternative to conventional surgical strategies. Long-term follow-up is mandatory to confirm these encouraging intermediate outcomes.

Cardiac Xenotransplantation: Early Success in the Orthotopic Position

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Mayo Clinic, William J von Liebig Transplant Center, Rochester, MN, United States of America

Objectives: A suggested threshold for clinical application of cardiac xenotransplantation is a median 90-day survival of the transgenic pig heart in the life-supporting orthotopic position in a non-human primate recipient. We have achieved consistent xenotransplant heart function in the heterotopic position for greater than 90 days. This report is our initial experience in the orthotopic position.

Methods: Orthotopic pig (transgenic for the human complement regulating protein CD46) to baboon transplantation was used (n=6 transplants). Immunosuppression consisted of splenectomy induction therapy with antithymocyte globulin for 5 days, FK506, rapamycin, anti-CD20 monoclonal antibody, a corticosteroid taper and TPC (an alpha-gal PEG polymer). No therapy was given for putative rejection episodes. Prophylactic antibacterial and antiviral strategies were applied.

Results: Two recipients survived in an active and healthy state greater than 8 weeks and 5 weeks respectively. Both died of non-cardiac causes with good xenograft heart function. These recipients remained well throughout the experiment and had good preservation of cardiac histology. The other four recipients failed perioperatively due to non-immune causes reflecting our early experience of preclinical orthotopic transplant in the laboratory.

Conclusions: These two primates represent the longest surviving orthotopic cardiac xenotransplants in history. From this experience the concept of life-supporting orthotopic cardiac xenotransplantation is viable. The tremendous advantages of biological cardiac replacement coupled with clear ongoing preclinical progress in cardiac xenotransplantation emphasize the need for continued studies.

To Investigate the Role of Stem Cells in Tumour Angiogenesis

K Redmond; J Wang; H Redmond
University College, Cork, Ireland

Objectives: To determine whether progenitor stem cells (SCs) recruited from the circulation (vasculogenesis) sustain tumour viability and growth in metastatic lung cancer.

Methods: SCs were isolated from human cord blood samples by mononuclear cell extraction SC marker AC133+ immunomagnetic labelling separation and VEGFR1 immunophenotyping with flow cytometry. 10000 AC133+ cells were engrafted into MF1 nude mice via tail vein injection (n=7) with PBS as a control (n=7) day 1. 50000 4T1 murine breast carcinoma cells were injected into the mammary fat pad day 10. The primary tumour and metastatic tumour in the lung (n=14 7 "treatment" group and 7 control group) were resected at day 14 and day 21 respectively. Samples were placed in paraformaldehyde fixative prior to H&E staining. Anti-human vWF receptor mAb immunohistochemistry was performed using appendix as a control.

Results: AC133+ cells were retrieved with >85% purity and 60% viability (using the fluorescent nuclear immunostain Propidium Iodide). 4T1 tumour cells infiltrated both primary mammary fat pad and lung parenchymal as evidenced on H&E cuts. As expected, AC133+ SCs was seen to contribute to tumour angiogenesis as substantiated by vWF immunostaining of both primary and lung metastatic tumours. Furthermore implantation of AC133+ SCs in tumour-bearing nude mice enhanced tumour growth and metastases probably through an angiogenesis-dependent mechanism. Student's T-Test calculated significant difference between PBS- and AC133+- injected primary tumour measurements (10.3mm versus 14.9mm, p=0.007) and lung macrometastatic nodule count (22.8 versus 30.4 p=0.01).

Conclusions: immunomagnetic labelling and separation successfully isolated SCs. Infused human AC133+ mobilized cells were incorporated into both the primary tumour of a orthtotopic implantation murine carcinoma model and its metastatic site. Results show for the first time that malignant tumours are capable of incorporating mobilized AC133+ haematopoietic cells resulting in enhanced tumour growth. Therefore the integration of bone-marrow-derived endothelial cells into the vascular endothelium has implications for the development of vascular targeting strategies for cancer.

Total Arterial Revascularisation is Safe: Multicentre 10-year Study of 71470 Isolated CABG Procedures

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Objectives: To assess the use of total arterial revascularisation (AA) and to compare the in-hospital mortality with other CABG grafting strategies.

Methods: 71470 CABG patients in 27 centres were studied. Hospital mortality was compared for various grafting strategies: all arterial (AA n= 5401) any mix of arteries and veins (AxV n=66069) and the "traditional" operation of one artery and any number of veins (A1V n=49801). Patient profile was by 22 preoperative variables. Groups were compared for hospital mortality using three methods: multivariate regression, comparison of actual mortality to predicted by logistic EuroSCORE and propensity score analysis of AA and A1V outcomes.

Results: AA increased over time (3.2% to 11.7%, p<0.001) with inter-centre variability. Mortality for AA was 2% versus 3% for AV (p=0.001) but AA patients were younger had less comorbidity and less urgency (all p<0.05). In multivariate regression AA had a slight but insignificant increase in hospital mortality (OR 1.13 [0.86 1.48], p=0.36). There was a trend towards higher mortality in the AA group when compared with the A1V group (OR 1.19 [0.91 1.56], p=0.10). The A1V group was the only group where mortality was significantly lower than predicted by EuroSCORE (p <0.001). In propensity analysis mortality was 1.51% for A1V and 1.74% of AA patients (p=0.56). Observed-to-expected mortality ratios against logistic EuroSCORE for propensity-matched patients were also similar: AA 0.88 [95%CI 0.73 1.06] and A1V 0.86 [95%CI 0.81 0.91].

Conclusions: The use of arterial grafting has increased over time varies by centre and appears not to increase hospital mortality.

Competitive Flow in Arterial Composite Grafts; The Crucial Role of Interactions of Sequenced Anastomotic Sites

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Objectives: We sought to delineate the effect of characteristics (severity of stenosis, diameter and location) of target coronary branch interactions of all anastomotic sites within the composite graft, anastomotic fashion (side-to-side/ end-to-side) and the shape (branched/ straight) of composite graft on competitive (reversal) flow and the efficacy of our strategy for prevention.

Methods: We reviewed coronary angiography of 1627 anastomoses in 458 patients who underwent off-pump coronary artery bypass grafting with aorta no-touch technique using total arterial grafting between 12/2000 and 03/2004. Competitive flow was defined as the phenomenon that at least one of the distal anastomotic sites was not opacified in IMA angiography but clearly opacified in native coronary angiography. Our current strategy consists of isolated LIMA to LAD and straight composite graft of RIMA and radial artery to LCX and RCA sequentially with avoidance of anastomosing the distal end of the graft to75% stenosis branch if possible.

Results: Anatomical graft patency rate was 99.0% (1610/1627) whereas competitive flow was found in 4.5% (74/1627). The multivariate logistic regression analysis demonstrated that 75% stenosis ($p<0.0001$), the location (RCA and LCX) ($p<0.0001$), distal anastomoses of composite graft>3 ($p=0.001$) and end-to-side fashion ($p<0.0001$) were significant predictors of competitive flow. Regarding interactions of anastomotic sites, sequential anastomoses of 99%(proximal)-75%(distal) ($p<0.0001$; OR=8.85) and 75%(proximal)-75%(distal) ($p<0.0001$; OR=4.03) had significant correlations to competitive flow and our current strategy had significant inverse correlation ($p=0.01$; OR=0.378).

Conclusions: In CABG, utilizing composite grafts anatomical graft patency does not necessarily correspond with the efficacy in myocardial revascularization. Our current strategy is considered effective for minimizing competitive (reversal) flow and achieving securely complete revascularization.

A Comparison of Transit-time Flowmetry and Intraoperative Fluorescence Imaging for Assessing Coronary Artery Bypass Graft Patency

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Relationship Disclosure: DP Taggart has stock options with Novadaq Technologies Inc, Canada

Objectives: Transit-time flowmetry (TTFM) is currently used to assess intraoperative coronary artery bypass graft (CABG) patency based on mean graft flow (MGF) and pulsatility index (PI). Intraoperative fluorescence imaging (IFI) based on fluorescence of indocyanine green dye provides direct visual images to confirm graft patency.

Methods: We performed a prospective study to compare intra-operative CABG patency in patients using an IFI system (SPYTM Novadaq) and TTFM (Medistim AS). Poor flow with IFI was defined as absence of fluorescence within 15 seconds in the graft. A persistent MGF <5ml/min and PI >5 with TTFM prompted graft revision.

Results: We studied 266 grafts in 100 CABG patients. IFI and TTFM confirmed adequate flow in all 241 (91%) grafts in 75 patients (75%). Transient poor flow was detected with both IFI and TTFM in 7 (2.6%) grafts in 7 (7%) patients, which subsequently proved to be adequate on, repeat testing and hence did not require graft revision. Both IFI and TTFM confirmed persistent poor flow in 8 (3%) grafts in 8 (8%) patients requiring graft revision. However in a further 10 (3.8%) grafts in 10 (10%) patients TTFM indicated persistently poor flows based on MGF and PI values while the IFI system demonstrated satisfactory flow. These grafts were not revised (Table).

Conclusions: In the majority of patients both IFI and TTFM are useful to confirm intraoperative graft patency. However in a small proportion of patients (10%) graft patency assessment using TTFM alone might prompt unnecessary graft revision.

	CATEGORY Number of grafts (%) Number of patients (%)	CATEGORY Number of grafts (%) Number of patients (%)
Flow Variable	GOOD TTFM FLOW	POOR TTFM FLOW
GOOD IFI FLOW	241 (91%) 75 (75%)	10 (3.8%) 10 (10%)
POOR IFI FLOW	0	Transient Poor Flow 7 (2.6%) 7 (7%)
		Persistent Poor Flow 8 (3%) 8 (8%)

Heart Transplantation in Adults with Congenital Heart Disease: Analysis of a National Cohort

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Objectives: Adults with congenital heart disease (ACHD) may have worse outcome following heart transplantation (HTx).

Methods: We compared early (30-day) and late (30-days to 5 years) survival following HTx in 46 (3.2%) ACHD (≥16 yrs) and 1404 other recipients. **Results:** The proportion of HTx for ACHD varied between 0% and 40% ($p<0.001$) in the centres. ACHD recipients were more likely to be younger ($p<0.001$), female ($p=0.002$), have a lower BMI ($p=0.002$), have had prior resuscitation ($p=0.04$), history of cerebrovascular episodes ($p=0.002$) and ventilation ($p=0.04$). 80% of ACHD recipients had undergone >1 open-heart operations compared with 30% in others ($p<0.001$). 30-day survival was 72% in ACHD compared with 88% in others ($p=0.002$); at 5 years the survival was 62% and 71% respectively ($p=0.04$). There was a trend for better late conditional survival (30 days to 5-years) in ACHD (86% vs. 80% $p=0.2$). Ischaemia time was significantly longer in ACHD: >240 mins in 41% vs. 20% in others ($p=0.003$). Cox regression identified recipient vascular disease, diabetes, previous open-heart operation, lower creatinine clearance, older donor age and longer ischaemia time as risk factors for mortality. After adjustment ACHD continued to be a significant predictor of perioperative mortality ($p=0.008$) but not late ($p=0.35$) or overall survival ($p=0.14$).

Conclusions: ACHD recipients are a small proportion of HTx and hence do not appear as risk factor in the model used to predict 30-day mortality in UK national audit. This potentially disadvantages centres performing HTx for ACHD and could bias against selection of ACHD for HTx.

Intrauterine Course and Postnatal Evaluation and Management of Congenital Bronchopulmonary Anomalies

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Objectives: We reviewed our experience with pulmonary resection for congenital bronchopulmonary malformations and analyzed the management of pregnancies with an antenatal diagnosis.

Methods: 31 patients underwent resection (8 emergent) for bronchopulmonary malformations. There were 13 congenital cystic adenomatoid malformations (CCAM), 6 sequestrations, 3 bronchogenic cysts and 9 lobar emphysemas.
15 patients had lung lesions diagnosed on antenatal ultrasound. In 10 patients antenatal ultrasound demonstrated resolution of the anomaly but post-partum radiology revealed persistent lesions. In 2 fetuses the malformation remained stable. Amniocentesis was performed in 3 fetuses with polyhydramnios. In 6 patients antenatal sonograms demonstrated lesion resolution, which was confirmed postnatally.

Results: There were no hydrops fetal demise or pregnancy termination. Of the 15 patients diagnosed antenatally 5 neonates underwent emergency resection. There were no post partum deaths. 1 patient required completion lobectomy due to prolonged air leak following segmental resection. Histopathologically 8 specimens had Stocker Type 1 and 5 had Stocker Type 2 CCAM.

Conclusions: Suspected resolution on antenatal ultrasound does not necessarily imply complete resolution. Post-natal evaluation is warranted. Detection of mass effects warrants therapeutic decompression. Fetuses with extensive unilobar or bilobar CCAM usually needed amniocentesis, presented with respiratory distress, needed urgent and more extensive resections and showed Stocker type 2-lesions on histopathology. Segmental resection can be complicated by air leaks necessitating repeat surgery but is an important option. Lobectomy is the procedure of choice is well tolerated and leads to excellent long-term outcomes except for those with bilobar and bilateral lesions and pulmonary hypoplasia.

Impact of Antioxidative Treatment on Nuclear Factor Kappa-ß Regulation in Patients Subjected to CABG

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Objectives: Nuclear factor kappa-ß (NFkß), a transcription factor, has been indicated to play a role in the development of numerous pathological states such as myocardial ischaemia-reperfusion (I/R), apoptosis and ischaemic preconditioning. As both myocardial ischaemia and reperfusion (by reactive-oxygen intermediates) can activate NFkß we investigated the impact of the antioxidant N-Acetylcysteine (NAC) on NFkß-regulation in patients subjected to cardioplegic arrest (CA) on cardiopulmonary bypass (CPB).

Methods: Forty coronary artery surgery patients (66±9[SD] years; 9 women and 31 men) subjected to CPB and cardioplegic arrest were randomized in a double-blind fashion to receive either NAC (100 mg/kg into CPB prime followed by infusion at 20 mg/kg/h; n=20) or Placebo (n=20). We collected transmural LV biopsies prior to CPB (baseline) and at CPB-end. LV specimen was immuno-cytochemically stained against active NFkB and phosphorylated I?ß? (activates NFkß). Staining was quantitatively determined using densitometry and the number of positive capillaries per viewfield (cpv) was counted.

Results: At CPB-end both NFkß and I?B? were unchanged in endothelial cells of controls compared to baseline (45.6±7.6 vs 49.9±7.1 and 36.8±6.1 vs 47.5±8.6 cpv, p>0.05 respectively). In NAC NFkß and I?ß? in endothelial cells were significantly decreased at CPB-end (19.8±1.7 vs 39.1±4.1 cpv, p<0.001 and 22.1±1.9 vs 38.3±4.4 cpv, p=0.006). In cardiomyocytes, however, there were no changes observed in either group.

Conclusions: Our data show that antioxidative treatment with NAC decreases NFkß-activity following I/R in endothelial cells but not in cardiomyocytes. As NFkß-activity post I/R appears to be mediated by free radicals; antioxidative treatment protects coronary endothelium during CA.

Tumour Necrosis Factor Alpha (TNF?) Gene Polymorphism A-308G Influences the Inflammatory Response after Coronary Revascularisation Surgery

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Objectives: A systemic inflammatory response is commonly observed following coronary revascularisation. TNF? is believed to be a potential modulator of this response. A functional polymorphism within the TNF? gene at position A-308G has been associated with increase TNF? levels. The relationship between predicted TNF? genotype and circulating TNF? levels in patients undergoing coronary revascularisation surgery has yet to be defined. We examined the relationship between TNF? A-308G polymorphism, TNF? post-operative levels and clinical outcome following coronary revascularisation surgery.

Methods: DNA was obtained from 96 consecutive patients who underwent elective coronary revascularisation. Patients were genotyped for TNF? A-308G polymorphism using sequence specific primer-polymerase chain reaction (SSP-PCR). TNF? levels were measured on serum samples taken three hours post-operatively using enzyme linked immunosorbent assay (ELISA). TNF? levels and genotypes AA, AG and GG were correlated with peri-operative clinical data.

Results: The prevalence of AA, AG and GG TNF? -308 genotypes was 12, 38 and 46 respectively. Patients homozygous for A had higher circulating levels of TNF? (p=0.009) which remained statistically significant following adjustment for age, sex, aortic cross clamp time and duration of cardiopulmonary bypass (CPB).

Higher levels of TNF? were significantly associated with prolonged intensive care unit stay (p=0.008), increased usage of an inotropic agent (p=0.024), increased mortality risk (p=0.018) and diabetes (p=0.047). This remained statistically significant following risk stratification.

Conclusions: Patients that are carriers of the AA -308 TNF? genotype showed significantly higher TNF? plasma levels as predicted. Higher plasma levels of TNF? were associated with less favourable outcome following coronary revascularisation surgery.

Comparison of Activity of Renin-Angiotensin-Aldosterone System and ANP in Patients with Stented or Stentless Aortic Valve Prosthesis

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Objectives: AVR in patients with small aortic root involves occurrence of patient prosthesis mismatch phenomenon. The latest papers show that not only decreased EOA index may be responsible for this complication. In search of new parameters describing haemodynamics of circulatory system after implantation of aortic valve prostheses into small roots (19-21mm), we analyzed activity of ANP and RAA system.

Methods: Between 2001 and 2003 in our unit 30 patients were randomized into 2 groups: group A, stentless Freestyle; and group B, stented Mosaic bioprostheses. Both groups had similar demographics characteristics. All patients had preoperative echocardiography and at 6 and 12 months postoperatively. In all patients the level of RAA system and ANP activity were measured preoperatively and 1 and 6 months postop.

Results: One month after AVR statistically significant differences in plasma renin activity were noted (A:25±139; B: 7±73 ng/ml/h; p<004) In case of ANP statistically significant differences were present at 1(A:363±2944;B:829±511 pg/ml; p<0005) and 6 months (A:356±26;B:533±21pg/ml; p<004).

In echocardiography the following parameters were assessed: EF, AV gradient, EOA index & LV mass index. Statistically significant difference were shown in case of LV mass index 12 months after the procedure (A: 216±13; B: 240±18g/m2; p<0.01). In other parameters the groups were the same.

Conclusions: Implantation of aortic valve prostheses influences the haemodynamics of the entire circulatory system. In our study in patients with implanted prostheses of 19-21mm diameter stentless valves resulted in quicker normalization of circulatory system haemodynamics (1month). However, after 6 months the difference was no longer present. Natriuretic peptides are a more sensitive (longer observation) but less specific (short observation) method of circulatory system assessment than imaging with echocardiography.

Potential for Biventricular Repair of Unbalanced Atrioventricular Septal Defect with Common Atrioventricular Junction

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Relationship Disclosure: The work described in the abstract was funded fully by the British Heart Foundation

Objectives: In atrioventricular septal defects with common atrioventricular junction gross imbalance between the ventricles has been identified as a risk factor for operation, often being managed using univentricular strategies. We have now used selective division of ventricular muscle bundles to correct such imbalance, thereby permitting us to achieve conventional bi-ventricular repair. We report here our experience to date.

Methods: Since 2002 those patients judged at a multi-disciplinary meeting to have imbalance of the ventricles indicative of a univentricular strategy for repair, were subjected to formal intra-operative morphologic inspection of the ventricular cavities, so as to identify and divide muscle bundles limiting the expansion of the ventricular cavities. We also surveyed the pertinent autopsied specimens in our archive to identify and classify the nature of the bundles restricting the ventricular cavities and to inform our surgical practice.

Results: Since 2002, 10 patients have met these criteria for ventricular imbalance. In 4 of these we achieved successful bi-ventricular repair subsequent to ventricular re-modelling. From the 37 pertinent specimens in our archive we identified two principle types of bundle that could be divided in order to recruit; apical bundles and mid-cavity bundles that specifically tether the papillary muscles to the ventricular septum obliterating ventricular cavity beneath.

Conclusions: We advocate cardioscopic ventricular inspection of all cases of unbalanced AVSD to identify and inform division of these two types of muscular bundle thus potentially avoiding the need for univentricular repair.

Intestinal Ischaemia following Cardiac Surgery: A Preoperative Risk Model and Prognosis in a Propensity-Matched Cohort

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Objectives: Intestinal ischaemia following cardiac surgery is a serious complication which carries a high mortality rate. Several studies have examined preoperative and intra-operative risk factors. We aimed to develop a preoperative risk model to identify those patients at highest-risk prior to surgery to aid perioperative management.

Methods: Data was prospectively collected for 10976 consecutive cardiac surgery patients from our institution between April 1997 and March 2004. 50 (0.5%) patients developed post-operative intestinal ischaemia. A forward stepwise multivariate logistic regression analysis was undertaken to identify preoperative predictors of developing intestinal ischaemia. These 50 patients were propensity-matched to 50 unique patients who did not develop intestinal ischaemia to assess the prognosis of this serious complication. Propensity scores for intestinal ischaemia group membership were matched on a 5- 4- 3- or 2-digit match.

Results: The preoperative predictors of post-operative intestinal ischaemia are shown in the table below. The predictive ability of this model was very good with a ROC curve of 0.81. The propensity-matched cohorts were well matched for preoperative risk factors, year of operation, lead surgeon and the type of procedure performed (C statistic was 0.86). In-hospital mortality for the patients who developed intestinal ischaemia was 94% (47/50) compared to 14% (7/50) for the other patients (p<0.001).

Conclusions: Although the incidence of intestinal ischaemia following cardiac surgery is low the prognosis for these patients is very poor. We have identified several preoperative predictors which may be useful in identifying patients at high-risk of developing intestinal ischaemia and thus help in perioperative management.

	Co-efficient	Standard Error	Odds ratio	95% CI	p Value
Renal dysfunction	1.7724	0.3505	5.9	3.0 - 11.7	<0.001
Age at operation	0.0850	0.0193	1.1	1.05 - 1.13	<0.001
Ejection fraction <30%	0.9410	0.3524	2.6	1.3 - 5.1	0.008
Respiratory disease	0.7189	0.2941	2.1	1.2 - 3.6	0.014
Peripheral vascular disease	0.7819	0.3307	2.2	1.1 - 4.2	0.018
Female	0.6683	0.3005	1.9	1.1 - 3.5	0.026
Intercept	-12.2691				

Metal Time-Bombs in the Chest. Complications of Metal-Expandable Stents

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Objectives: Metal-expandable stents are useful for treating strictures of the airways and oesophagus. While most reports have attested to their efficacy and safety there have been several documented problems with their use. Having noted some complications following their insertion, we reviewed our recent caseload to assess their safety.

Methods: Our experience with metal-expandable stents over a 5-year period was retrospectively reviewed. Between January 1998 and December 2003 a total of 73 metal-expandable stents were placed in the tracheobronchial tree(41) or oesophagus(32). Eleven patients, 6 with oesophageal stents and 5 with airway stents, were identified as having significant stent-related problems. Seven of these had been referred after initial treatment elsewhere.

Results: The 11 patients ranged in age between 32 and 89 years. There were 7 males and 4 females. Five patients developed a tracheo-oesophageal fistula, 4 developed severe obstruction of the airways and 2 suffered a fatal haemorrhage.

Seven of these patients had stents placed for malignant strictures and 4 for benign strictures. The problems occurred between 9 days and 2 years after insertion of the stents.

Two patients are still alive, 7 died directly of stent related causes, one of progression of their underlying disease and one of a complication of their management.

Only 4 of these patients had been primarily treated by us and 7 were referred from elsewhere, so the true patient population they came from is not known.

Conclusions: The present generation of metal-expandable stents are not suitable for long-term use in either the oesophagus or the airways.

Randomized Trial of Low Dose versus Medium Dose Aspirin versus Clopidogrel on Platelet Aggregation after Cardiac Surgery

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Objectives: The beneficial effect of aspirin after coronary surgery is established, however, a recent study reported the inability of low doses (100mg) to inhibit postoperative platelet function. We conducted a double-blind randomised trial to establish the efficacy of low dose aspirin and compared it against medium dose aspirin and clopidogrel.

Methods: Patients undergoing coronary surgery were invited to participate and consented. Patients were randomised to aspirin 100mg, aspirin 325mg or clopidogrel 75mg tablets daily for 5 days. Our primary outcome was difference in platelet aggregation (day 5 – baseline) using 1 µg/ml of collagen. Secondary outcomes were differences in EC50 of collagen, ADP and epinephrine (assessed using the technique of Born).

Results: From September 2002 to April 2004, 90 patients were randomised. In total 4 discontinued leaving 86 participants; 35, 34 and 17 in the low dose, medium dose aspirin and clopidogrel arms respectively. The clopidogrel arm was terminated during interim analysis (no inhibition of platelet aggregation).

Mean aggregation was reduced in both medium and low dose aspirin arms by 37% and 36% respectively. The baseline-adjusted difference (low - medium) was 6% (95% CI -3 to 14; p=0.19). The directions of the results for the differences in EC50 (low – medium dose) were consistent for collagen, ADP and epinephrine in favour of medium dose at -0.07 (-0.53 to 0.40) -0.08 (-0.28 to 0.11) and -4.41 (-10.56 to 1.72) respectively but none were significant.

Conclusions: Low dose aspirin is effective and medium dose aspirin did not prove superior to inhibit platelet aggregation after coronary surgery.

Aprotinin is Effective and Safe in Paediatric Cardiac Surgery: A Meta-analysis and Systematic Review of Randomized Clinical Trials

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Relationship Disclosure: K Taylor - Grants from Bayer

Objectives: While aprotinin (Trasylol®) treatment is the best known intervention to reduce blood transfusions in adult cardiac surgery there is no consensus on its use in children. We sought to determine if aprotinin use is associated with fewer patients requiring blood transfusion as compared to placebo.

Methods: MEDLINE (1/1966-1/2004) Current Contents (weeks 1/1993-4/2004) EMBASE (weeks 1/1980-4/2004) and The Cochrane database of RCTs were systematically searched. Inclusion criteria were as follows: 1) randomized placebo-controlled trials 2) no combination with another medication or device 3) paediatric surgery regardless of type or complexity 4) prophylactic use of the drug.

Results: A total of 12 studies enrolling 407 patients met the inclusion criteria. Most studies were double blind. Average age of the patients range from 0.3 to 5.9 yrs and average weight range from 4.8 to 16.5 kg.

Number of patients requiring packed red cells post surgery was reported in 5 trials enrolling 222 patients. Aprotinin use was associated with fewer children requiring any packed red cell (RR 0.59; 95% CI 0.45-0.78) or fresh frozen plasma (RR 0.55; 95% CI 0.38-0.81) as compared to placebo. Although aprotinin did not seem to substantially reduce blood loss or mean units of blood product use after surgery (reported in 12 trials) these outcomes are less likely to be important in children.

Finally there was no difference between aprotinin and placebo groups with regard to adverse events as reported in 6 trials.

Conclusions: Aprotinin reduces the number of patients receiving blood transfusion post-operatively and is safe to use in paediatric cardiac surgery.

Study	Number of Patients Randomised	Relative Risk of Requiring Packed Red Cell Transfusion (95% CI)	Relative Risk of Requiring Fresh Frozen Plasma Transfusion (95% CI)
Boldt et al 1994	30	0.75 (0.20-2.79)	1.50 (0.29-7.73)
D'Errico et al 1996	57	0.81 (0.63-1.04)	0.50 (0.30-0.85)
Herynkopf et al 1994	30	0.48 (0.22-1.02)	0.18 (0.03-1.36)
Miller et al 1998	45	0.58 (0.24-1.43)	0.70 (0.27-1.84)
Mossinger et al 2003	60	0.29 (0.11-0.77)	0.57 (0.28-1.16)
Total	222	0.59 (0.45-0.78)	0.55 (0.38-0.81)

Safety, Efficacy and Cost of Intraoperative Cell Salvage and Autotransfusion following OPCAB Surgery: A Randomised Trial

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Objectives: We evaluated the effectiveness of intraoperative cell salvage and autotransfusion of washed salvaged red cells following first time coronary artery bypass grafting (CABG) performed on the beating heart (OPCAB) in a randomised controlled trial.

Methods: Sixty-one patients undergoing OPCAB surgery were prospectively randomized to Autotransfusion (n=30): receiving autotransfused washed blood from intraoperative cell salvage or Control (n=31): receiving homologous blood only as blood replacement therapy. Homologous blood was given according to unit protocols.

Results: The groups were well matched with respect to demographic and comorbid characteristics. Patients in the autotransfusion group had a significantly higher 24 hour postoperative haemoglobin concentration (11.9 g/dL, SD 1.41) than those in the control group (10.5 g/dL, SD 1.37) mean difference 1.02 g/dl 95% CI 1.60 to 0.44, (p=0.0007) as well as a 53% reduction in the frequency of homologous blood product usage (11/31 versus 5/30, p=0.095). Autotransfusion of washed red cells was not associated with any derangement of thromboelastograph values, laboratory measures of clotting pathway function (Prothrombin Time, Activated Partial Thromboplastin Time and fibrinogen levels), increased postoperative bleeding, fluid requirements or adverse clinical events. There was no statistical difference in the mean total operation hospitalisation and management costs per patient between the groups (median difference $1015.9; 95% CI $2260- $206, p=0.11).

Conclusions: Intraoperative cell salvage and autotransfusion was associated with higher postoperative haemoglobin concentrations, a modest reduction in transfusion requirements, no adverse clinical or coagulopathic effects and no significant increase in cost compared to controls. This study supports its routine use in OPCAB surgery.

The Role of Activated Recombinant Factor VII in the Management of Intractable Perioperative Haemorrhage after Cardiac Surgery

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Objectives: Excessive perioperative bleeding during cardiac surgery is often related to coagulopathy and carries significant morbidity. Activated recombinant factor VII (rFVIIa) was introduced in 1988 but so far its use in cardiac surgery has been limited. We have reviewed our initial experience with rFVIIa in cardiac surgical patients.

Methods: 27 patients undergoing cardiac or thoracic aortic surgery in a single centre received rFVIIa between Jan 2002 and June 2004. All patients received rFVIIa to treat persistent perioperative haemorrhage due to intractable coagulopathy. We analyzed the data from a prospectively collected database on these patients.

Results: 20 male and 7 female patients with mean±SD age of 62± 16 years underwent the following procedures: thoracic aortic surgery (n=13), combined valve and coronary surgery (n=5), valve surgery (n=3), re-operative coronary surgery (n=2) and other major procedures (n=4). Prior to rFVIIa administration the patients had a median blood loss of 500 ml/hr and had been transfused with a median of 8 units of red blood cells (RBC), 6 units fresh frozen plasma (FFP) and 3 units of platelets. Following rFVIIa administration there was a significant reduction in blood loss and blood product transfusion (table). Recombinant FVIIa led to a significant drop in the international normalized ratio (INR).

Conclusions: Our initial experience suggests that rFVIIa significantly reduces blood loss and is a useful adjunct in cases of perioperative coagulopathy that cannot be corrected with other blood products. A prospective randomized study to evaluate further the potential advantages of rFVIIa in cardiac surgical patients is warranted.

Parameter	Pre rFVIIa median (IQ range)	Post rFVIIa median (IQ range)	p value
Blood Loss (ml/hr)	500 (304.5-1350)	60 (33-123)	<0.001
INR	1.5 (1.3-1.8)	0.9 (0.8-1.1)	<0.001
RBC transfused (units)	8 (4-11)	2 (1-4)	<0.001
FFP transfused (units)	6 (2-10)	0 (0-2)	0.003
Platelets transfused (units)	3 (2-4)	0 (0-2)	< 0.001

Negative Bronchoscopy Results in a Significant Delay in Treatment of Lung Cancer Patients: Results of a Prospective Tracking Study

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Objectives: Despite guidelines and multi–disciplinary team meetings, late presentations and delays in diagnosis and staging continue to contribute to poor outcomes for lung cancer patients. To ascertain the causes of delay in treatment all patients presenting to our centre with a working diagnosis of lung cancer were entered prospectively into a "tracking study".

Methods: Of 112 confirmed cases of newly diagnosed lung cancer presenting between September 2003 and August 2004, 61 were general practitioner referrals and 51 presented through casualty and internal referral. The former group formed the basis of the study.

Of GP referral patients 33 had a positive diagnostic bronchoscopy (Group P). These were compared with 28 others with a negative result (Group N). For uniformity of comparison the non-GP referral patients were excluded from this study. Minitab (Release 13) statistical package was used for analysis.

Results: As shown in the table.

There were no significant differences in the demographics presentation or clinical staging of the two groups. However, the mean referral to treatment interval for group N was significantly longer compared to group P. The intervals between the referral to outpatient appointment and date of decision-to-treat to actual date of initiation of treatment were similar. Most of this delay occurred in the interval of outpatient appointment to the date of decision-to-treat.

Conclusions: A negative initial bronchoscopy results in a significant delay in treatment. Most of the delay occurs in the interval from the outpatient appointment to date of decision-to-treat. Patients with negative bronchoscopy require a more concerted effort to achieve a timely diagnosis and treatment.

Time interval	Group P (n=33)	Group P (n=33)	Group N (n=28)	Group N (n=28)	p value
	Mean	Standard Deviation	Mean	Standard Deviation	
Referral to out patient	4.09	8.78	2.89	3.89	0.48
Out patient to decision to treat	32.5	11.6	78.8	66.9	0.002
Decision to treat to treatment	10.78	8.33	13.7	15.1	0.39
Referral to treatment	47.9	17.6	95.4	68.3	0.002

Comparison of Risk Adjusted Mid-term Survival following Coronary Artery Bypass Grafting Between Four Hospitals in the United Kingdom

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Objectives: The measurement of in-hospital mortality following coronary artery bypass graft (CABG) surgery is undertaken worldwide and comparisons between hospital providers are common. However, little work exists comparing the mid-term survival of CABG patients between different hospitals.

Methods: We undertook a retrospective multi-centre study using routinely collected prospective data involving four hospital providers of isolated CABG surgery. A total of 19625 CABG operations were performed between 1st April 1997 and 31st March 2003. Patient records were linked to the National Strategic Tracing Service to establish current vital status as from the 31st July 2003. Kaplan-Meier survival curves were plotted to compare mid-term survival between the four hospitals. Differences in case-mix (as measured by the additive EuroSCORE) between the four hospital providers were adjusted for using Cox proportional hazards analysis. The EuroSCORE has recently been shown to be a good predictor of long-term mortality as well as in-hospital mortality following CABG surgery.

Results: 1255 (6.4%) deaths occurred during the follow-up period. Total follow-up was 60803 patient-years with a mean average of 3.1 years (standard deviation 1.8 years). The average EuroSCORE observed survival and EuroSCORE adjusted survival at 6-years are shown in the Table stratified by hospital provider.

Conclusions: Monitoring follow-up survival after CABG is possible and can offer valuable information for hospital providers and patients. Following risk-adjustment of patient characteristics no differences existed between these four hospitals with regards to mid-term survival.

Hospital	Average EuroSCORE	Observed survival at 6 years	EuroSCORE adjusted survival at 6 years
A	3.3	89.8% (88.8 - 90.7)	91.0% (90.0 - 91.9)
B	3.5	87.2% (86.4 - 87.9)	90.4% (89.7 - 91.0)
C	3.1	90.0% (89.3 - 90.7)	89.7% (89.1 - 90.4)
D	2.7	88.1% (87.1 - 89.0)	89.1% (88.2 - 90.1)
p Value	<0.001	<0.001	NS

Failure of Preconditioning to Protect the Neonatal Heart: Are Free Radicals the Missing Link?

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Objectives: We have previously described a developmental change in the cardioprotection afforded by ischaemic preconditioning (IPC). Protection is absent in human neonatal myocardium but appears gradually after the first month of life. In the adult sub-lethal generation of low concentrations of free radicals have been shown to play a pivotal signalling role in IPC. We have therefore investigated their role in the neonatal myocardium.

Methods: Right atrial trabeculae (n=6/group) were obtained from adult (65±12yrs) and neonatal (<1 month) patients undergoing cardiac surgery. Trabeculae were isolated and superfused at 37ºC field-stimulated at 1Hz stretched to Imax and allowed to stabilise for 120min. Ischaemia was simulated by switching to hypoxic substrate-free buffer and pacing at 3Hz. Trabeculae were subjected to either 60min simulated ischaemia: 120min reperfusion (I/R) or this protocol preceded by IPC (3min I/ 15min R) or pre-treatment protocols. Pre-treatments included: Hydrogen peroxide (H_2O_2 1µM) and the antioxidant N-acetylcysteine (NAC 4mM). Post-ischaemic recovery of function (PIR; % baseline) was measured.

Results: Following I/R alone PIR was 19±3% and 48±7% in adult and neonates respectively. This was significantly ($p<0.05$) improved in adult by IPC (PIR 70±6%) but not in neonatal myocardium (PIR 51±5%). In the adult NAC abolished this protection. H_2O_2 protected both the adult and neonate (PIR 53±7 v 23±3% and 95±18 v 42±3% respectively).

Conclusions: Protection by IPC develops after 1 month in the human and this may be due to an inability by the neonatal myocardium to generate an adequate oxidant stress to trigger IPC.

Changes in Intramyocardial Amino Acids during Paediatric Cardiac Surgery: A Randomised Study of Three Cardioplegic Techniques

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Objectives: Immature hearts have a greater dependence on amino acid (AA) transamination during ischaemia and in adults blood cardioplegia has been shown to preserve endogenous AAs. However, no clinical studies have specifically looked at the effect of cardioplegia on AA levels in immature human hearts.

Methods: Paediatric patients undergoing open-heart surgery were randomised to receive intermittent antegrade cold crystalloid (CC), cold blood (CB) or cold blood with a 'hot shot' (CB+HS) cardioplegia. Myocardial biopsies were collected prior to ischaemia, at the end of ischaemia (T1) and 20 minutes after reperfusion (T2). Amino acid levels at T1 and T2 were analysed using repeated measures ANOVA adjusting for baseline levels. Data were analysed separately for acyanotic and cyanotic patients.

Results: Of 103 patients recruited, 32 (22 acyanotic and 10 cyanotic), 36 (24/12) and 35 (25/10) respectively were allocated to CC, CB and CB+HS groups. Cyanotic patients were significantly younger with longer cross-clamp times (60.3±4.9 vs 42.0±2.0 minutes, $p<0.001$ respectively). There were no significant differences in clinical outcomes between cardioplegic methods. In acyanotic patients there were no significant effects of cardioplegic method on alanine, glutamate, glutamine, aspartate, taurine or branched chain amino acid levels (all $p>0.05$). However, in cyanotic patients there were significant interactions of cardioplegic method and time (all $p<0.05$) for all amino acids with patients allocated to CB+HS having higher levels after reperfusion compared with CC and patients allocated to CB having intermediate levels.

Conclusions: For cyanotic patients (younger with longer cross-clamp times) cold blood cardioplegia with a 'hot shot' preserves intramyocardial amino acids.

Optimal Myocardial Protection Strategy for Coronary Artery Bypass Grafting (CABG) without Cardioplegia: Prospective Randomised Trial

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Objectives: In the UK approximately 5000 CABG procedures are performed each year using the technique of intermittent cross clamping and ventricular fibrillation (ICCF). Hypothermia and ischaemic preconditioning (IP) are independently recognised mechanisms of cardioprotection. However, interactions between myocardial temperature and preconditioning have not been investigated before. This study aimed to identify the best modality for myocardial protection during CABG with ICCF.

Methods: Patients undergoing CABG with ICCF were randomised to four groups: N=normothermia (36.5±0.5ºC); NP=normothermia + preconditioning; H=hypothermia (31.5±0.5ºC); HP=hypothermia + preconditioning. IP was induced with 2 three-minute periods of ischaemia each followed by a two-minute period of reperfusion. The primary endpoint was release of cardiac Troponin I (cTnI) at 6 time points: a): pre-CPB; b): end-CPB; c), d), e) and f) at 6, 24, 48 and 72 hours post-CPB respectively. Differences between groups were quantified by levels of cTnI at each time point and by the area under the curve (AUC) of cTnI release.

Results: Twenty-six patients were recruited in each group (n=104). There were no hospital deaths and groups had similar pre- and intra- operative characteristics. There were significant differences within and between groups in cTnI levels and AUC of cTnI ($p \leq 0.05$) as shown in the table below. There were no significant differences in secondary clinical outcome measures ($p \geq 0.05$).

Conclusions: IP can be safely and effectively induced at hypothermia. The addition of IP before CABG with ICCF at hypothermia achieves optimal myocardial protection. Further studies are warranted to investigate the effects of hypothermia in addition to pharmacological strategies for myocardial preconditioning.

	Pre-CPB	End-CPB	6 hrs	24 hrs	48 hrs	72 hrs	AUC
N	<0.01	0.4±0.1	1.3±0.2	2.4±0.3	1.3±0.2	1.1±0.1	117±12
NP	<0.01	0.3±0.1	1.5±0.1	1.6±0.2	0.8±0.1	0.7±0.1	87±8
H	<0.01	0.6±0.1	1.3±0.1	1.5±0.2	0.8±0.1	0.5±0.1	76±6
HP	<0.01	0.3±0.1	0.7±0.1	0.8±0.1	0.6±0.1	0.3±0.1	44±6

cTnI release (µg/L)

Heat Shock Protein 27 Protects the Heart from Ischaemia-reperfusion Injury

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Objectives: Heat shock proteins (HSPs) protect against ischaemic cardiac damage by acting as molecular chaperones and stabilising the cytoskeleton. One such HSP is the 27-kDa heat shock protein known as HSP27. HSP27 is capable of inhibiting apoptosis in response to noxious stresses including hyperthermia, free radicals and trauma. We investigated wether overexpression of HSP27 would confer protection from a period of lethal ischaemia using two independent lines of transgenic mice overexpressing HSP27 (TG +ve: +18+64) and their negative litter-mates (TG –ve: -18-64).

Methods: Isolated Langendorff perfused hearts from the positive and negative litter-mates were subjected to 35 minutes of global ischaemia followed by 30 minutes reperfusion. Infarction was analysed using tetrazolium staining and quantification of total and phosphorylated HSP27 performed by Western blot analysis.

Results: Mice overexpressing HSP27 had significantly reduced infarction compared to their negative controls (TG line18: TG+ve=28.25±3.13% (n=6) vs TG-ve=39.15±2.9% (n=11), $p<0.05$; TG line64: TG+ve=26.36±2.09% (n=8) vs TG-ve=38.86±4.54% (n=8), $p<0.05$). Western blot analysis confirmed the presence of increased total and phosphorylated HSP27 in the transgenic hearts compared to their negative controls.

Conclusions: Overexpression of HSP27 in the mouse heart reduces infarction following a period of lethal ischaemia. Furthermore it appears that the increase in both total and phosphorylated HSP27 is important for the attenuation of myocardial infarction.
Future approaches to cardiac disease may involve the over expression of HSP27 using viral vectors to deliver the exogenous HSP27 gene or by using pharmacological compounds to induce the endogenous HSP genes.

Objective Assessment of Technical Skills in Cardiac Surgery

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Objectives: Reduced training time combined with no rigorous assessment for technical skills makes it difficult for trainees to assess their competence. We have developed an objective bench-top assessment of technical skills at a level commensurate with a junior registrar in cardiac surgery.

Methods: Forty cardiothoracic surgeons were recruited to the study consisting of 12 junior trainees (year 1-3) 15 senior trainees (year 4-6) and 13 consultants. The assessment consisted of four key tasks on standardised bench-top models: aortic root cannulation, vein-graft to aorta anastomosis, vein-graft to LAD anastomosis and femoral dissection. An expert surgeon was present at each station to provide passive assistance and rate performance on a validated global rating scale giving rise to a total possible score of 40. Three expert surgeons repeated the ratings retrospectively using blinded video recordings. Data analysis employed non-parametric tests.

Results: Both live and video scores differentiated significantly between performances of all groups of surgeons for all four stations ($p<0.01$)(e.g. median live and video score for LAD; Junior 1917; Senior 2922; Consultant 3628). Correlations between live and blinded rating was high ($r= 0.67$ to 0.84 $p<0.001$) as was inter-rater reliability between the three expert video raters (alpha >0.7).

Conclusions: The use of bench-top tasks to differentiate between cardiac surgeons of differing technical ability has been validated for the first time. Furthermore it is unnecessary to perform post-hoc video rating to obtain objective data. These measures can provide formative feedback for surgeons-in-training and lead to the development of a competency-based technical skills curriculum.

Statistical Process Control Charts for Measuring Morbidity and Mortality in Coronary Artery Bypass Surgery

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Objectives: There is need for cardiac surgeons to continuously audit their performance. However, collection of case-mix data takes time therefore we aimed to introduce the use of statistical process control (SPC) charts across four hospitals providing coronary surgery (CABG) to provide readily available information on the quality of care provided.

Methods: Post-operative outcome variables were collected on 6682 consecutive CABG patients between April 2002 and March 2004. Mortality, hospital stay, stroke and re-exploration for bleeding were recorded. Use of left internal mammary artery (LIMA) as a process measure was also collected. SPC charts were plotted for the above variables on a monthly basis for each hospital using pooled data to define averages and control limits. The charts were examined for overall trends with time and outlying performance. The SPC charts were fed-back on a regular basis within local audit meetings and any significant changes noted with appropriate action discussed and taken.

Results: Mortality was 2%, LIMA usage was 93%, re-exploration for bleeding was 4% and 60% of patients had a post-operative stay >6 days. One hospital had an increase in mortality during the study period, which breached the control limits. Two units demonstrated significant improvements in LIMA usage. Use of SPC charts triggered audits on specific topics in 2 of the 4 hospitals.

Conclusions: Routine use of SPC charts has shown improvements and also demonstrated unsatisfactory performance in some areas, which have directly triggered local audit projects. They have allowed us to start to define the standards, which we wish to work to.

Tissue Engineering of Vascular Conduits: Development and Characterisation of an Acellular Human Umbilical Vein Matrix

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Objectives: There is a shortage in the availability of autologous vascular conduits for cardiovascular surgeries. The results of allografts, xenografts and prosthetic grafts have been inferior to autografts. The aim of this study was to produce an acellular human umbilical vein matrix with a view to reseeding with autologous cells to produce a tissue engineered vascular conduit.

Methods: Umbilical veins from live donors were treated with hypotonic buffer and SDS (0.1%) in the presence of protease inhibitors and finally treated with a nuclease solution (RNAse/ DNAse). Characteristics of the tissue were compared before and after decellularisation. Light microscopy was used to evaluate the success of decellularisation and the effect of decellularisation on the matrix (collagen and glycosaminoglycans). Biochemical components were determined using assays for sulphated proteoglycans and hydroxyproline (collagen).

Denatured collagen in the tissue was measured following a-chymotrypsin digestion. The contact cytotoxicity of the decellularised veins was assessed using human dermal fibroblasts and MG63 osteoblasts. Data were analysed using Student t-test and ANOVA.

Results: Histological analysis of the acellular matrices showed that decellularised human umbilical vein tissue retained its histoarchitecture with no evidence of whole cells or fragments. No significant change was found in the content of hydroxyproline, glycosaminoglycan and denatured collagen after decellularisation (p value>0.05). No indication of contact cytotoxicity was found.

Conclusions: Successful decelluarisation of human umbilical vein was achieved while maintaining the major structural components. Decellularised tissue was biocompatible in vitro. The next stage is to look at biomechanical properties of the decelluarised vein (tensile strength burst pressure) and study the reseeding capability of the tissue.

Systemic and Local Delivery of Adenoviral Interleukin-10 in a Mouse Vein Graft Model

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Objectives: Aorto-coronary vein grafts are still widely used despite their suboptimal short and long-term outcomes. Vein graft disease is characterised by early graft thrombosis neointimal hyperplasia and accelerated atherosclerosis culminating in patency rates of approximately 60% by 10 years. Gene therapy has been recognised as a potential treatment for vein graft disease exploiting the opportunity to deliver genetic material ex-vivo following vein harvesting. We have studied the potential benefits of interleukin-10 an anti-inflammatory and immunomodulatory cytokine with pleiotropic effects.

Methods: We used a first generation adenovirus to over express viral interleukin-10 or a ?-galactosidase control from a Cytomegalovirus promoter in an established apolipoprotein E knock out murine vein graft model. Liver transduction was achieved by systemic delivery via tail vein injection of viruses or phosphate buffered vehicle. Plasma levels of interleukin-10 were measured by ELISA assay. Alternatively the vein itself was incubated in viruses or vehicle for twenty minutes at room temperature. Vein grafts were harvested at 28 and 56 days and serial sections analysed by morphometry and immunocytochemistry methods.

Results: The total lesion area in grafts treated by local delivery of adenoviral interleukin-10 were smaller by 71% and 75% compared to vehicle and adenoviral ?-galactosidase controls respectively (p=0.0001and p=0.0002 respectively). Mice treated by systemic adenoviral interleukin-10 had significantly raised plasma interleukin-10 levels but no significant effect on lesion area was seen.

Conclusions: Our data demonstrate that a clinically applicable strategy of local adenoviral transduction with interleukin-10 can reduce disease progression in vein grafts.

Pressure Mediated Intraoperative Gene Delivery of Antisense-DNA: A Potential Method of Preventing Neointimal Hyperplasia in Patients Undergoing Myocardial Revascularization

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Objectives: The G-protein RhoA and Transient Receptor Potential Channel (TRPC1) are targets for the inhibition of neointimal hyperplasia (NIH) in long saphenous vein (LSV). The aim of this study was to develop an intraoperative system to deliver antisense DNA (AS-DNA) against RhoA and TRPC1 messenger RNA (mRNA) in vascular smooth muscle cells.

Methods: AS-DNA targeting mRNA encoding RhoA (n=10) and TRPC1 (n=4) was delivered to LSV from patients undergoing myocardial revascularization using non-distending pressure of 2 atmospheres for 15 minutes. Control group underwent same treatment but without AS-DNA. Transfection was measured using fluorescence photomicrography. Inhibition of mRNA expression was measured using quantitative real-time polymerase chain reaction. Structural and functional integrity of the LSV following transfection was assessed by electron microscopy (EM) and organ bath contraction studies. Further functional assessment was performed by the organ culture of the LSV using the TRPC1 AS-DNA probe.

Results: In all cases AS-DNA was successfully delivered to the neointimal layer of the LSV (mean transfection efficiency = 83.2%; $p<0.01$). EM confirmed normal endothelial integrity and contraction studies confirmed normal vein contractility in all cases. The mean inhibition of mRNA expression was 47.2% and 65.6% for RhoA and TRPC1 respectively ($p<0.01$). There was significant reduction of NIH in LSV organ culture in the TRPC1 group ($p<0.05$).

Conclusions: This study shows that pressure mediated delivery is a safe and effective method of delivering AS-DNA to reduce gene expression. A reduction of NIH was achieved by targeting TRPC1 mRNA. This method has the potential to be applied intraoperatively during myocardial revascularisation.

Transepicardial Implantation of Autologous Bone Marrow Mononuclear Cells to Ungraftable Coronary Territories for Patients With Ischemic Cardiomyopathy

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Objectives: We aim to investigate the safety and therapeutic potency of autologous bone marrow mononuclear cell (ABMMNC) implantation into ungraftable coronary artery territories in patients with end-stage ischemic cardiomyopathy (ICMP).

Methods: Seventeen patients with 6-month follow-up were enrolled in this prospective nonrandomized study. Patients were candidates if they require conventional CABG for ICMP and had at least one ungraftable infarct-related coronary artery. Transepicardial ABMMNC implantation as an adjunct to CABG (n=10 men mean age 56.2±8.3 years EF<30%) was performed into an area of reversible ischemia within the territory of ungraftable obstructed coronary artery. The control group (n=7) who underwent incomplete revascularization received placebo to the ungraftable territories. Coronary angiography, dobutamine stress echocardiography, Thalium201 single-photon emission computed tomography (SPECT), Tc99m MIBI gated SPECT perfusion scanning and 24-hour Holter monitoring were performed at baseline and 6-month follow-up.

Results: There were no perioperative myocardial infarction or deaths in both groups. All patients reported improvement in angina class after therapy. No fatal arrhythmias were detected in ABMMNC group during follow-up. The mean perfusion stress and rest scores as measured by SPECT perfusion scanning was significantly reduced in the ABMMNC group as compared with baseline (13.8±10.8 vs 10.6±7.5p=0.01; 9.3±5 vs 8.5±6.9p=0.04) respectively and the control group (p=0.02). The mean wall motion index score was significantly reduced at 6-months in the ABMMNC group (2.46±0.46 vs 2.16±0.61 p=0.02).

Conclusions: Transepicardial implantation of ABMMNCs into ungraftable myocardial territories in patients with ICMP appears to be feasible and relatively safe may produce a therapeutic effect by improving myocardial perfusion and contractility.

A Prospective Study of Conduit Flow in On-pump and Off-pump Coronary Artery Bypass Grafting

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Objectives: Despite profound differences in the neurohumoral milieu in patients undergoing on-pump CABG (ONCABG) and off-pump CABG (OPCABG) it is not known if this affects graft blood flow.

Methods: We prospectively studied intraoperative transit-time flow measurements (TTFM) (Medistim AS) of all conduits in patients undergoing OPCABG and ONCABG using internal mammary artery (IMA) radial artery (RA) and long saphenous vein (LSV) conduits. The mean graft flow (MGF) and mean arterial pressure (MAP) were simultaneously recorded and the FPR (flow-pressure ratio) was calculated as a ratio of MGF to MAP for all the conduits.

Results: TTFM was recorded in 266 grafts (203 OPCABG; 63 ONCABG) in 100 patients (80 OPCABG; 20 ONCABG). MGF (ml/min) was higher for all grafts in the ONCABG group although the MAP was significantly lower in the ONCABG group ($p<0.05$). Overall the FPR was significantly greater for all grafts in the ONCABG group (ITA 0.55 vs 0.35 RA 0.61 vs 0.36 LSV 0.77 vs 0.55). Overall MGF was significantly greater in the LSV than in ITA ($p<0.001$) and RA ($p=0.001$) but there was no difference in MGF in ITA or RA grafts between both groups.

Conclusions: In comparison to the OPCABG group the overall MGF (ml/min) and FPR were significantly higher and MAP significantly lower in the ONCABG group. These findings are probably a result of reactive hyperaemia secondary to a period of ischemia. There was no difference in the MGF and FPR of arterial grafts, which were significantly, less than for LSV grafts.

		ITA	RA	LSV	p value ITA vs LSV	p value RA vs LSV
TOTAL	Number of grafts	148	48	70		
TOTAL	Mean Graft Flow (SD)	29 (21)	31 (21)	47 (31)	<0.001	0.001
TOTAL	Mean Arterial Pressure (SD)	78 (14)	79 (15)	72 (12)	0.001	<0.005
TOTAL	Flow Pressure Ratio	0.37	0.39	0.65	<0.001	<0.001
OPCABG	Number of grafts	126	44	33		
OPCABG	Mean Graft Flow (SD)	28 (19)	31 (22)	41 (30)	0.007	0.08
OPCABG	Mean Arterial Pressure (SD)	79 (14)	80 (15)	76 (14)	0.25	0.17
OPCABG	Flow Pressure Ratio	0.35	0.36	0.55	0.01	0.04
ONCABG	Number of grafts	22	4	37		
ONCABG	Mean Graft Flow (SD)	37 (29)	40 (21)	52 (32)	0.06	0.5
OPCABG	Mean Arterial Pressure (SD)	70 (12)	64 (10)	69 (10)	0.5	0.5
ONCABG	Flow Pressure Ratio	0.55	0.61	0.77	0.01	0.36
p value OPCABG vs ONCABG	Mean Graft Flow (SD)	0.2	0.4	0.04		
p value OPCABG vs ONCABG	Flow Pressure Ratio	0.001	0.13	0.03		

Developing a VATS Lobectomy Programme: The Captain's Log and the Next Generation

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Objectives: To evaluate the effect of experience and SpR training on surgical outcomes during the development and establishment of a VATS lobectomy programme.

Methods: Data was collected prospectively on 276 consecutive VATS lobectomies under the care of a single consultant as either the primary surgeon or supervising an SpR. The series was divided into cohorts of 46 patients. These comprised one trainee cohort and 5 sequential consultant cohorts. Statistical analysis utilised standard tests of significance (unpaired t, ANOVA, chi^2).

Results: See table:

Conclusions: Increasing experience with VATS lobectomy programme is associated with a significant reduction in operating time ($p=0.02$). Intraoperative blood loss and postoperative stay is not influenced by increasing consultant surgical experience. Training is associated with an increase operative time ($p=0.0005$) but no increase in intraoperative blood loss mortality or postoperative stay. The 46 trainee operative times were similar to the first 46 consultant cases. VATS lobectomy can be safely taught to specialist registrars.

	Mean Operation Time (min)	Mean Blood Loss (ml)	Mortality (no. of patients)	Mean Postoperative Stay (days)	Numbers of Middle: Bilobectomy: Upper: Lower lobectomies:
Consultant Cases 1-46	158	159	0	8.7	4:2:20:20
Consultant Cases 47-92	139	87	0	7.7	6:2:26:12
Consultant Cases 93-138	130	87	1	5.8	3:3:25:15
Consultant Cases 139-184	136	86	0	8.1	3:2:26:15
Consultant Cases 185-230	121	74	1	7.7	4:1:26:15
Trainee Cases 1-46	160	100	0	6.5	5:2:22:17

Effect of Risk Adjusted Non-dialysis Dependent Renal Dysfunction on Mortality and Morbidity Following Coronary Artery Bypass Surgery: A Multi-centre Study

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Objectives: Dialysis-dependent renal dysfunction is an important risk factor in coronary artery bypass grafting (CABG). However little is known about the impact of non-dialysis-dependent renal dysfunction (Group R) on short- and mid-term outcomes. We conducted a large multi-centre study comparing Group R with control patients with no history of renal dysfunction (Group C).

Methods: Data was prospectively collected on 19625 consecutive patients undergoing CABG between 1997 and 2003 from four institutions. 67 patients had a history of dialysis support prior to CABG and were excluded from the study leaving 19558 patients. Group R (preoperative serum creatinine levels >200 µmol/L without dialysis support) had 386(2%) patients. Logistic regression was used to adjust in-hospital outcomes for case-mix differences. Cox proportional hazards analysis was used to risk adjust Kaplan-Meier survival curves. Case-mix was accounted for by developing a propensity score, which was the probability of belonging to Group R and included in the multivariable analyses (C statistic 0.83).

Results: The logistic EuroSCORE for Group R was 11.4 versus 3.4 in Group C ($p<0.001$). The propensity score included sex body mass index co-morbidity factors (respiratory disease diabetes cerebrovascular disease hypertension hypercholesterolaemia) ejection fraction left main stem stenosis emergency status prior CABG and the logistic EuroSCORE. 1183(6.1%) deaths occurred during 58062 patient-years follow-up. After adjusting for the propensity score the adjusted hazard ratio of mid-term mortality for non-dialysis dependent renal dysfunction was 2.7 ($p<0.001$).

Conclusions: Patients undergoing CABG with non-dialysis-dependent renal dysfunction have significantly increased incidence of mortality and morbidity. Mid-term survival is also significantly reduced at 5-years.

	Adjusted Odds Ratio	95% Confidence Intervals	p Value
In-hospital mortality	3.0	2.0 – 4.6	<0.001
Stroke	2.0	1.1 – 3.9	0.033
Mediastinitis	1.9	0.7 – 5.7	0.21
Re-op for bleeding	1.5	0.9 – 2.7	0.14
Atrial arrhythmia	1.5	1.1 – 1.9	0.003
Ventilation >24 hours	2.1	1.4 – 3.2	<0.001
Post-op stay >6 days	2.6	2.0 – 3.4	<0.001

Glucose Insulin Potassium and Tri-iodothyronine Individually Improve Cardiovascular Performance and Systemic Oxygen Delivery Post-CABG Without Increasing Systemic Oxygen Consumption

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Objectives: Both glucose insulin potassium (GIK) and tri-iodothyronine (T3) may improve cardiovascular performance following cardiac surgery. The effects of combined treatment are unknown.

Methods: We performed a randomised double-blind placebo-controlled trial on patients undergoing first time elective/urgent isolated CABG. Between January 2000 and September 2004 440 patients were recruited and randomised to either placebo (D5%W) (n=160) GIK (D50%W K+ 100mmol.L-1 Insulin 70u.L-1) (75ml.kg-1.h-1) (n=157) T3 (0.8?g.kg-1 followed by 0.113?g.kg-1.hr-1) (n=63) or GIK+T3 (n=60). GIK/placebo therapy was administered from time of entering theatre until 6 hours after removal of aortic cross clamp (AXC) and T3/placebo was administered for a 6-hour period from removal of AXC. Serial haemodynamic measurements were performed at baseline and up to 12 hours following removal of AXC.

Results: Results are summarised in the accompanying table. Repeated measures ANOVA demonstrated a statistically significant increase in cardiac index (CI) in both the GIK and GIK/T3 group in the first 6 hours compared with placebo ($p<0.001$ for both) and T3 therapy ($p=0.009$ and $p=0.029$ respectively). There was no significant difference between the two GIK treatment groups. T3 therapy increased CI versus placebo between 6 and 12 hours after AXC removal ($p=0.01$)) but combination therapy did not further increase CI. Oxygen delivery but not consumption was increased in all GIK groups ($p\leq0.005$).

Conclusions: Treatment with GIK T3 and GIK/T3 improve cardiovascular performance in patients undergoing CABG surgery. Combination therapy does not provide added haemodynamic effect.

	Placebo	GIK	T3	GIK+T3
Baseline CI ($l.min^{-1}m^{-2}$)	2.17	2.25 (p=0.2)	2.28 (p=0.157)	2.2 (p=0.674)
6h post AXC CI ($l.min^{-1}m^{-2}$)	2.7	2.92 (p=0.003)	2.86 (p=0.08)	2.98 (p=0.002)
12h post AXC CI ($l.min^{-1}m^{-2}$)	2.75	2.83 (p=0.276)	3.02 (p=0.002)	2.88 (p=0.133)
Baseline O_2 delivery index ($mlO_2.min^{-1}m^{-2}$)	373.3	367.7 (p=0.862)	353.4 (p=0.426)	340.2 (p=0.183)
6h post AXC O_2 delivery index ($mlO_2.min^{-1}m^{-2}$)	309.9	395.3 (p=0.004)	349.6 (p=0.09)	373.4 (p=0.005)
6h post AXC O_2 consumption index ($mlO_2.min^{-1}m^{-2}$)	90	110.3 (p=0.144)	103.2 (p=0.358)	105 (p=0.205)

Extrapleural Pneumonectomy or VATS Debulking Pleurectomy/ Decortication for Early Stage Malignant Mesothelioma? A Case Control Study

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Objectives: To examine the effects of extrapleural pneumonectomy (EPP) or VATS debulking pleurectomy / decortication (VATS) for malignant pleural mesothelioma (MM) on patient survival and disease progression in a case control study.

Methods: We analysed the results of EPP or VATS in consecutive patients with early stage MM undergoing a radical surgery protocol for MM over a seven-year period. If deemed medically fit patients received EPP. Those unfit underwent VATS (a subtotal parietal pleurectomy followed by visceral decortication to gain full lung expansion if required.) Postoperative survival and time to progression (TTP) data were analysed

Results: EPP was performed in 80 and VATS in 43 patients of who 17 required decortication by VATS. Those in the VATS group were older (median age 68 vs 57 years p<0.001). Pathological TNM stage in the EPP group was 6 stage I, 7 stage II, 46 stage III and 21 stage IV. There was no difference in survival between the EPP and VATS groups (median survival 16 months p=0.24). VATS P/D was associated with a shorter TTP (7.6 vs 12.0 months p=0.02). There was no planned adjuvant chemotherapy or hemithorax irradiation in the VATS group. In the EPP group neoadjuvant chemotherapy adjuvant chemotherapy hemithorax irradiation and combined chemoradiotherapy were performed in 16 9 3 and 1 patients.

Conclusions: Although there was an improved rate of local control and TTP in the patients undergoing EPP there was no effect on survival even as part of multimodality therapy. EPP should be subject to evaluation in a randomised trial.

Drug Eluting Stents and The Potential Impact on Elective Coronary Artery Bypass Grafting Waiting Lists

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Objectives: To identify that proportion of patients on an outpatient elective CABG waiting list who might have been offered alternate therapy (CABG PCI either or neither (medical therapy)).

Methods: A consultant interventional cardiologist (CIC) and cardiothoracic surgeon simultaneously reviewed all available diagnostic coronary angiograms (390/435 [90%]) from which the decision to refer for CABG was made (1st review). Based solely on the angiogram the reviewers decided whether the best treatment was CABG PCI-Bare Metal Stent (BMS) either (PCI-BMS or CABG) or neither. A 2nd review took place by a CIC on 100 randomly selected angiograms on those patients deemed suitable for CABG after 1st review (298/390) asking 'Given the availability of Drug Eleuting Stents (DES) would you consider PCI using DES?'

Results: Mean age of whole cohort 66.7yrs (+/- 3.2) with 295 (76%) male; 72 (18%) diabetic (DM); 257 (66%) smokers (ex or current) and 278 (71%) 3-vessel disease (VD). Results of 1st and 2nd review are shown below.

Conclusions: Potentially over 40% of patients on an outpatient CABG waiting list could be offered PCI in the DES era; having a significant impact on cardiac surgery volume. A small minority of cases exist for whom pursuing medical therapy was deemed the best option. A regular forum for angiographic review involving interventional cardiologists and cardiothoracic surgeons must be encouraged.

	1st RV n=390	Demographics	2nd RV n=100	Demographics
CABG	298 (76%)	Age 66.7 (+/-8.1)	77 (77%)	Age 65.6 (+/-8.2)
PCI BMS	36 (9%)	Sex M 222 (74%)	–	Sex M 78 (78%)
PCI DES		DM 56(19%)	4 (4%)	DM 17 (17%)
Either	47 (12%)	Smokers 210 (70%)	19 (19%)	Smokers 73 (73%)
Neither	9 (2%)	3VD 249 (84%)	0	3VD 91 (91%)

Cost Implications of Off-pump and On-pump CABG Surgery. A Propensity Matched Study of a High Volume Off-pump Practice

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Objectives: To compare cost implications of off-pump and on-pump coronary artery bypass grafting (CABG) surgery and to identify areas of cost savings in both techniques. Currently large well-matched studies are lacking on this topic.

Methods: Data on 4406 patients who underwent consecutive CABG surgery between January 2000 and September 2003 at our centre were prospectively collected. Eighteen pre-operative variables were identified for patient matching. We performed a propensity-matched cohort analysis between off-pump and on-pump patients to adjust for differences in pre-operative patient characteristics. Five-digit propensity score matching using greedy-match technique was performed. Failing this a 4- 3- 2- or 1-digit match was performed. The costs of both procedures were calculated retrospectively on variables covering: operative post-operative complications transfusion requirement and bed occupancy.

Results: We matched 1353 off-pump patients with 1353 unique on-pump patients. Mortality and most outcome variables were comparable. Incidence of stroke was significantly less in off-pump group (0.7%(9/1353) versus 1.6%(22/1353), p=0.033). Cost analysis favoured off-pump surgery in terms of operative time; post-operative ventilation (off-pump median: 5 hours versus on-pump median: 8 hours, p=<0.001); IABP usage and transfusion requirements. This was reflected in reduced ITU and ward bed occupancy. Variables which favoured off-pump surgery and individual component cost details are given.(Table).

Conclusions: Off-pump surgery offers considerable cost savings in areas of: operative time, post-operative ventilation time, IABP requirement, ITU and ward bed occupancy and transfusion requirements. Reduced stroke incidence has enormous hospital and wider socioeconomic cost implications. In this cohort of matched patients there is a saving of £1352.72 per patient.

Variable	Off-pump (n=1353)	On-pump (n=1353)	p value
Operating time in minutes: median (25th -75th percentile)	210 (180 – 240)	255 (225 - 290)	<0.001
Mean operation costs	£3409.92	£3878.90	<0.001
ITU stay in days: mean (25th - 75th percentile)	1.5 (1-1)	2 (1-2)	<0.001
Mean bed occupancy costs (ITU & ward)	£3893.62	£4678.76	<0.001
IABP support %	2.1 (28/1353)	3.4 (42/1353)	0.046
Mean complication costs	£65.51	£91.06	<0.05
Mean transfusion costs (mean units transfused)	£57.81 (0.5)	£130.86 (1.1)	<0.001
Mean overall cost per case	£ 7426.86	£ 8779.58	<0.001

Neural Networks and Bootstrap Simulation in Prediction Of Outcome of Non-small Lung Cancer Patients after Complete Lobectomies and Pneumonectomies

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Objectives: The potential prognostic clinico-morphological factors for outcome of non-small lung cancer (LC) patients (LCP) after surgery were investigated.

Methods: In trial data (1985-2004) of consecutive 511 LCP after complete resections R0 (age=57; 1±0.4years; male=460 female=51; tumour diameter: D=4.6±0.1cm; pneumonectomy=212; bi/lobectomy=299; combined procedures with resection of pericardium, atrium, aorta, superior vena cava, carina, diaphragm, ribs=143; only surgery (S=310); adjuvant chemoimmunoradiotherapy (AT=99): CAV/gemzar+cisplatin+thymalin/taktivin+radiotherapy (45-50Gy); postoperative radiotherapy (45-50Gy) RT=102; squamous=329; adenocarcinoma=144; large cell=38; T1=143, T2=225, T3=112, T4=31; N0=297, N1=116, N2=98; G1=122, G2=144, G3=245) were reviewed. Variables selected for 5-year (5Y) survival (5YS) study were input levels of blood factors, sex, age TNM, G, D. Survival curves were estimated by Kaplan-Meier method. Differences in curves were evaluated using a log-rank test. Neural networks, Cox regression, clustering discriminant analysis structural equation modelling, Monte Carlo and bootstrap simulation were used to determine any significant regularity.

Results: For 511 LCP overall life span (LS) was 57.7±1.9 months and 5YS reached 57.9%. 296 LCP (LS=86.1±2.0 months) lived more than 5Y without LC progressing. 185 LCP (LS=18.7±0.9 months) died because of LC during first 5Y after surgery. Cox modelling displayed that 5YS of LCP significantly depended on: N0-2, AT histology, T1-4, age, weight and 16 blood factors. Neural networks computing generic algorithm selection and bootstrap simulation revealed relationships between 5YS of LCP and N0-2 (rank=1), LC growth(2), S(3), T1-4(4), procedure type(5), G1-3(6), histology(7), RT(8), AT(9), ESS(10), protein(11), prothrombin index(12), gender(13), % segmented neutrophils(14), D(15), %lymphocytes(16), ratio of monocytes/LC cells (LCC)(17), thrombocytes/LCC(18), eosinophils/LCC(19), healthy cells/LCC(20), leucocytes/LCC(21), glucose(22), lymphocytes/LCC(23) and bilirubin(24).

Conclusions: Correct prediction of LCP survival after surgery was 76.6% by logistic regression, 81.3% by discriminant analysis and 99.8% by neural networks computing (error=0.0456; area under ROC curve=0.996).

Pre-treatment with Hyperbaric Oxygen - Neurocognitive Dysfunction and Inflammatory Response Following Cardiopulmonary Bypass – A Prospective Randomised Double Blind Trial

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Objectives: Pre-treatment with hyperbaric oxygen reduces inflammatory response and induces CNS ischaemic tolerance in animal models. We analyse the benefit of this modality in patients undergoing cardiopulmonary bypass.

Methods: Prospective randomised double-blind trial group A (n=31) air 1.5 atmospheres-absolute (ATA), group B (n=33), hyperbaric-oxygen 2.4 ATA. All patients spent 60 minutes in the hyperbaric chamber 24hr, 12hrs and 4hrs prior to cardiopulmonary bypass. Both groups were comparable for age, gender, BMI, peripheral vascular disease, coronary disease severity, LV function, Parsonnet, Euroscore, bypass and cross-clamp times, number of grafts, IQ and anxiety-depression scores. CCS angina, NYHA, dyspnoea and previous MI were higher in group B.

Neurologic and neuropsychometric testing (Rey auditory-verbal learning test, trail-making A and B, grooved peg-board, adult memory and information processing-A, digit-span forwards and backwards) - 48hrs preop and 4 months postop. Neurocognitive dysfunction was defined as > 1 standard deviation decline in > 2 out of 7 tests at 4 months. Blood analysis - pre-op, 2 and 24 hrs post-op.

Results: 55.2% in group A had neurocognitive dysfunction compared to 30% in groupB (p=0.05).

Peak rise in sE-selectin, HSP-70 and CD-18 were significantly higher in group A compared to group B. Correlation analysis revealed HSP-70 directly correlated to bypass and cross-clamp times in both groups. Though the ventilation time, ICU stay and hospitalisation were longer in group A, it was not significant.

Conclusions: We found that pre-treatment with hyperbaric oxygen significantly reduced neurocognitive dysfunction and postoperative rise in sE-selectin, HSP-70 and CD18 following cardiopulmonary bypass. Further multi-centre randomised trials are needed to assess the applicability and benefit of this modality.

Group A	Pre-op	2hrs post-op	24hrs post-op	p value
sE-Selectin	23.0 +/- 2.4	36.9 +/- 6.4	24.0 +/- 3.5	0.05
HSP-70	8.1 +/- 1.0	19.7 +/- 4.5	8.9 +/- 1.0	0.007
CD-18	63.6 +/- 3.6	83.8 +/- 3.4	80.5 +/- 4.7	0.001
Group B	Pre-op	2hrs post-op	24hrs post-op	p value
sE-Selectin	31.0 +/- 3.9	35.0 +/- 5.2	35.0 +/- 4.7	0.7
HSP-70	7.6 +/- 1.4	13.7 +/- 2.7	12.0 +/- 2.1	0.2
CD-18	63.3 +/- 4.1	76.8 +/- 4.8	70.5 +/- 4.9	0.1

A Prospective Randomised Study of Neurocognitive Function and Cerebral Microemboli after On-pump and Off-pump Coronary Artery Surgery

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Objectives: Neurocognitive impairment can be a debilitating complication following coronary artery surgery (CABG) and microemboli (high intensity transcranial signals or HITS) have been implicated as a causal factor. Detailed assessment of neurocognitive function comparing on- and off-pump CABG is sparse in the literature. We set out to examine the occurrence of HITS during on- and off-pump CABG and to assess neurocognitive function before and after surgery.

Methods: 212 patients admitted for CABG were randomised to on-pump (n=104) and off-pump (n=108). HITS were detected with bilateral transcranial Doppler ultrasonography of the middle cerebral artery. A battery of neurocognitive tests was administered preoperatively, on discharge, 6 weeks and 6 months after surgery. A composite neurocognitive function score was calculated using principal component analysis and compared between the 2 groups using ANOVA to adjust for baseline values.

Results: The median number of HITS was 1605 (751-2473) during on-pump and 9 (4-27) during off-pump CABG (p<0.0001). At discharge, the adjusted composite neurocognitive score was 0.2 SDs greater in the off-pump than on-pump group (95% CI: 0.38 to +0.02; p=0.07). There was no significant difference at 6 weeks (0.11 SDs, p=0.25) and 6 months (-0.02 SDs, p=0.18). Results of univariate analysis (at discharge) are shown in table. By multivariate analysis lower age (p=0.003) and off-pump surgery (p=0.04) remained independent predictors of better neurocognitive function.

Conclusions: Cerebral microemboli are more prevalent during on-pump CABG. At discharge neurocognitive function is better after off-pump compared to on-pump surgery but there is no difference at 6 weeks and 6 months.

Risk Factor	Coefficient	95% CI	p value
Total HITS Count (log)	+0.04	-0.003 - +0.08	0.06
Off-pump surgery	-0.19	-0.39 - +0.02	0.07
Age at operation	+0.02	+0.01 - +0.03	0.003

Peri-operative Hyperglycaemia Associated with Glucose-Insulin-Potassium therapy In CABG Does Not Affect Neurological Outcome

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Objectives: Glucose-insulin-potassium (GIK) improves haemodynamic indices following cardiac surgery but produces increased serum blood glucose levels during administration that may be detrimental to neurological outcome. We investigated the effects of GIK therapy on post-operative neurological outcomes on patients undergoing CABG surgery.

Methods: We recruited 440 patients undergoing first time elective/ urgent isolated CABG into a randomised double-blind placebo-controlled trial between January 2000 and September 2004. A cohort of 139 patients underwent neuropsychometric (NP) testing using a 10 test consensus-compliant battery carried out at baseline, 1 week and eight weeks following surgery. Patients were randomised to either placebo (D5%W) (n=65) or GIK (D50%W, K^+ 100mmol.l^{-1}, Insulin 70u.l^{-1}) (75ml.kg^{-1}.h^{-1}) (n=74). In the placebo and GIK groups 24 and 31 patients received supplemental tri-iodothyronine respectively. GIK/ placebo therapy was administered from the time of entering theatre until 6 hours after removal of aortic cross clamp (AXC).

Results: Mean serum glucose levels were significantly higher in the GIK group compared to placebo at 6 hours after AXC removal (10.1 vs. 8.4 $p<0.001$). Total insulin usage in this period was nine times greater in the GIK group (27.7U vs. 3.1U $p<0.001$). There was no difference in either the number of recorded type I or II neurological complications or in NP decline at 1 and 8 weeks following surgery.

Conclusions: Hyperglycaemia associated with GIK administration does not increase adverse neurological outcome.

	Group 1 (placebo)	Group 2 (GIK)
Type I complication	5/223 (2.2%)	2/217 (0.9%) p=0.45
Type II complication	10/223 (4.5%)	18/217 (8.3%) p=0.119
20% decline in 2 or more NP tests at 1 week	33/58 (56.9%)	29/51 (58.8%) p=0.839
20% decline in 2 or more NP tests at 8 weeks	7/58 (12.1%)	12/64 (18.8%) p=0.309
1 standard deviation decline in 2 or more NP tests at 1 week	28/58 (48.3%)	24/51 (47.1%) p=0.899
1 standard deviation decline in 2 or more NP tests at 8 weeks	13/58 (22.4%)	14/64 (21.9%) p=0.943

Head CT in The Unconscious Cardiac Surgical Patient. A Dangerous Waste of Time?

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Objectives: Transfer of ventilated, potentially unstable patients for radiological investigations is inherently hazardous and consumes medical and nursing time. We sought to confirm a suspicion that it added little to the management of these patients.

Methods: Retrospective analysis of ITU and radiology databases. Medical records of all patients undergoing head CTs were scrutinized to identify the indication for the investigation, their clinical state, the formal result of the CT and its influence on management.

Results: Over a three-year period up to 31/08/2004, 4155 patients were admitted to cardiothoracic surgical ITU. 72 patients underwent head CT. Complete records of 55 (76%) were available. The indications were as follows: 28 for altered conscious level, 23 for focal neurological signs or altered reflexes and four for postoperative seizures.

26 scans showed a new abnormality: 24 new infarcts (20 in patients with a neurological deficit), one cerebral oedema and one mild hydrocephalus. There were no bleeds. Changes in management amounted to starting anti-epileptics (for which CT is not needed) and mannitol or steroids for post-infarct oedema.

In the group with altered conscious level, 27/28 patients were on sedation with opiates or benzodiazepines, 7/28 patients had liver dysfunction, 13/28 had acute renal failure and 17/28 had an identified focus of infection.

Conclusions: Routine CT has little place in these patients; it should only be employed when a significant change in management is considered.

The Use of Gabapentin for Post-operative and Post-traumatic Pain in Cardiothoracic Surgery Patients

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Objectives: The pain following chest surgery and trauma often shares characteristics of neuropathic pain and proves refractory to normal analgesics. To our knowledge this is the first study assessing the use of gabapentin – a proven treatment for neuropathic pain- in cardiothoracic surgery patients.

Methods: Gabapentin was prescribed to 60 consecutive out-patients with refractory pain following chest surgery or trauma. For the 45 patients followed-up (75%), a cross-sectional questionnaire-based survey was performed and clinical data collected. The mean age was 51.6 years (range 22-83). The median follow-up was 11 months (range 2-18).

Results: The mean duration of pre-treatment refractory pain was 5.76 months (range 1-62). The mean duration of gabapentin use was 21.9 weeks (range 1-68). Some of the results are summarized in the Table. Overall 33 patients (73.3%) noted reduction of pain. Chest wall paraesthesia distinguishable from wound pain was relieved in 24 (75.0%) of 32 affected patients. No deaths or major complications were encountered. Minor side effects - mostly somnolence and dizziness - occurred in 18 patients (40.0%) causing three patients (6.7%) to discontinue gabapentin. Severe pain was significantly correlated with pain relief using gabapentin (p=0.009). No other demographical or clinical variable correlated with benefit or side effects. Satisfaction with gabapentin was expressed by 40 patients (88.9%).

Conclusions: Gabapentin appears safe for use in cardiothoracic surgical patients although minor side effects require attention. Gabapentin may relieve refractory chest wall pain in many of these patients particularly those with more severe pain. Further studies are warranted to define the role of gabapentin in cardiothoracic practice.

Patient category		Total patients	Pain improved	Pain not improved	
Cardiothoracic operation or trauma	Video-assisted thoracic surgery	22	14	8	
	Thoracotomy	8	7	1	
	Median sternotomy	3	3	0	
	Blunt chest trauma	12	9	3	p = NS
Pre-treatment degree of pain	Mild (1-3)	9	3	6	
	Moderate (4-6)	12	9	3	
	Severe (7-10)	24	21	3	p = 0.009

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Annual Scientific Meeting 2006

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