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Annual Report 2012-2013

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Facility

Our newly built mortuary came into use in the summer of 2012, with 6 tanks holding 4 cadavers each, and storage in racking for 66 cadavers. In summer 2013 a further 5 tanks were added, holding a further 20 bodies.

A tray system means that manual handling has been greatly reduced. A new height-adjustable embalming table accommodates the tray, which then slides onto a trolley and from there into the tank, without needing to lift the body.

A van has been equipped to transport cadavers on trays between CAHID and other locations where our cadavers are used such as the Cuschieri Skill Centre (CSC) and the Institute for Medical Science and Technology (IMSAT).

The 2012 - 2013 academic year was the first year for Jennifer Scherr as our mortuary manager. We were also joined by Amanda Hunter as prosector and Samantha Skene as anatomy technician.

In the summer of 2013 all 30 stations in the DR were equipped with computer screens to replace paper-based dissection manuals and atlases, in preparation for the transition to fully Thiel-based dissection in the 2013-14 academic year.

From April 2012 onwards all our bodies have been Thiel embalmed. We accepted 76 donations: 35 male, 41 female, with an average age of 81 years. Causes of death included heart problems (11), stroke (6), cancer or tumour (24), respiratory disease (25), frailty or old age (10) and dementia (3) – with often multiple causes given.

Some of these cadavers are already in use CAHID's 2013 - 2014 dissection classes, some have been used for surgical training, and others are in storage to be used in the 2014 - 2015 academic year.

Showcase



Filling our new tanks with the solid chemicals that make up the embalming fluid.

Teaching and Training

Showcase



Computer screens in the Anatomy Lab have replaced paper books and manuals.

In 2012-2013 Thiel embalmed cadavers have been used for anatomy teaching, training in clinical skills, and training in surgical procedures. This includes all levels, from undergraduate and postgraduate students to professionals at different stages of their career. Most of our dissection classes still used formalin cadavers, the final groups to do so.

Undergraduate

- Ca. 70 second year BDS students were trained in dental extraction procedures
- Those same dentistry students, accompanied by 10 BSc Oral Health Sciences students, were trained in injections for anaesthetic blocks for dental procedures.
- Ca. 160 first year medical students were taught intubation.
- Members of the student Surgical Society practised suturing.

Postgraduate

- Three Thiel cadavers were dissected by 12 students in MSc Human Anatomy.

CPD courses facilitated at CAHID

- A hip arthroplasty course with 24 participants
- A shoulder arthroplasty training session for an individual surgeon
- A hip and knee arthroplasty course for 11 students on the MChOrth course.
- A dissection-based Head & Neck anatomy session for ENT registrars
- An injection course for physiotherapists
- A number of anatomy revision sessions for physiotherapists.
- An Advanced Septorhinoplasty course on 22 cadavers attended by UK and international surgeons.
- Cadavers were used to create training videos in shoulder arthroplasty and below-knee amputation.

CPD courses at the Cuschieri Skills Centre

We have provided cadavers for a range of courses, aimed at qualified surgeons:

- Advanced and Open Sinus Surgery
- Aesthetic Facial Surgery
- Orthopaedics: hip and knee arthroplasty
- Advanced Airways Techniques
- EAES Advanced Laparoscopic Colorectal Surgery
- EAES Laparoscopic Bariatric Surgery
- EAES Laparoscopic Lower GI Surgery
- Emergence Safe Neck Dissection
- Endoscopic Sinus Surgery
- Facial Plastic Surgery Flap Reconstruction Dissection
- Flexible Cystoscopy
- Laparoscopic Renal Resection
- Hernia Repair
- Otolaryngology exam

Facilitating training



Course at CSC (photo by Alan Minty)

Research

We have facilitated sessions as part of product development and also supported larger research projects. We also work with MSc and PhD students in Mechanical Engineering.

CODIR

(Prof Cuschieri, Institute for Medical Science and Technology (IMSAT))

This 5-year grant focuses on development of a new technique for colonoscopy.

IIIOS

(Prof Melzer, IMSAT)

Integrated Interventional Imaging Operating System (IIIOS) was a large-scale Initial Training Network funded by the Seventh Framework Programme (FP 7). Its goal was to develop novel techniques and devices to meet the needs of the imaging operating theatre.

FUSIMO

(Prof Melzer, IMSAT)

Development, implementation and validation of a multi-level model for abdominal organs with respiratory motion and vascular flow for use with Magnetic Resonance-guided focused ultrasound surgery (MRgFUS).

MRgFUS

(Prof Melzer, IMSAT)

Studies involving CT and MRgFUS of brain and spine, to assess the suitability of Thiel cadavers.

Tendon surgery

(Ms Harry and Ms Hassan, Ninewells)

This research study has assessed the use of Thiel cadavers as a model for tendon repair, in comparison to formalin cadavers and a porcine model.

Research related to ultrasound-guided regional anaesthesia (UGRA) and tissue characterisation

(Prof Corner, Medical Physics)

Prof Cochran, Dept of Imaging & Technology

Dr McLeod, Institute for Academic Anaesthesia

Dr Demore, IMSAT

Dr Huang, Mechanical Engineering)

- Evaluation of elastography techniques to characterise tissue and improve needle placement.
- Needle visibility experiments, aimed at improving UGRA accuracy.
- Pilot studies of high-frequency ultrasound for imaging of the internal structure of nerves.
- Pilot studies of Optical Coherence Tomography (OCT) for tissue imaging
- Pilot studies of Optical Coherence Elastography (OCE) for tissue characterisation.
- Pilot studies of Laser Ultrasonics for skin characterisation.

MSc Project (Design for Medical Technology)

Sandy Kemp: "Elastic and Viscoelastic Properties of Thiel embalmed Human Ligament and Tendon"

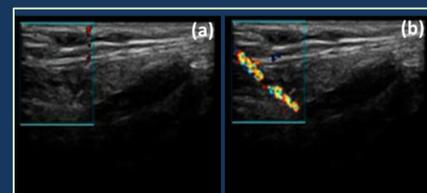
R&D sessions

We have facilitated sessions to evaluate new retractors, laparoscopic equipment, endonasal clips, colorectal surgery instruments, robotic knee replacement, and cardiac surgery equipment.

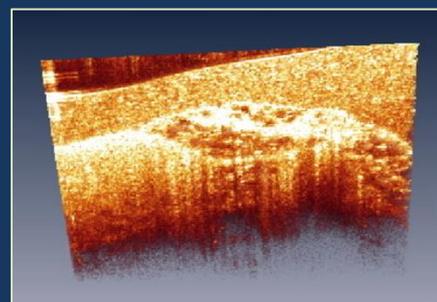
Showcase



Instron experiments to measure Young's modulus of Thiel tendon.
(Kemp and Liao)



Needle activation to improve visibility in ultrasound imaging.
(Sadiq and Huang)



OCT imaging of nerve fascicles.
(Guan and Huang)

Publications 2012 - 2013

- Eisma R, Lamb C, Soames RW. 2013. From formalin to Thiel embalming: What changes? One anatomy department's experiences. *Clinical Anatomy* 26:564-571
- Munirama S, Satapathy AR, Schwab A, Eisma R, Corner GA, Cochran S, Soames R, McLeod GA. 2012. Translation of sonoelastography from Thiel cadaver to patients for peripheral nerve blocks. *Anaesthesia* 67:721-728
- Eisma R, Gueorguieva M, Immel E, Toomey R, McLeod G, Soames R, Melzer A. 2013. Liver displacement during ventilation in Thiel embalmed human cadavers – a possible model for research and training in minimally invasive therapies. *Minimally Invasive Therapy*. 2013;22(5):291-6
- Gueorguieva M, Yeo DTB, Eisma R, Melzer A. 2013. MR Imaging of Thiel-embalmed human cadavers. *JMRI*, in press.
- Prasad Rai B, Tang B, Eisma R, Soames RW, Wen H, Nabi G. 2012. A qualitative assessment of human cadavers embalmed by Thiel's method used in laparoscopic training for renal resection. *Anatomical Sciences Education*; 2012 5(3):182-6.
- Hassan S, Eisma R, Soames R, Waterston S, Harry L. 2013. Raising of microvascular flaps using the Thiel cadaveric model: *Journal of Plastic, Reconstructive and Aesthetic Surgery* 2013
- Munirama S, McLeod GA, Eisma R, Schwab A, Corner G, Soames R, Cochran S. 2012. Application of sonoelastography to regional anaesthesia: A descriptive study with the thiel embalmed cadaver model. *Ultrasound* 20, 41-48.

New Grants starting in 2013-14

- Sarah Vinnicombe, "The use of Thiel embalmed cadavers in the evaluation of magnetic resonance imaging guided focused ultrasound surgery (MRgFUS) in the breast: a Feasibility Study"
- Sandy Cochran, "Ultrasound in a needle – minimally invasive high resolution imaging for neurosurgery"
- Graeme McLeod, "Development of a model of subperineural injection during ultrasound guided regional anaesthesia"
- Graeme Houston, "Thiel embalmed cadaveric assessment of interventional radiology vascular procedures."
- Paul Prentice, "TheraCav – Harnessing Cavitation for Therapy"
- Sandy Cochran, "Sonopill"
- Margaret Lucas, "Ultrasonic Needles based on Mn-doped Ternary Piezocrystals"
- Andreas Melzer, "FUTURA - Focused Ultrasound Therapy Using Robotic Approach"
- Andreas Melzer, "TRANS-FUSIMO"



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