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## DATES FOR YOUR DIARY

### **BSCI/BSCCT Annual Meeting**

12 - 14 September, Oxford

### **BSCMR Annual Meeting**

12th October, London

### **AHA Scientific Sessions**

13-15 November, Boston



## Dr Russell Bull, BSCI/BSCCT President

I took over the presidency of the society from Giles Roditi in May 2019 PC (pre – coronavirus). At that excellent (and packed) meeting in Cambridge it would have been impossible to imagine what would unfold over the next two and a half years. The first wave of the pandemic hit just before the original planned date for the Oxford conference in March 2020 enforcing cancellation at the very last minute. After a second cancellation in September 2020, I am absolutely delighted to say that finally this conference will be going ahead in a few weeks' time. It is a wonderful tribute to the patience and perseverance of the meeting organisers, led by Andrew Kelion and Jamie Kitt and I would encourage all members attending the conference to thank them very much for making this a reality.

As we came out of the first wave of the pandemic, BSCI had to decide what we could usefully do as a society at a time when in-person events were impossible. In collaboration with SCCT and due to the considerable efforts of Ed Nicol, we held a virtual BSCI/SCCT 'state of the art' meeting in December 2020. This was attended by delegates from every continent and allowed our industry gold sponsors to reach a global audience at a time where vendors and delegates were unable to attend the traditional in-person conferences. Our gold sponsors are a vital component

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of the society, and I would like to thank them for their fantastic support during such a difficult time. Led by our excellent treasurer, Jim Stirrup, the society remains in a strong financial position with record membership levels.

Led by Michelle Williams, BSCI has hosted and recorded monthly webinars on a variety of imaging topics throughout the pandemic, presented by a range of excellent speakers. In May of this year, James Shambrook hosted a BSCI recorded lecture day covering all the didactic lecture elements of the level 2 cardiac CT curriculum. BSCI now have a substantial repository of lecture material which will imminently be available to all members on the Moodle platform allowing members to claim CPD points towards accreditation and re-accreditation requirements, supplemented by our online SCCT level 1 cases which have been well received.

During the pandemic, the BSCI committee have continued to publish national guidelines and original research. Michelle Williams led a joint BSCI/BSTI project on reporting of cardiac calcification on non-gated CT studies and Gareth Morgan-Hughes led a national BSCI audit on downstream testing following coronary CT:

<https://www.birpublications.org/doi/10.1259/bjr.20200894>

<http://openheart.bmj.com/cgi/content/full/openhrt-2021-001597?ijkey=Fztlm1l4h83je1I5&keytype=ref>

Despite all the challenges, it has been truly the highlight of my professional career to lead BSCI. What I will remember most is the incredible kindness and support I have received from all members of the committee as well as the wider cardiac CT community. I will be delighted to hand over the presidency to my friend, James Shambrook at the end of the Oxford meeting. He will make a wonderful president and I know that the society will continue to flourish under his leadership.



## Dr James Shambrook, Incoming President

As the incoming president of the BSCI/ BSCCT, I would like to start by offering a huge thanks to Dr Russell Bull for his leadership of the Society through these most challenging times. I am sure you will all appreciate the huge challenge it has been to offer ongoing support to cardiovascular imagers while the goal posts keep moving! Despite this, our Society has gone from strength to strength and I am delighted many of us will be finally meeting again in Oxford.

I have been a consultant cardiothoracic radiologist at University Hospital Southampton since 2009. My interests include both adult and paediatric cardiac CT and MRI. In addition, I have a particular interest in medical education at both postgraduate and undergraduate level.

I joined the BSCI/BSCCT committee in 2015 and have seen the Society thrive and expand. Each meeting gets larger with increased delegate numbers whilst maintaining a real sense of community. This for me is one of the unique features of this organisation. As a mixed specialty group, this Society benefits from the diversity and enthusiasm of its members.

The BSCI / BSCCT has a varied number of roles including education, accreditation, standards development, research and a vibrant training committee. Our defined objectives include:

- Promoting the highest standards of practise in cardiovascular imaging in the United Kingdom
- Promoting education, training and the dissemination of scientific evidence in all aspects of cardiovascular imaging
- Advising the Royal College of Radiologists and the British Cardiovascular Society on cardiovascular imaging
- Nurturing and evolving the links between the cardiology and radiology communities

I believe our greatest challenge currently is to ensure there are enough trained cardiovascular imagers throughout the United Kingdom to provide this essential service to our patients. Fundamental to meeting this challenge is ensuring education is available to enough individuals, at the highest possible standard. Supporting our radiographic colleagues in accessing training in ECG gated imaging as well sufficient access to appropriate equipment.

The Royal College of Radiologists and British Cardiac Society have recently adapted their curricula to include cardiovascular CT as a core training requirement, something which the BSCI/BSCCT has been advocating for several years. The BSCI/BSCCT now needs to help these organisations meet the demands of the curricula. My aim as president over the next two years is to assist in this in several ways:

- Expand our online educational content and develop new online learning tools
- Provide cardiovascular imaging specific revalidation tools to ensure members evaluate their practise to the highest governance standards
- Ensure our face-to-face meetings continue to go from strength to strength, providing up to date scientific data as well as educational content.
- Facilitate local networks of specialist cardiovascular imagers that can work with the Deaneries in planning training.
- Expand our radiographic committee to encourage the universal training of ECG gated techniques.

I hope you enjoy the upcoming meeting in Oxford which has been organised by Andrew Kelion and Russell Bull, as well as many others. The programme looks fantastic and I'm sure we will all appreciate speaking to one another, face to face, once more.

I look forward to the challenges of expanding and promoting our speciality over the next two years. Please do not hesitate to contact me or the Society if you want to get involved or have ideas for the organisation.



## Trainee Committee Radiology Chair 2019 – 2021

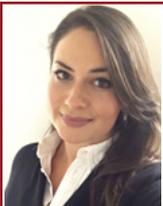
Dr Lindsey Norton

My time in the BSCI/BSCCT trainee committee has been a busy and immensely satisfying experience. I have had the privilege to work with a team of enthusiastic and passionate professionals who have been a pleasure to lead. Being on the committee and part of the wider society has been a fantastic opportunity to meet and work with the leading lights in cardiac imaging and as a trainee committee co-chair I have also had the chance to become more involved in national training, liaising with the professional bodies for Cardiology and Radiology.

I am very proud to have been part of the trainee committee during this difficult time. The Covid-19 pandemic has halted or postponed many activities but we have been able to assist in the provision of new educational content through regular BSCI/BSCCT webinars, pushed for greater support for cardiac imaging training from both the Royal College of Radiologists and the British Cardiovascular Society and produced new evidence that will highlight the need for increased provision of cardiac imaging across the UK.

I am really looking forward to our fantastic conference which this year is being held in Oxford. This will be a wonderful opportunity to come together to rebuild professional networks as well as catch up with what's new in the fast-moving world of cardiac imaging. The conference is also where I will be officially handing over my chair to my esteemed colleague Dr Erica Turr.

I am currently undertaking a fellowship at Royal Papworth Hospital NHS Foundation Trust before heading back to Scotland for my consultant post specialising in cardiac imaging in early 2022.



## New Trainee Committee Radiology Chair

Dr Erica Turr

It is an honour to introduce myself as the new co-chair of the BSCI Trainee Committee. I have been a member of the committee for the past two years and have really enjoyed working with other radiology and cardiology trainees based in different parts of the country on the improvement of cardiovascular imaging education for trainees in both disciplines. I have especially been involved in promoting our use of social media to disseminate information about training programmes, conferences and events, as well as provide a platform for discussion on interesting CVI cases and diagnostic conundrums, which has enabled the BSCI to develop networks with other national and international CVI societies.

I am currently in my final year of radiology training in the North West, though I started out as a surgical trainee in London. It has been a long, tortuous road to cardiothoracic radiology and I often wonder how much sooner I would have chosen a cardiovascular imaging career path if I had been more exposed to the field earlier or had a better understanding of what it entailed. One of my goals is to increase overall awareness of the specialty and encourage cardiologists and radiologists

to work together to develop cross-disciplinary skills and ensure that good quality CVI training and resources are available to all trainees. As co-chair I hope to take that further and work with the Executive Committee and bodies such as the Royal Colleges on expanding the curriculum and improving the access to and availability of cardiac imaging training to junior doctors.

By providing better CVI guidance and by promoting the integration of cardiac interpretation into routine thoracic reporting, it is my belief that patients will receive a more comprehensive cardiovascular assessment, and cardiac imaging will be thought of as less of a “niche” subspecialty among the wider radiology community.

I very much look forward to welcoming you to upcoming BSCI events, to your social media input, and to your “image of the month” entries - all trainees and CVI readers can make a contribution, and I will be encouraging you to do just that.



## Trainee Committee Cardiology Chair 2019 - 2021

Dr Jason Tarkin

Having been privileged to serve as the co-opted Cardiology trainee representative on the BSCI committee for the past two years alongside Dr Lindsey Norton (Radiology trainee representative), I am now delighted to pass the role to Dr Jamie Kitt. It has been an honour and pleasure to have held this position that provides a platform to support fellow trainees undertaking cardiovascular imaging training in the UK, and to contribute more widely to the ongoings of the Society.

The BSCI trainee committee has and will continue to play a fundamental role within the Society. A few examples of our most recent and ongoing activities include important contributions to the organisation of the upcoming BSCI/BSCCT meeting in Oxford, monthly educational webinars, maintaining the website and image of the month competition, running the twitter account, and conducting national audits relating to imaging training. Many of these activities are highlighted in this edition of the newsletter. On that note, I wish to thank my fellow trainee committee members for their impressive work and commitment, and to congratulate those who are moving onto new consultant roles. I am also pleased to report that there have been a number of excellent new candidates coming forward to join the trainee committee.

A few months ago, I completed cardiology training and was fortunate to be appointed as an honorary consultant cardiologist at Cambridge University/ Cambridge University Hospitals NHS Trust. I am also very pleased to have since been appointed to the elected BSCI committee. I hope to contribute a unique perspective to the committee as an early-career cardiologist with an active interest in imaging research, and will continue to advocate on behalf of the BSCI for the needs of clinical trainees and other medical professionals in this new role.



## New Trainee Committee Cardiology Chair

Dr Jamie Kitt

I started my DPhil at Oxford University in 2018 under the supervision of Professor Paul Leeson, Professor Richard McManus and Doctor Adam Lewandowski. I am a Cardiology ST7 speciality registrar in Thames Valley (Oxford) sub-specialising in cross-sectional imaging and echo. My research interests are within Obstetric Cardiology given the prevalence of pre-eclampsia (1/10 pregnancies in the UK) and the expertise within this area of my supervisors.

I am delighted to take over the co-chair role of the trainee committee role from Jason Tarkin and Lindsey Norton who did an excellent job in a difficult two years. I look forward to working alongside Erica over the coming year. Having a cardiologist and radiologist co-chairing helps bring balance to the committee and achieve the best for both specialties. Do not hesitate to get in touch with comments or suggestions for the committee to address over the coming year.



## Looking forward to the BSCI Conference

Dr Andrew Kelion



The Conference at Keble College in Oxford was almost the best meeting the BSCI never had. Originally it was going to be on 26th and 27th March 2020, and all of the final arrangements were in place when COVID struck. The couple of weeks leading up to the first lock-down that began on 24th March must have aged Russell Bull and me by several years. When inevitably the time came to cancel, Keble College through its Conference Manager, Senan Simmons, could not have been more helpful. We simply moved the entire Conference – programme, practical arrangements and all – to September 2020 . . . and finally to September 2021.

From the outset we were keen to hold the meeting in one of the colleges, to give delegates an authentic “Oxford experience”. After a bit of research, we soon discovered that out of 39 colleges only Keble was able to host a meeting of our size. The Newman Quad, with its Arco and Sloane-Robinson buildings, offers a state-of-the-art conference venue, with a tiered lecture theatre and numerous breakout rooms. Keble also has a large number of en suite bedrooms available, and we hoped that most people would opt to stay in College to enhance the experience. We have even been assured that the bar will be kept open late for us!

For those who are interested, Keble College was the first Oxford College to be founded in the modern era. It was created in memory of John Keble (1792-1866), a key member of the so-called Oxford Movement which sought to recover the Catholic heritage of the Church of England. The College opened its doors to its first 40 undergraduates in 1870. Keble’s original architect was William Butterfield, who also designed Melbourne Cathedral in Australia. The College’s polychrome brick architecture is not to everyone’s taste, but is now considered to be one of the finest examples of Victorian Gothic anywhere and has grade 1 listed status. Fun fact: the beautiful Gothic dining hall, in which we will be eating our meals during the Meeting, is the longest in Oxford.

With the Meeting now only a few weeks away, I can hardly believe that it might actually happen! We have stuck to the original concept of a full in-person event, rather than moving the whole thing on-line or attempting a hybrid format. “Zoomed” meetings have served an important educational function during the lock-down period, but they cannot replicate the social elements and opportunities

for networking of a good old-fashioned meeting. Nonetheless we are mindful of the fact that not everyone will be comfortable attending a live event yet. We will therefore be recording some of the lectures in the main lecture theatre which we will make available to all members in due course.

The programme for the 2021 Conference includes a number of innovations, with an emphasis on making the sessions entertaining as well as educational. On the Sunday before the main Conference, delegates can choose to attend one of four intensive pre-courses, two under the aegis of the BSCI/BSCCT and two under that of the British Nuclear Cardiology Society. The main Conference programme on the Monday and Tuesday will include debates and an ever-popular Multimodality Imaging Quiz, in addition to more conventional sessions – if talks on imaging babies, the dead and animals can be regarded as “conventional”! Awards will be given during the meeting to delegates who have submitted the most striking imaging vignette in a number of categories. And for the first year, we will be running a series of 90 minute “read with the experts” sessions on various topics, in parallel with the “main” sessions.

Given that none of us has been out much over the last 18 months, one of the highlights of the Meeting is certain to be the gala dinner in the beautiful (dining) Hall at Keble. This will be preceded by a champagne reception, weather-permitting in the Quad outside. The price for the whole Conference is heavily subsidised by the Society, thanks to the support of its industry sponsors, and includes this gala dinner. Keble is also offering an attractive rate for bed and breakfast in its en-suite college rooms.

Organising an academic conference is a complex undertaking, even under pre-COVID circumstances. A lot of things have to be in place that delegates take for granted – for example, who knew that poster-boards do not simply appear from nowhere? In this regard I am particularly grateful to the Trainees’ Committee and especially to my able fixer in Oxford, Jamie Kitt. They are actually the ones pulling the whole thing together and delivering on every last detail.

It is going to be a fantastic Conference, and I look forward to seeing you in Oxford. If you have not yet registered I would urge you to do so!



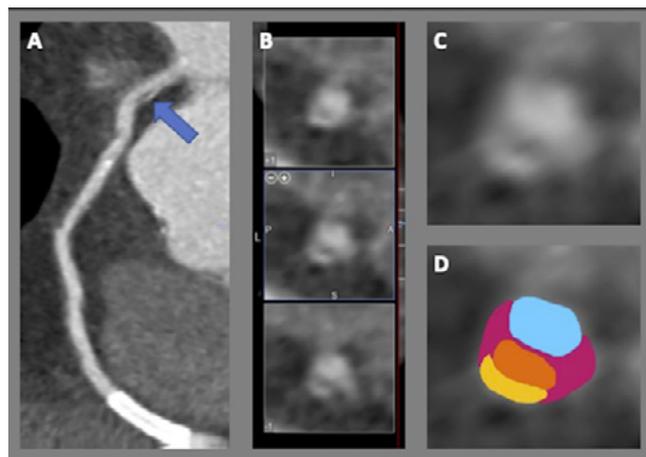
## Image of the month: The elusive napkin ring sign

Sai Viswan Thiagarajah and Michelle C Williams, University of Edinburgh

A 58-yr old female presented to the emergency department with heavy central chest pain. It was relieved with sublingual glyceryl trinitrate (GTN) and resolved by the time she arrived at the hospital.

She had a previous history of coronary artery disease and suffered a non-ST elevation myocardial infarction (NSTEMI) 1 year previously. An invasive coronary angiogram performed at this time showed severe stenosis in the distal right coronary artery, which was treated with a stent. She had a history of hypertension and a family history of coronary artery disease. She was an ex-smoker with a significant pack year history.

An electrocardiogram (ECG) showed long standing T wave inversion, but was otherwise unremarkable. High sensitivity troponin on admission was 5 ng/L, and a repeat at 3 hours later was 4 ng/L. She was discharged and followed up with an outpatient computed tomography coronary angiogram (CTCA).



CTCA identified a napkin ring sign in the proximal right coronary artery. Image (A) shows a curved planar reformation of the right coronary artery with an arrow showing the area of the napkin ring sign in the proximal vessel and a patent stent in the distal vessel. (B) shows cross sectional images through the proximal right coronary artery showing three images of the napkin ring sign at 1 mm intervals along the vessel lumen. (C) shows a zoomed in cross sectional image of the napkin ring with (D) corresponding labelled components. Blue represents the lumen, orange represents the low attenuation centre of the napkin ring, pink represents non calcified plaque and yellow represents the high attenuation rim.

CTCA can visualise both the coronary artery lumen and characteristics of atherosclerotic plaques. On CTCA plaques were initially classified as calcified, non-calcified, and mixed. However, more recently additional CTCA features have been identified as markers of high-risk plaques (also called vulnerable plaques, or adverse plaque characteristics). These features are thought to be associated with the thin cap fibroatheroma, the histological precursor of ruptured plaques.

Features of vulnerable plaques on CTCA are positive vessel remodelling, low attenuation plaques,

spotty calcification and the napkin ring sign<sup>1,2</sup>. Positive vessel remodelling refers to a plaque with the outer vessel diameter > 1.1 times that of the adjacent uninvolved vessel. A low attenuation plaque is a non-calcified plaque measuring < 30 Hounsfield units. Spotty calcifications are small, calcified plaques < 3mm in diameter in any direction<sup>3</sup>. The napkin ring sign refers to a combination of plaque characteristics where there is a non-calcified plaque with positive remodelling, a low attenuation plaque centre and a higher attenuation peripheral rim, as seen in this case. Reporting of these features is recommended in the Coronary Artery Disease Reporting and Data System (CAD RADS), but observer agreement amongst expert readers is only 'fair'<sup>4</sup>.

Several studies have evaluated the usefulness of these vulnerable plaque characteristics for assessing risk of clinical outcomes. Motoyama et al showed that, in a study of 3,158 patients followed up over 4 years, those with adverse plaque features were ten times more likely to develop an acute coronary syndrome<sup>5</sup>. In the PROMISE trial, the presence of adverse plaque features was associated with an increased risk of MACE (major adverse cardiovascular events), particularly amongst women and younger patients<sup>6</sup>. In the SCOT-HEART trial, adverse plaque characteristics were associated with an increased risk of fatal or non-fatal myocardial infarction, with the greatest risk seen in those with adverse plaques and obstructive coronary artery disease<sup>7</sup>. However, in the SCOT-HEART trial adverse plaque characteristics were not an independent predictor of outcomes when controlled for coronary plaque burden assessed with calcium score. Vulnerable plaque characteristics are common, and only some of them cause clinically apparent plaque rupture. Atherosclerotic plaque is undergoing continuous remodelling, and therefore vulnerable plaque characteristics are likely better predictors of short- and medium-term outcomes, with quantitative assessment of plaque burden better for long term prognostication.

The napkin ring sign has been shown to be a particularly high-risk plaque feature. Maurovich-Horvat et al showed that the napkin ring sign was associated with histologically advanced atherosclerotic lesions (per plaque sensitivity 36%, specificity 100%)<sup>8</sup>. A study of 895 patients found that after 3 years of follow-up the presence of the napkin-ring was an independent predictor of subsequent acute coronary syndrome (Hazard ratio 5.55, 95% confidence interval 2.10 to 14.70,  $p < 0.001$ )<sup>9</sup>. In another study by Puchner et al, 472 patients presenting with chest pain suspicious of ACS underwent CTCA<sup>2</sup>. The incidence of a napkin ring sign was around ten times greater in those found to have ACS than those without (32.4% vs 3.2%).

However, the napkin ring sign is not a particularly common finding on CTCA. In the SCOT-HEART trial the napkin ring occurred in 0.3% (78 of 26,525) of vessel segments analysed<sup>7</sup>. Otsuka et al identified it in 0.4% (45 of 12,727) of segments<sup>9</sup>. Uncertainty also remains as to what exactly the napkin ring sign represents – is it focal ulceration, contrast enhancement with the vasovasorum, low density calcification, or something else? The management of these CTCA findings is also uncertain. There are no randomised controlled trials assessing the impact of different management strategies on the progression of these plaques, or subsequent clinical outcomes.

Despite the discovery of these potent adverse plaque features, difficulties still exist regarding their utilisation going forwards. Identification of CTCA adverse plaque features may help identify patients at risk of future adverse events. However, more research is required to assess what should be done when one of these CTCA features is identified.

References can be found [here](#).



## Trainee Survey 2021

Dr Marwa Daghem

Capabilities and provision of cardiac CT heart scans has rapidly expanded in-line with changes in national guidelines. Whether actual training has developed in parallel is unknown. We undertook the first national survey examining the provision of CTCA training in the United Kingdom in order to gain insight into the current obstacles and challenges faced by trainees.

Cardiology (63%) and radiology (37%) trainees from 16 deaneries and 29 hospital responded to our detailed survey. Whilst the vast majority of trainees (93%) worked in centres with an established cardiac CT service, less than 20% of these seem to provide a formal cardiac CT training program. This may explain why even though nearly half of trainees (47%) have completed a formal cardiac CT course only a fifth have formal CT accreditations.

The most commonly cited obstacles to training are lack of supervision and the limited number of sessions; less than half (43%) have formally allocated CT reporting sessions. Trainees have made it clear that there is no substitute for one-to one teaching - 69.23% citing this as the most effective learning method.

So whilst current curriculum guidelines state that “all trainees will have experience of CT coronary angiography and have contributed to reports under supervision by CCT”, changes to the current training model - including formal training sessions and better supervision - are needed in order to achieve this.



## BHF-CRC

Dr Michelle Williams

The BSCI/BSCCT are delighted to have joined the BHF Clinical Research Collaborative. The BHF-funded Clinical Research Collaborative, hosted by the British Cardiovascular Society (BCS) on behalf of all cardiovascular societies, aims to support the planning and delivery of high-quality cardiovascular research nationwide. By uniting the clinical research efforts of cardiovascular professional societies, it seeks to help join up work to identify and prioritise the most important clinical questions. The BHF CRC has set up a robust infrastructure to facilitate and coordinate researchers from across the country to develop robust study proposals to answer these questions. It is also anticipated that, as a result of the initiative, more clinicians will get involved in research as part of their roles and a greater share of cardiovascular patients interested in research can participate. One of the key principles in the work of the BHF CRC is around democratising research and making sure the right questions are being asked.

The primary focus of the BHF CRC is to provide immediate material support to the cardiovascular clinical research community. There is a range of resources available to support research development and collaboration.