

BCIS Cath Lab Basics Angiography and Angioplasty 16-17th March 2015, Golden Jubilee National Hospital

In March 2015, Cath Lab Basics was to travel north to the Beardmore Hotel and Conference Centre in Clydebank. This facility happens to be attached to the Golden Jubilee National Hospital, home to the West of Scotland Heart and Lung Centre. Ideal for a Cath Lab conference as it meant the delegates could be shown around the Cath Labs there and the equipment to be discussed would already be on site. The slight drawback was the travel times for the delegates. As most of the delegates were coming from south of the border, early flight times made for a long first day. Some travelled up the night before but in the case of two of the faculty, they wished they had driven or taken an early flight on the Monday – it would have been half their travel time on the Sunday evening!

Monday morning, the faculty met to finalise the last minute details and to hear of Doug and Bryan's epic journey! After which the delegates began to arrive from all over the country. In all, there were 70 delegates plus those invited from Industry. The course was fully subscribed for the third year running – a great start!

We started on time with myself welcoming everyone to a very grey, but not raining, Clydebank and briefly going over the coming 2 days and what we hoped everyone would get from the course. Dr Doug Fraser followed with some facts about BCIS and the AHP group, what our hopes and aspirations are and future events planned. He also recommended the BCIS website to keep in touch with events and as an educational resource.

Dr Fraser was followed by Jennifer Hunter who is the Clinical Specialties Manager in the Golden Jubilee. Jennifer gave us an insight into her very first day in the Cath Lab and how she felt about the experience and her hopes for the future for patients and staff. Bringing it up to 2015, she spoke of the expanding speciality that is Interventional Cardiology and all that it entails with new procedures equipment and devices but reminded us all that the patient is still at the very centre of what we do and their experience must be a safe and timely one with as good an outcome as possible.

After that, we settled into the programme and encouraged the delegates to ask questions as we progressed to make it as informal and interactive as we could within an auditorium.

The next session was titled 'What we do and when'.

To open, as a reminder to some and to clarify for others Alison led an interactive discussion on the terminology of the Cath lab as on a Patient Journey from admission to the ward and then to the Lab. Terms hopefully demystified from anatomy to radiographic views, from Cardiology abbreviations to the Cath Lab kit.

We then had a 'live case in a box' from the Golden Jubilee with Dr Paul Rocchiccioli describing the pathway for a Diagnostic Angiogram, the reason we now choose radial access, the sheath and catheter selection and radiographic views.

We then focused on pathways for Cath Lab patients.

Catherine Theron described the pathway for patients with Stable Angina. She told us that 20-40% of medical admissions are for acute chest pain and that timely diagnosis and prevention are key to reducing this. Patients are assessed by GP's and referred to RACPC's if appropriate which improves diagnosis. These patients can then be assessed at a pre-operative appointment and scheduled to enter hospital in a planned way. Information and planning are key to a successful patient experience and satisfactory outcomes.

Ellie Gudde then explained about acute coronary syndromes and NSTEMI, the difference between them and how each presents and is treated. These patients require prompt diagnosis and treatment, but are not in the 'emergency' category. They should have angiography within a short time of symptom onset and have their diagnosis and treatment planned as quickly as possible.

In comparison the patients with STEMI are the true emergency of the Cath lab and require PPCI (primary percutaneous coronary intervention) to reopen an abruptly occluded vessel. Prompt treatment will reduce infarct size and preserve LV function. Mortality rates will be lower as well as those of reinfarction and strokes. Ellie also spoke of the Thrombolysis criteria for those patients that will not reach a PPCI centre within the set timescale. Ellie also discussed Cath Lab requirements for these patients and some of the complications that we can expect in the Lab.

The final talk of the morning was by Catherine, who this time spoke about the Safe Surgical Checklist. Catherine explained how this has been developed and is now integrated into the Cath Lab pathway within her own trust. It is essentially a checklist that is used for every patient undergoing a procedure and includes Team brief and debrief, potential equipment requirements and complications along with the routine checks. This is now a mandatory requirement in many theatres and labs.

Monday's afternoon session was dedicated to basic equipment and vascular access.

Dr Sanjay Sastry was the first to speak and gave a very detailed talk on vascular access. This included a brief history of femoral access and the increased use of radial artery access. Along with a description of best practice. Dr Sastry then spoke of the pros and cons of the various closure devices available for both femoral and radial punctures and the extreme importance of patent haemostasis.

Dr Fraser's talk on Catheters followed next. He explained the derivation for the names and numbers of the catheters that we hear every day in the lab. He explained how guide catheters have differed in construction from the diagnostic type to maintain torquability during PCI. He also gave a brief overview of which guide to use when presented with anatomical variations. Dr Fraser also gave a quick insight on what not to do and why in certain instances during procedures!

Back then to Dr Sastry, who spoke about the many different types of guide wires we have available in the Cath lab for both peripheral and coronary wires. He explained about the 3 key components in the design of coronary guide wires, how they are constructed and why. He also explained how the strength of push that can be provided by various wires is related to its construction - the tip load- and how this is balanced against the danger that a wire may perforate the artery. He also clarified the difference between hydrophilic and hydrophobic wires as well as giving us examples of these and of wires used for CTO procedures.

Dr Rocchiccioli then returned to talk about stents and balloons. He gave us some history of coronary intervention, from balloon angioplasty to a single vessel previously to the complex 3 vessel multiple stent procedures that are now seen regularly in the Cath lab. He explained about the many types of balloons how compliant balloons will increase significantly in size as pressure increases and non-compliant ones allow greater pressure with less change in size, how the drug-eluting balloon performs and how cutting balloons help with calcific lesions. Finally, he described the various types of stents that are used in PCI and how these have evolved from bare metal to drug-eluting and the more recent bioresorbable scaffolds.

These talks were then followed by a recorded case presented by Dr Tom Johnson. This talk reinforced all that had been said in the previous talks. Access was discussed, views were

taken and the need to progress to PCI from diagnostic angiography following a pressure wire study. These studies are commonplace within the Cath Lab and measurement of the ratio between the pressure at the proximal and distal ends of the artery, aids the staff in their decision to stent a lesion or not. It was an interesting case and allowed the delegates to ask questions, to clarify the process and procedure.

The last session of the day required the delegates to be sorted into their professional groups and to receive talks that were specifically tailored to their needs. Each group heard about drugs used within Cath Labs from Alison and Catherine, ECGs from Nishat Jahagirdar and radiographic views from Bryan Walker. These were highly interactive talks that were very well received.

The day ended with a discussion of what everyone had learned so far within their professional groups. Queries and questions were answered to the best of the faculties' abilities before we adjourned. Our BCIS course dinner was held in the Beardmore Hotel so we didn't have far to go! Our guest speaker was Dr Stuart Hood one of the Interventional Cardiologists from the Golden Jubilee who is well known for his after dinner speeches. He entertained us all with stories about staff and patients he met throughout his years in practice. Some of whom made it into the press but for all the wrong reasons!

At lunch and before dinner, the delegates were given the opportunity to visit the Cath Labs and the Day Unit in the Golden Jubilee. This was well received and most of the delegates took up the opportunity to have a look at a different facility from their own.

Tuesday started with myself outlining the plan for the day. Cath Lab visits could be arranged for over lunch and the talks would take place in the morning and early afternoon. The last session was for Industry to showcase their kit in the surrounding rooms. This would allow the delegates some time with the Clinical Specialists but also allowed them to leave in time for planes and trains without disturbing speakers and delegates.

We then went into the first session for the second day, based on Cath Lab emergencies. Sarah Carson and Dr Tom Johnson led this very detailed and involved discussion regarding everything that can go wrong in a Cath Lab – followed by examples of how such things can be dealt with. The subjects they included were perforation and tamponade, problems with vessel closure, hypotension and arrhythmias. The scenarios were set up by each of the presenters discussing the options. This was a highly interactive session – the scenarios were given in detail along with the operator's feelings. The audience could only empathise as each scenario unfolded. Each scenario was followed with Sarah giving good solid recommendations for knowing your patient, your colleagues, your Cath Lab and your kit, the necessity for your Team Brief and importantly the de-brief.

Tom and Sarah were joined by Ellie Gudde for the next session. This session dealt with the Out of Hospital Cardiac Arrest scenario, whether these patients should come to a PPCI centre and why. The session emphasised the necessity for good history taking, communication and organisation. Ellie discussed what may happen on the occasion this doesn't occur and a patient is brought – sometimes inappropriately to the Cath Lab. There was further discussion of what happens if the patient dies on the table. This was also very interactive with the delegates contributing their experiences and I'm sure they all benefited from the experiences shared.

With a complete change of pace and emotion, the next session was entitled Research and Radiation. Bryan provided a talk about minimising radiation exposure, involving the delegates in assessing good and less good radiation safety practices. Bryan then quizzed

everyone on the lead equivalence of various protective structures in the labs – an enlightening subject for us all!

Dr Catherine Sinclair then introduced us all to the subject of research. She described the project set-up process, the Research Nurse/ Physiologist/ Radiographer support required and the on-going governance. She finished with an overview of the studies being currently undertaken in the Golden Jubilee.

Our last session in the auditorium was devoted to more advanced equipment and techniques.

Chris Loder talked us through Intravascular Imaging - IVUS (intravascular ultrasound) and OCT (optical coherence tomography). He explained how intravascular imaging is now an integral part of Interventional Cardiology and the mode of imaging depends on the lesion and the questions needing answered. It was a very visual learning experience with Chris showing and interpreting both OCT and IVUS images.

Nishat Jahagirdar then gave us two talks. His first was the Pressure Wire and how it is used to assess the physiological significance of a lesion. He explained that the technique is reliable and described the set-up and pitfalls that can happen. He also showed some case studies to aid our learning.

Nishat's second talk was about the balloon pump, its indications and contra-indications. He explained how the IABP can improve the circulation to the patient's brain and myocardium by reducing the flow to the distal circulation. He also explained the specifics around the timing of the balloon inflation and deflation and the indications this has on the pumps performance.

Chris then took us through the use of the rotablator and its usefulness in the successful preparation of calcified lesions that may otherwise be impossible to treat. There are burrs of various sizes and during use they spin at 140,000 rpm, making a sound similar to a dentist's drill. He explained that the burr will vaporise the hard plaques which are then flushed through the capillary bed leaving the vessel suitable for conventional angioplasty with balloons and stents. He also had some angiograms of before and after cases illustrating the techniques good and less good features!

Dr Fraser brought the meeting more or less to a close as some delegates were leaving earlier to airports and stations. He also reminded everyone of future courses to be run and the importance of CPD for all Cath Lab staff – the next Cath Lab Basics will be held in Bristol!

However, there was a final coffee break with the opportunity for the delegates to move to the demonstration rooms and a chance to get their hands on all of the advanced equipment that had been discussed during the previous session. We had divided the delegates into four groups and we had four rooms with:

- Basic equipment/trolleys where catheters could be wired, balloons and stents inflated by staff who don't normally have the opportunity within their role. We had experts on patent haemostasis showing everyone how important it is regardless of closure device. TR bands and Helix were available to be tried. Unfortunately, the access simulators did not travel well to Clydebank and despite all efforts refused to work!
- Autopulse and the IABP shared a room so the delegates had a chance of discussing Autopulse, the criteria for and its contraindications before trying to operate the board or the chance to set up a balloon pump and play with the timings to see the effect on the pumps performance.

- IVUS, OCT and Rotablaters were also available to try, as were CTO simulators and delegates were asked to try to wire the vessel through some cheese!
- Pressure wire analysers and simulators were there so the difference could be easily visualised between the proximal and distal vessels.
There was also the chance to see the new bioresorbable scaffolds and to discuss their use and importance.

It was a busy time trying to keep everyone moving to allow them to see all the kit. It appeared to be very well received and enjoyed by everyone. I certainly hope so!

Many thanks to the Faculty, the delegates, the Industry specialists for coming north to Clydebank and a special thanks to Millbrook for keeping me right!

Alison Brown
Clinical Educator – Interventional Cardiology
Golden Jubilee National Hospital
Clydebank

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