

"The Past, Present and Future of Surgery and the Surgeon"

A discussion paper from The Surgical Forum of Great Britain and Ireland. Dublin 16th July 2018

Introduction

1918 was a cataclysmic year for the British Isles and Ireland, and the Surgical Forum felt it appropriate to mark the centenary of the Great War and the separation of the Republic of Ireland by looking backwards at how surgery and its allied specialties emerged from very dark times. We wished then to look at where we are now and then forward to how surgery and surgeons may have to change in the future.

The Past

The Great War was a catalyst for change at every level of human existence.

In 1914, surgeons were 'general surgeons' in the main but the next 4 years saw the birth of specialisation. For example, the British Orthopaedic Association was founded in 1918, but perhaps the single greatest advance that allowed surgery to flourish and specialties to develop during and after the Great War was the introduction of endotracheal intubation by Sir Ivan Magill. However, muscle relaxation was not introduced until 1942 and the skill of the first anaesthetists was in taking patients close to death to allow interventions and procedures to be performed but then rescuing them. All this took place in an era when antibiotics and blood transfusion were not even dreamt of.

At the outbreak of the First World War, Ireland was over producing doctors for the size of its population and their career path often led to the 'mainland'. In 1910, a third of the doctors in the Royal Army Medical Corp (RAMC) were Irish, born, bred and trained at a time when one had to be of 'pure European descent' and under 30 years of age to join the Corps. 3305 Irish doctors served with the allied forces in the 8 theatres of The Great War and 243 died. The head of the RAMC was an Irishman and the 83rd Boulogne Hospital, where Sir Harold Gilles started the work that led to the foundation of Plastic Surgery, was set up by the Royal College of Surgeons of Ireland. The Irish contribution British military medicine was enormous. Major advances in X-rays, the discovery of tetanus toxoid, the re-discovery of debridement of wounds, the invention of the Thomas Splint for femoral fractures and the rapid evacuation of casualties all had major impacts on survivability. The number of amputations, the signature injuries of previous conflicts, was reduced and the signature injuries of the Great War became the missile injury to the facial skeleton and the pulmonary effects of gas attacks.

The specialties gradually ceded from General Surgery during and after the Great War. The Association of Surgeons of Great Britain and Ireland was founded in 1920 and the Society of British Neurological Surgeons in 1926. The Association of Anaesthetists of Great Britain and Ireland was founded in 1932, prior to which most anaesthetics were delivered by General Practitioners. The Society of Cardiothoracic Surgery was founded in 1934 and the first bullet was successfully removed from a heart in 1945. The British Association of Otolaryngologists was founded in 1943 but their Royal Society of Medicine Section started in 1907. The British Association of Urologists was founded in 1945 and the first TURP

performed in these islands was in 1926. The British Association of Plastic Surgeons (now BAPRAS) was established in 1946 and the British Association of Paediatric Surgeons in 1953, the British Association of Oral Surgeons (now BAOMS) in 1962 and the Vascular Society in 2012. It is very unlikely that any new specialties will be approved in the short to medium term. The increasing specialisation of surgeons has, however, led to some problems delivering the routine and emergency surgical needs of the population of our islands.

Advances in anaesthesia, such as the introduction of mechanical ventilators in the 1950s, muscle relaxants in 1942, blood transfusion, antibiotics and 'intensive care' allowed new, more complex surgical and interventional procedures to be performed.

Surgeons do not work in a vacuum and we rely on radiology and pathology to investigate and assess the success of our surgical interventions. One of the major, medical advances in the last 20 years has been in interventional radiology. The British Association of Radiologists was founded in 1934, becoming the Royal College of Radiologists in 1975. Histopathology, although central to much of what surgeons do, was late to develop as a separate body politic, becoming the Royal College of Pathologists only in 1962.

The Present

We now live in a completely interconnected world where Information and innovation are as fundamentally important in medicine as in life in general. All specialties have seen massive technological advances from improved monitoring during anaesthesia, intravenous anaesthesia, new modalities of scanning the body and molecular medicine applied to pathological analysis and to treatments of many conditions. The commonest causes of death are now heart disease, cancer and suicide and the spectrum of disease is very different from even 30 years ago. In the surgical specialties, interventional radiology has had an enormous effect on how conditions are investigated and treated and we are currently short of 200 interventional radiologists in the NHS. Intra-operative scanning is now integral to many procedures, particularly in the head, neck, brain, abdomen and in many cancer resections.

Robotics are now being introduced in many areas of medicine but, all except the hair transplant robot, still need the human hand to guide them. 90% of transurethral prostatectomies in the United Kingdom were robot assisted in 2017. Solid organ transplantation has developed in extent and complexity since Joseph Murray, a Plastic Surgeon, performed the first renal transplant in 1954. In a similar way, the development of new medical devices and implants have allowed enormous advances in every area of surgery, from hip replacement, aortic, coronary and aneurysm stenting to cataract surgery and penile rods for impotence unresponsive to drug treatment. However, the pendulum always swings in medical innovation and NICE has recently reported that endovascular stenting for aortic disease should no longer be performed. A similar situation occurred over a decade ago when coronary artery stenting by cardiologists led to a generation of cardiac surgery trainees being sacked only to find that, when the stents blocked, the surgery was then more complex and more cardiac surgeons were required.

The United Kingdom and Ireland led the field in traumatic brain injuries from high velocity missile injuries during the 70s and 80s.

Trauma care

The care of trauma victims deserves special mention both for the advances in survivability and rehabilitation but also for the challenges it presents in delivering that care. The introduction of the Advanced Trauma Life Support system of care by an American orthopaedic surgeon, whose aircraft crashed in 1976, killing his wife and severely injuring his children, has saved thousands of lives by prioritising the injuries present and, hence, the order in which they are treated. During that time, the Belfast and Glasgow neurosurgical units led the world in innovation of devastating head injuries and developed the titanium cranioplasty, Glasgow Coma Scale and ventilation to help control raised intracranial pressure.

These Islands have also been involved in various overseas military conflicts since the Second World War and, in particular, the experience from Iraq and Afghanistan has meant that the survivability of massive injuries to the body and limbs is now the rule rather than the exception and the signature injury of modern, military conflict is the Dismounted Complex Blast Injury. Immediate haemorrhage control (perhaps even with early aortic balloon stenting) and immediate evacuation have been the corner stones. The ability to adapt to changing circumstances underpinned this success story, as it has throughout the history of medicine. However, success has led to the question 'Do we need Major Trauma Surgeons?' The American experience suggests these individuals can become rapidly de-skilled and de-motivated in times of peace and it may not be an avenue to pursue. This problem is a microcosm of the situation that confronts all surgical specialties. In both Ireland and the United Kingdom, we have an 'implementation gap' between what the population needs (both military and civilian) and what medicine can now provide. As part of that debate, surgeons need to decide what sort of surgeon is needed for the future and implement it before our political masters dictate our future.

Surgical Education

The lack of surgical exposure in the undergraduate curriculum is bemoaned across all of surgery and may be one of the reasons that recruitment to surgical training has declined. That said, our Medical Schools are transforming medical education to make it more in tune with the needs of the modern world. For example, the use of virtual reality will dramatically change how anatomy will be taught. Knowledge, skills and identity are key to success in undergraduate and post graduate training and 'professionalism' is being increasingly acknowledged as essential for surgeons. Many senior surgeons at the top of their 'game', multiply published, renowned as teachers and for their bedside manner will confess that they would not been offered a place at medical school if the same grades were required of them in the 1970s and 80s as students have now to achieve. London medical schools were asking students for 3 C grades in 1975. There is a level of educational achievement required to be a doctor but the other 'soft' skills are what makes for a 'good' doctor. Perhaps the entry criteria for medical school should be examined?

We have to acknowledge that only a small proportion of doctors in general, and surgeons in particular, are required to become super-specialists, yet the current system is designed to produce only super-specialist surgeons. That has led to calls for a '2 tier consultant' system to help fill the 'implementation gap', in which the District General Hospital, especially in rural areas across the British Isles and Ireland, are struggling to recruit, with many relying on locum staff.

Plans have been introduced in the Republic of Ireland to trial the decoupling of scheduled and non-scheduled surgery. The outcome will be keenly awaited, because there are growing calls to do the same in the NHS. In addition, increasing the surgical cadre providing the services, increasing the roles of surgical practitioners, providing dedicated time in the working day for emergencies to be operated on by experienced staff and time for professional development are all viewed as essential for a safe, patient focused service.

Surgeons are exhausted by the use of healthcare as a 'political football', which has led to the feeling that there has been change for change's sake for decades. The Kings Fund have produced figures showing that NHS Trust Chief Executives are in post for 3 years on average, and the 'churn' in Directors is also a concern. No one in the NHS seems to be enjoying their job and a great many are feeling demotivated.

We cannot ignore the demographic changes in the medical workforce. The European Working Time Directive, which is widely ignored in specialist training in many EU countries, has led to the increased numbers of trainees in the system. Their working patterns have led to widespread discontent with the quantity and standard of their training, which have been compounded by 'winter pressures'. All trainees wish to have better work/life balance than their trainers. This has been perceived as a loss of medicine as a 'vocation' at the upper ends of the profession, but that does not bear scrutiny. Many senior surgeons had terrible work/life balances and missed out on their family life as a result. Now that both parents will almost certainly work something has to slip, and that 'something' surely must be work and not family life. We must produce a system that works for everyone, which at present it does not. Patients must not suffer and the staff of our health services must not become the 'second victim'.

There has been a consistent drive to reduce time in training for all doctors in Europe. That has led to surgeons being less exposed to surgery in general and, hence, less able to provide general, acute surgical services. Our trainees are actively asking for their hours to be extended. That can be done, as in many European training schemes by the staff working the extra hours without pay, 'under the radar' and illegally or to opt out of the EWTD. The latter will only be possible if the increase in hours worked results in a decrease in the numbers of juniors employed. That equation has not yet been tested.

On several occasions during the Forum Meeting the words "sustainability"; "de-skilling"; "teams"; "professionalism" and "encouragement" were used. It is accepted that the status quo is not sustainable and there is universal desire to improve the situation.

The Future

The future of surgery and of the surgeon is being examined by the Royal Colleges of Surgery and the need for intercollegiate cooperation is accepted by all. All the Royal Colleges of Surgery have committed to coordinating their work in international surgical training and development. We must show a united front to the world and act as an example of national and international cooperation to the Surgical world, especially in the face of the BREXIT upheaval. Many countries in resource limited parts of the world look to our Colleges for leadership, training, examinations and quality assurance. It is the least we can do to fulfil their expectations.

How surgery will change in the future is not easy to predict but technology will continue to play a big part in what we do and, thankfully, surgeons have always been 'early adopters'. The efficacy of new interventions must however trump surgical enthusiasm and yet not dampen surgical innovation.

Should the surgeon become a technician? The Forum feels that would be to the detriment of our patients. There is, however, no doubt that some procedures can be performed well by a 'technician', such as in podiatry and some cardiac interventions. The individuals who perform such procedures must, however, not operate in a vacuum and should be an integral part of the surgical firm. The dearth of interventional radiologists means that more surgeons have to opportunity to learn how to use imaging, just as our anaesthetists, breast and vascular surgeons already do. Many radiological interventions need surgical skills, especially if complications ensue. We should not abrogate interventions requiring imaging to our overstretched radiologists.

Should the role of a general, trauma/emergency surgeon be developed? There is a reluctance to embrace this role because it implies a 2-tier consultant grade. That said, those who wish to take on that role should be able to be trained and perform it. For example, Mr. David Nutt fulfils that role in his humanitarian work and surgeons are being training specifically to be able to provide services in the 'austere' environment. Never the less, exposure to such work in these islands is like to be sporadic in civilian or military practice, as has been shown by current American military experience.

In which case, should there be a two-tier consultancy? As currently discussed, the answer must be 'No'. Almost all surgeons now train with a special interest in mind. Once they complete training, those skills are ready to be developed further and, to make them spend several years not using them, will lead to their loss. Making junior surgeons step off their training ladder to provide old fashioned 'senior registrar' level of surgical service is not acceptable in our current training scheme but the contrary argument is that it would ensure surgeons 'pay back' their training to their health care system because an increasing number of surgeons now chose to leave the public health care system shortly after attaining consultant level to work entirely in the independent sector. Those individuals may pay taxes at a high level but they did not fund their post graduate training, the whole population did. Why should they not have to pay something back through well remunerated public service before turning to private practice?

Another way of providing a two-tier service would be to reverse the career pyramid. Surgeons will now be working until their 70s and that is a long time for someone to remain motivated and strong enough, physically and mentally, to perform the job they were appointed to as young consultants. Perhaps it is time to formalise what senior consultants did in the 20th century? When my generation trained, senior consultants who had been at the cutting edge of their specialties took on more minor cases, often taking junior staff through them with immense patience, care and kindness. They became excellent role models and educators, having perhaps been hard task masters in their day! It is not widely discussed or appreciated that surgeons, like pilots and racing drivers, become more risk averse as they get older and the patient with a complication weighs even more heavily on them. If we allowed senior consultants to opt to take up less specialist roles, the patients would receive excellent care and we would maintain the surgical workforce longer. It may also help with staffing of District General Hospitals in rural areas. This approach may not effect the issue of caring for the truly emergency cases, especially those complex cases which must be done in the middle of the night. It is much harder to be up all night as one ages. It is no joke. But perhaps blending younger consultants, who would be responsible

for taking those few, truly emergency, cases to theatre after 8pm and older consultants who would do the 'routine' work in elective surgery units that young specialists do not have time to do would pay benefits to the surgical patient. Senior consultants, whose children have flown the nest, could perhaps also staff the weekend minor trauma or routine surgical lists to allow young consultants to spend their more weekends with their families than the 1 in 2 or 1 in 4 weekends the older generation had to cover. That may be a trade worth making and if we are asking our juniors to be altruistic, perhaps seniors must as well?

The Surgical Forum will continue to examine ways of sustaining the exciting future of surgery. We all lament the passing of the Surgical Firm and our juniors are asking us to find ways of re-introducing a modern version of it. The Firm gave a sense of belonging and pride but we must remember that it could have its problems due to personality clashes and bullying. At a higher level, the same sense of belonging to our specialties and our surgical Colleges gave a feeling of cohesion. They were exclusive clubs. There is no reason why that cannot continue. Medicine is one of the few professions where there is no inherent discrimination between sexes and there is no reason that a 'club' should imply 'men only'!

The Surgical Forum is committed to improving the care of our patients and our surgeons and we will be examining the making of modern teams at our next meeting in April 2019 with the help of a range of experts from various fields.