provision of vascular care is patchy with the majority of trusts unable to deliver 24-h access to interventional radiology and indeed a staggering 25% unable to provide emergency vascular surgical care. The coming together of vascular surgery and interventional radiology will provide not only high-quality service for our patients but also the wherewithal to provide excellence in training for the future vascular specialist. The need to centralise delivery of vascular services is acknowledged by the Vascular Society and the Association of Surgeons of Great Britain and Ireland.¹ The process of centralisation will be difficult but has already begun with the majority of vascular centres in England

coming together within Vascular Networks. Increasing the volume of vascular work will raise the profile of peripheral vascular disease, improve outcomes and be of vital importance in delivering training within the time constraints of the European Working Time Directive and shortened specialty training programmes. Change for the better in both provision of vascular care and training of vascular specialists will become a reality in the near future.

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Future of vascular surgical training: the trainees' views

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ABSTRACT

INTRODUCTION In the UK, surgical training includes all aspects of general surgery. Vascular surgery is not an independent specialty. We wished to assess the views of vascular trainees in UK on the future of vascular surgery and training.

MATERIALS AND METHODS Trainees were surveyed in 2003, 2004 (after introduction of the European Working Time Directive) and 2005, concentrating on four areas – future practise of vascular surgery, role of endovascular training, vascular specialisation and future training.

RESULTS The majority of trainees want to practise vascular surgery alone. In 2003, 80% thought training should include endovascular techniques. By 2005, all trainees regarded training as mandatory as endovascular techniques would represent a significant part of their future work. Opinion changed on training; from 4 years general then 2 years vascular surgery (qualification in general surgery) to 2 years general and 4 years vascular surgery (specialist qualification in vascular surgery; $P < 0.0001$). Opinion also changed, that vascular surgery should split from general surgery to form its own speciality ($P < 0.0007$).

CONCLUSIONS Trainees now regard training in endovascular techniques and endovascular aneurysm repair as mandatory. The majority wish to specialise from general surgery and achieve a separate qualification in vascular surgery.

KEYWORDS

Vascular surgery – Training – Audit

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In the UK, surgical training includes all aspects of general surgery. Formerly, trainees spent 1 year as a house officer, 2–3 years as a senior house officer, and 6 years as a registrar. In addition, most trainees undertook 2 years in

research. As a registrar, all trainees do 6–12 months vascular surgery and a similar time in other specialities of general surgery. Sub-speciality training was undertaken in the final 2 years, the exit qualification was for general

surgery. Many trainees undertook a further year's fellowship before becoming a consultant.

Currently, half of consultant surgeons in the UK practise vascular surgery in conjunction with general surgery. This reflects current service provision in the UK, where half of all surgeons practise in district general hospitals serving populations of about 250,000. At larger hospitals, many surgical sub-specialities have separate on-call structures. In these centres, most vascular surgeons practise purely vascular surgery and do not participate in receiving emergency general surgical referrals.

Introduction of the European Working Time Directive (EWTD)^{1,2} and new pay contracts⁵ have pushed the trend to sub-specialisation. For the trainee, the reduction in working hours and introduction of shift-working patterns has resulted in reduced patient exposure, significant reduction in theatre training time^{4,5} and significant discontent.⁶ In August 2007, the structure of surgical training was radically altered with the introduction of Modernising Medical Careers (MMC).⁷ MMC aims to shorten surgical training with 2 years as a foundation trainee followed by 6 years in a run-through specialist training programme.⁸ Despite a requirement for earlier specialisation, the exit qualification is currently proposed to remain in general surgery.

We wished to assess the views of vascular trainees in UK on the future of vascular surgery and vascular surgery training.

Materials and Methods

The Rouleaux Club was established in 1984 and represents vascular trainees in UK. Vascular trainees meet twice a year at the Vascular Society conference and annually at the Rouleaux AGM. In 2003, an educational programme was started to inform trainees about changes in working practise and to discuss the possible future of vascular surgery. Speakers were invited from the Royal Colleges of Surgeons and Radiology, also from the Vascular Society educational committee. Members of the Rouleaux Club were surveyed in 2003, 2004 (post-EWTD) and 2005. Each survey concentrated on four main areas – what future trainees would like to practise as a consultant, the role of interventional radiology/endovascular training, should vascular surgery split away from general surgery and how should future training vascular be structured? The survey in 2005 also incorporated more detailed questions on radiological training. Details on training and access to interventional radiology were also collected.

Results

Replies were received from 68 trainees in 2003, 52 in 2004 and 67 in 2004. Currently, 98 trainees in the UK have registered an interest in vascular surgery. In 2003, the majority of trainees who responded were in their final year

Figure 1 Trainee opinion on: 'what do you wish your future practise to be as a consultant?'

of training or awaiting consultant appointment. In 2005, an even spread of replies were received from members across the 6-year training programme.

How surgical trainees would like to practise as a consultant remained unchanged over the 3 years (Fig. 1). The majority of trainees want to practise vascular surgery alone, some with participation in the general surgery on-call. About a third wanted to become a general surgeon with a vascular interest. A few wished to combine with another interest such as transplantation or endocrine surgery.

In 2005, concern was expressed by half of trainees (32; 48%) that vascular surgery was a shrinking speciality. Just over half (58%) felt that current practise, where a significant amount of vascular surgery is practised in district general hospitals, could be maintained in the future. The rest (42%) thought most future vascular surgery should be centralised in larger units.

Trainees were asked whether vascular surgery training should include radiological techniques of angiography, angioplasty and endovascular aneurysm repair (EVAR). In 2003, 80% thought training should include endovascular techniques; this increased to 90% in 2004 with trainees regarding duplex skills as essential. In 2005, all trainees thought the future of vascular surgery included endovascular techniques and regarded training as mandatory (Table 1). Trainees also considered endovascular techniques would represent a significant part of their future work (Table 1).

In 2005, there were two posts in the UK for vascular surgeons to undertake a 1-year fellowship in interventional radiology. Twelve trainees throughout the UK had established one 4-h session a week in interventional radiology, the majority were unable to gain access.

The opinion of vascular trainees on a future training pathway in vascular surgery has changed significantly in the last 3 years (Fig. 2). In 2005, most opted for the current system of training with 4 years general surgery followed by 2 years vascular specialisation (4 + 2), cumulating in a qualification in general surgery. However, by 2005, opinion had changed with

Table 1 Response of vascular trainees to specific questions on radiological training in endovascular techniques and endovascular aneurysm repair (EVAR) in 2005

Question	Response
<i>Do you think vascular trainees should undertake EVAR?</i>	
• Mandatory	55
• Optional	10
• No	1
<i>Do you think vascular training should include endovascular techniques?</i>	
• Mandatory	61
• Optional	6
• No	0
<i>What percentage of your future work?</i>	
• Would you like to include endovascular techniques	40%
• Do you think will include endovascular techniques	50%

most wanting 2 years general surgery and 4 years vascular specialisation (2 + 4) with a specialist qualification in vascular surgery (Chi-squared $P < 0.0001$). Corresponding with this change in opinion over the future of vascular surgery training was a shift to thinking that vascular surgery should spilt away from general surgery to form its own subspecialty surgery (Chi-squared $P < 0.0007$; Fig 3).

Discussion

The objective in the UK remains to continue training the 'general surgeon'. Introduction of the MMC aims to achieve fully trained consultants in a reduced time period within the EWTd. Therefore, one must question what this position will involve and, importantly, what will the future general surgeon be capable of doing? With regard to specialist training, more questions remain unanswered. In 2004, the Vascular Society identified that specialists, with a high caseload volume, should manage vascular disease. In 125 hospitals surveyed in the UK, two-thirds of vascular surgeons practised alone or with one colleague and only 43% offered 24-h vascular services. This was despite previous recommendations for centralisation of services or development of collaborative clinical networks.⁹

What future trainees would like to practise as a consultant has remained unchanged. This may reflect that in the later surveys more junior trainees replied, who may have yet to decide and commit to vascular surgery. In a survey of

vascular trainees in the US,¹⁰ senior fellows, who had decided to undertake a career in vascular surgery, wished to specialise completely whereas residents were more likely to remain 'general'.

Concern exists over vascular surgery as a shrinking speciality, and comparisons could be made to the demise of cardiothoracic surgery. Trainees regard EVAR and endovascular techniques as an essential part of surgical training and that these procedures will represent half of the future consultant surgeon's work. The practise of EVAR is increasing, but currently remains the minority treatment for AAAs in the UK and is centralised at larger teaching hospitals.¹¹ One method of developing vascular training would be the expansion of post-registration fellowship posts combining vascular surgery and interventional radiology. These have been successful in the US and are popular with both the surgical and radiology fellows.¹² In the UK, most training

regions offer fellowships at centres undertaking EVAR, although regional variation exists.

However, training in interventional radiology is significantly lacking with only two posts nationally. Compared to the US, the UK vascular surgical trainees' endovascular experience falls far short of vascular senior residents.¹⁵ Currently, most vascular trainees do not have the opportunity to achieve competency in endovascular surgery.¹⁴ One option to address this could be the use of dedicated simulators.¹⁵

The future of vascular service provision is subject to much debate. Many trainees (42%) think services should be centralised and this is supported by the current centralisation of EVAR and associated fellowships. The recent NCEPOD report will also encourage this.¹⁶ NCEPOD recommended that strategic health authorities consider concentrating the management of AAA in fewer hospitals, by specialist vascular surgeons and anaesthetists where radiological services were available out-of-hours. Should centralisation of AAA and EVAR progress, it is logical that other aspects of vascular surgery will follow.

Opinion on the vascular surgical training and vascular surgery as a speciality is clear from data presented here. Trainees wish to move to a dedicated training pathway in vascular surgery with separate specialisation from general surgery. Training in the EU is varied. In 2002, Liapis and Paaske¹⁷ found that, of 16 countries, all shared a common general surgical training (2–6 years) with variable time spent in vascular surgery (2–6 years). The European Association for Vascular Surgical Trainees (EAVST) identified problems with non-standardised training schemes, lack of funding for courses and private practise as factors affecting training.¹⁸

Throughout Europe, the history of vascular surgery as a speciality is short. Defined as a subspecialty in 1991, it was not until 1996 that a separate Board of Vascular Surgery was formed. Only in 2004 was vascular surgery recognised as an independent speciality by the UMES.¹⁸ Despite this, many EU countries do not have vascular surgery as an independent speciality particularly in the newer member states.¹⁹ In the UK, there remains considerable resistance for a complete split from general surgery.²⁰

Data presented here offer a clear opinion from trainees on the future of vascular surgery training and vascular specialisation. Currently, opportunities in EVAR training and, in particular, interventional radiology are lacking in the UK. Data from the Vascular Society suggest that specialist vascular service provision is currently lacking in the UK. Should centralisation of vascular surgery occur, this would see the development of larger regional units offering all aspects of vascular surgery, EVAR and interventional radiology. This would offer the opportunity to develop dedicated combined training pathways specialising in vascular disease, something that current trainees would like to see happen.

Conclusions

In recent years, trainee opinion on the future of vascular surgical training has changed. Trainees now regard endovascular and EVAR training as mandatory, as these techniques will represent half of their future practise. The majority wish to separate training from general surgery and achieve a separate qualification in the speciality of vascular surgery.

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