How should a candidate assess varicose veins in the MRCS clinical examination? A vascular viewpoint

N BHASIN, DJA SCOTT

Leeds Vascular Institute, Leeds General Infirmary, Leeds, UK

ABSTRACT

INTRODUCTION Varicose veins are a common problem and, therefore, regularly feature in the vascular bay of the MRCS clinical examination. Candidates are still being instructed to perform tests in the examination that are considered by many to be obsolete and inaccurate. Using the current cohort of vascular examiners, we aim to clarify which tests a candidate should be performing when assessing varicose veins. We also aim to assess basic surgical trainees' experience in the use of hand-held Doppler (HHD).

MATERIALS AND METHODS Postal questionnaires were sent to all English College Court examiners with a declared vascular interest to gain their opinion on what tests should be used in the vascular bay to assess primary varicose veins. E-mail questionnaires were also sent to basic surgical trainees to assess their experience in the use of hand-held Doppler to assess varicose veins.

RESULTS There was a 100% response rate from the examiners with 93%, 86% and 79% feeling that clinical examination, HHD examination of the SFJ and HHD examination of the SPJ, respectively, should form part of the examination of primary varicose veins in the vascular bay. Only 50% indicated the Trendelenburg test and cough impulse and 57% believed the tap test should form part of the examination of varicose veins. Of the BSTs, 53% believed they could examine varicose veins with HHD. Of the BSTs who could use HHD, 74% had held a vascular SHO post.

DISCUSSION Published data and opinion show many consultant surgeons have totally abandoned the use of the Trendelenburg, cough, tap and Perthes tests and support the opinion that HHD increases the accuracy of the examination of varicose veins. This study shows the opinions of the examiners supports the evidence-based recommendations that, in the light of easily accessible HHD, the older tests are now outdated. The majority of BSTs who were able to use HHD had held a vascular SHO post (74%) but otherwise it was unlikely that the BST would be comfortable with this skill.

CONCLUSIONS The Brodie-Trendelenburg (tourniquet) test, cough impulse and tap test are outdated but candidates should be aware of the principles and failings behind them. In the MRCS clinical examination, candidates should examine varicose veins by means of clinical examination and HHD as this is now accepted standard practice. To aid candidate education, the HHD technique should replace traditional clinical tests which continue to be taught in medical school and remain within the classical surgical text books.

KEYWORDS

Varicose veins – MRCS – Clinical examination – Trendelenburg test – Hand-held Doppler

CORRESPONDENCE TO

Mr Neeraj Bhasin BSc(Hons) MB BS MRCS, Specialist Registrar in Vascular Surgery, Leeds Vascular Institute, Leeds General Infirmary, Leeds LS1 3EX, UK. M: +44 (0)7747 001054; E: neerajbhasin@hotmail.com

Varicose veins are present in 25–40% of the population^{1,2} and represent a significant workload of the vascular surgical service. It is, therefore, inevitable that they will feature as part of the vascular bay assessment in the clinical section of the MRCS examination. It still appears, anecdotally, that candidates are being instructed to perform, and being assessed on, traditional clinical tests which are widely considered to be obsolete.^{5–6} We only questioned The Royal College of Surgeons of England examiners with a declared vascular interest to delineate what tests a candidate should be performing when

assessing varicose veins. In addition, we questioned a group of basic surgical trainees to measure their experience in hand-held Doppler (HHD) examination of varicose veins.

Materials and Method

Postal questionnaires were sent to all 14 English College Court examiners with a declared vascular interest. The questionnaire was a Yes–No tick box design enquiring whether 'in the vascular bay should the examination of primary varicose veins be by', clinical examination,

Table 1 Summary of the examiners' responses

Examination of primary varicose veins in the vascular bay should be by:	Yes	No
Clinical examination	93% (13)	7% (1)
Trendelenburg test	50% (7)	50% (7)
Tap test	57% (8)	29% (4)
Cough impulse	50% (7)	43% (6)
HHD examination of the SFJ	86% (12)	14% (2)
HHD examination of the SPJ	79% (11)	21% (3)

Trendelenburg test, tap test, cough impulse, HHD examination of the saphenofemoral junction (SFJ) and HHD examination of the saphenopopliteal junction (SPJ). An area was also available for additional comments.

Through the responses, we aimed to define what tests consultant vascular surgeons thought were reasonable to assess a candidate upon when examining varicose veins in the MRCS examination

In addition, an E-mail questionnaire was sent to 70 basic surgical trainees (BSTs) on the Yorkshire School of Surgery rotation. The questionnaire asked for the following information: what year SHO was the trainee, whether they had held a vascular SHO post and whether they could use a HHD to assess varicose veins?

It was our impression that a trainee would not be able to use HHD unless they had held a vascular post. This was assumed as HHD training does not form a routine part of undergraduate or postgraduate medical education.

Results

All 14 examiners responded to the questionnaire (100%) and their responses are summarised in Table 1.

Of the examiners, 93%, 86% and 79% felt that clinical examination, HHD examination of the SFJ and HHD examination of the SPJ, respectively, should form part of the examination of primary varicose veins in the vascular bay. This represents an overwhelming majority in favour of

these tests forming the basis of the examination and becoming the accepted standard practice for a candidate faced with this task.

The examiners were split when faced with the more traditional clinical tests: 50% indicated the Trendelenburg test and cough impulse should be undertaken and 57% believed the tap test should form part of the examination of varicose veins. Although this is not a small proportion, it does not give the conclusive evidence that is shown by the figures related to clinical and HHD examination.

We received 36 responses from the BSTs (51%). The responses are summarised in Table 2. The majority of the responses (50%) came from 2nd-year BSTs. It would be these trainees who would be about to take the clinical exam and we felt that this would, therefore, be true representation of experience with HHD at the time of taking the examination. Of the BSTs who responded, 53% (19) felt they could examine varicose veins with HHD and 44% (16) had held a vascular SHO post, including general and vascular posts. Of the 19 BSTs that felt they could examine varicose veins with HHD, 74% (14) had held a vascular SHO post.

Discussion

HHD was introduced into the out-patient surgical assessment of varicose veins in 1992 as a simple, non-invasive technique.⁷ Gradually, this led to many consultant surgeons totally abandoning the use of the Trendelenburg, cough, tap

Table 2 Summary of the BSTs' responses

What year SHO are you?	1 28% (10)	2 50% (18)	3 22% (8)
	Yes	No	
Have you held a vascular post?	44% (16)	56% (20)	
Can you use a HHD to assess varicose veins?	53% (19)	47% (17)	

and Perthes tests and declaring them unreliable and obsolete.^{3,5,8} In 1999, members of the Vascular Surgical Society surveyed the management of varicose veins by vascular and general surgeons and found 65% of surgeons were routinely using HHD to assess varicose veins.⁹ They went on to suggest that the use of HHD in the initial assessment of varicose veins is advisable.⁹ As far back as 1995, some have suggested that the standard of medical practice requires that any physician who treats varicosities needs to be competent with Doppler ultrasound.⁶

It is accepted that colour duplex scanning is the gold standard in planning surgery for varicose veins^{8,10} and improves long-term outcome,¹¹ but many have supported the opinion that HHD increases the accuracy of the examination of varicose veins.^{4,12,13} The HHD is now firmly established as part of the vascular surgeon's routine examination of varicose veins, with some centres now progressing to the use of portable duplex scanners in the vascular laboratory or out-patient setting.

The accuracy of the HHD is limited in the popliteal fossa due to the complex anatomy of veins in this area.^{13,14} However, many studies have investigated the accuracy of HHD in identifying venous reflux and directly compared this to the traditional tests.^{3-5,9,13} Campbell *et al.*⁵ demonstrated that when using a HHD reflux was correctly detected in the long saphenous vein in 91% of cases, and 71% of cases at the SPJ. Although lower for the SPJ, it did correctly exclude reflux in 90% of cases.⁵ These values agree with other published data giving HHD a sensitivity and specificity of 92% and 94%, respectively, for assessing incompetence at the SFJ.¹⁵ Kim *et al.*⁴ directly compared the sensitivity and specificity of HHD against the more traditional tests and found them to be inaccurate as compared to HHD in localising sites of reflux. The respective specificity and sensitivity for the Trendelenberg, cough and tap tests were, 0.91 and 0.15, 0.59 and 0.67 and finally, 0.18 and 0.924. In contrast to this, the respective specificity and sensitivity of HHD assessment of the SFJ, LSV and SPJ were 0.97 and 0.73, 0.82 and 0.92 and finally, 0.80 and 0.904.

Our study of English College Court examiners with a declared vascular interest backs up the evidence-based recommendations that, in the light of easily accessible HHD, the older tests are now obsolete. The general opinions expressed by the additional comments of the examiners were that they all used HHD in the clinical setting of the out-patient department and expect their registrars and SHOs to do the same. They did state that candidates should, however, be aware of the principles behind the traditional tests and their limitations. Additional comments also raised the opinion that HHD is less tiring for the patients and, if the candidate provides an appropriate description and diagnosis based on their clinical examination, they should not be failed for the inability to use HHD. In light of this evidence

and the clear opinions of experienced examiners, the future intercollegiate MRCS examination, surgical courses and textbooks should be updated to reflect this change in what is now the accepted standard practice for examining varicose veins.

It is important to clarify that this paper solely reflects the opinions of the 14 College Court examiners with a declared interest in vascular surgery. We are aware that, if we had canvassed the opinion of the whole court of examiners, the response may have been very different, as many of the examiners based in other specialities may not be familiar with the technique. In the clinical examination, a vascular examiner is invariably paired with a non-vascular examiner in the vascular bay; as examination of the venous system now lies within the sub-speciality of vascular rather than general surgery, we believe that suggested changes in this area should be specifically vascular surgery driven. It is within this field that the current expertise lies and explains why we only chose this select group of examiners. We believe the specialist opinions documented, in combination with the outlined evidence, can act as an educational reference and point for debate not only for the MRCS candidates, but also for examiners who are not as experienced in this evolving field.

There is no published data on the experience of surgical trainees with HHD in assessing varicose veins. As we assumed the majority of BSTs who were able to use HHD had held a vascular SHO post (74%), but otherwise it was unlikely that the BST would be comfortable with this skill. Only 53% of the trainees questioned believe they could use HHD to assess varicose veins. We accept the response rate from the BSTs was poor as compared to the examiner group, and we did consider repeating the questionnaire in the group that did not reply. Due to the practical difficulties of gaining new contact details for these trainees who had rotated to their next training post, we did not re-send the questionnaire. We felt that any additional responses we may receive from a second E-mail would not significantly change our conclusions. In interpreting the results, it may be considered that the actual percentage of BSTs who can use HHD is lower than the 53% quoted here. This figure may be artificially elevated due to a positive response bias, with the BSTs who can use HHD being more likely to respond to the questionnaire.

If the opinions we have put forward are incorporated into the MRCS syllabus then the BSTs who do not hold a vascular post prior to their clinical examination will have to seek out exposure to teaching and experience of HHD assessment of varicose veins. As mentioned previously, we would emphasise that, in order to aid the education of the trainees, the HHD should replace traditional tests in surgical textbooks, educational courses and as part of standard practice, not only at the basic surgical training level but also

the undergraduate level. The implementation of this change in education may be enabled by the incorporation of this skill into the undergraduate and intercollegiate MRCS syllabuses. As a minimum requirement, we would suggest that all BST training establishments should train SHOs in the use of HHD in the examination of varicose veins. This change to the clinical examination has been suggested in a letter to the *Annals*¹⁵ and we agree that the use of HHD now lies within the remit of basic surgical training and no longer constitutes a vascular higher specialist training skill.

The study may be limited by relatively small numbers but we feel that the data reflect the general opinion and experience held on a wider scale. To improve the validity of the study, it would be necessary to question all the intercollegiate MRCS examiners with a declared vascular interest along with a cohort of candidates at the time of their clinical MRCS examination.

Conclusions

The Brodie-Trendelenburg (tourniquet) test, cough impulse and tap test are outdated but candidates should be aware of the principles behind them. MRCS clinical section candidates should examine varicose veins by means of clinical examination and HHD. To aid candidate education, HHD technique should replace the traditional clinical tests taught in text books and on education courses.

Acknowledgements

We would like to acknowledge and thank all the English College Court examiners with a declared vascular interest and the BSTs on the Yorkshire School of Surgery rotation who took the time to respond to the postal and E-mail questionnaires. The English College Court examiners who replied to the questionnaire were Mr M Wyatt, Professor C Shearman, Professor J Scott, Mr S Silverman, Mr S Andrews, Professor G Hamilton, Professor M Thompson, Mr K Lafferty, Mr K Poskitt, Mr F Smith, Mr N Aston, Mr R Sayers, Mr M Dennis and Mr R Greatorex. We would also like to thank Mr M Patterson, Chairman of the Court of Examiners of The Royal College of Surgeons of England, and Mr C Butler for reviewing this paper and guiding us on how to

express satisfactorily the vascular examiners' opinions. Finally, we would like to thank Robert Brackenbury, Intercollegiate MRCS Co-ordinator, and Breda Higgins, Surgical Course Co-ordinator for the Yorkshire School of Surgery, for sending out the postal and E-mail questionnaires and forwarding the responses.

References

1. Crane J, Cheshire N. Recent developments in vascular surgery. *BMJ* 2003; **327**: 911–5.
2. Lee AJ, Evans CJ, Allan PL, Vaughan Ruckley C, Fowkes FGR. Lifestyle factors and the risk of varicose veins: Edinburgh Vein Study. *J Clin Epidemiol* 2003; **56**: 171–9.
3. Campbell WB, Niblett PG, Ridler BMF, Peters AS, Thompson JF. Hand-held Doppler as a screening test in primary varicose veins. *Br J Surg* 1997; **84**: 1541–3.
4. Kim J, Richards S, Kent PJ. Clinical examination of varicose veins – a validation study. *Ann R Coll Surg Engl* 2000; **82**: 171–5.
5. Hoffmann WH, Toonder IM, Wittens CHA. Value of the Trendelenburg tourniquet test in the assessment of primary varicose veins. *Phlebology* 2004; **19**: 77–80.
6. Butie A. Clinical examination of varicose veins. *Dermatol Surg* 1995; **21**: 52–6.
7. Pleass HCC, Holdsworth JD. Audit of introduction of hand-held Doppler and duplex ultrasound in the management of varicose veins. *Ann R Coll Surg Engl* 1996; **78**: 494–6.
8. Campbell WB. Clinical and hand-held Doppler examination of primary varicose veins. *Ann R Coll Surg Engl* 2001; **83**: 287–8.
9. Lees TA, Beard JD, Ridler BMF, Szymanska T. A survey of the current management of varicose veins by members of the Vascular Surgical Society. *Ann R Coll Surg Engl* 1999; **81**: 407–17.
10. Mercer KG, Scott DJA, Berridge DC. Pre-operative duplex imaging is required before all operations for primary varicose veins. *Br J Surg* 1998; **85**: 1495–7.
11. Blomgren L, Johansson G, Bergqvist D. Randomised clinical trial of routine pre-operative duplex imaging before varicose vein surgery. *Br J Surg* 2005; **92**: 688–94.
12. Singh S, Lees TA, Donlon M, Harris N, Beard JD. Improving the preoperative assessment of varicose veins. *Br J Surg* 1997; **84**: 801–2.
13. Salaman RA, Salaman JH. Improving the preoperative assessment of varicose veins (Letter). *Br J Surg* 1997; **84**: 1748.
14. Abu-Own A, Coleridge Smith PD. Hand-held Doppler as a screening test in primary varicose veins (Letter). *Br J Surg* 1998; **85**: 424.
15. Posnett H, Derodra J. Hand-held Doppler to assess valvular incompetence – a new OSCE station? *Ann R Coll Surg Engl* 2004; **86**: 491–2.