

Eur J Vasc Endovasc Surg 31, 553–557 (2006)

doi:10.1016/j.ejvs.2005.05.016, available online at <http://www.sciencedirect.com> on SCIENCE @ DIRECT®

Return to Work Following Varicose Vein Surgery: Influence of Type of Operation, Employment and Social Status

A.P. Wright, D.C. Berridge and D.J.A. Scott*

Department of Vascular and Endovascular Surgery, St James's University Hospital, Leeds LS9 7TF, UK

Objectives. To determine factors which influence the time taken to return to work in patients undergoing varicose vein surgery.

Design. Prospective collection of data from patients at outpatient interview.

Setting. The Department of Vascular and Endovascular Surgery at a teaching hospital in the UK.

Participants. Two hundred and fifteen consecutive employed or self-employed patients attending the outpatient clinic for review following varicose vein surgery.

Methods. Data was collected from patients in the outpatient clinic approximately 6 weeks following varicose vein surgery. Type of procedure, gender, occupation status, category of occupation, the incidence of complications and the time taken to return to work (RTW) was recorded. Statistics were performed using Kruskal–Wallis H, Mann–Whitney U and chi-squared analysis.

Results. Two hundred and fifteen patients were included, 77 (36%) men and 138 (64%) women. One hundred and ninety-two (89%) were employed and 23 (11%) self-employed. One hundred and fifty-three underwent primary saphenofemoral (SFJ) surgery, 10 bilateral procedures, 23 primary saphenopopliteal surgery (SPJ), 14 redo operations, five combined SFJ and SPJ, two mid thigh perforator ligation, six phlebectomies without groin or popliteal surgery and two bilateral surgery for recurrence. There was no relationship of gender or incidence of complications to RTW. There was a significant difference ($p < 0.0001$) between employed (median RTW 4 weeks, interquartile range 2–5 weeks) and self-employed patients (median 2 weeks, interquartile range 1–4 weeks). Occupation category did show an overall significant difference ($p < 0.0001$) on Kruskal–Wallis H-testing. Paired Mann–Whitney U-analysis showed that this difference was between occupation class I (median RTW 2 weeks, interquartile range 1–3 weeks) and IIIN (median 3.5 weeks, interquartile range 2–5 weeks), IIIM (median 5 weeks, interquartile range 2–5 weeks), IV (median 4 weeks, interquartile range 2–6 weeks) and V (median 4 weeks interquartile range 3–6 weeks), and between class II (median 3 weeks, interquartile range 2–4 weeks) and classes IIIM, IV and V.

Conclusions. Employed patients and those involved in intensive manual labour are less likely to return to work early. There is no effect of gender or incidence of complications. On the basis of this study we would recommend that patients could return to work within 3 weeks of varicose veins surgery.

Introduction

Varicose vein surgery is a common surgical procedure, with over 100,000 operations performed in the NHS in the year 2003/2004.¹ The expected time to return to work (RTW) following surgery may impact upon work commitments, plans for convalescence (including childcare) or the absolute need for surgery. Mehta *et al.* reported that patients consider information regarding time taken to resume normal daily activities as of paramount importance, above information about potential risks and complications of the procedure

itself.² Several studies have demonstrated that RTW following laparoscopic cholecystectomy^{3,4} and inguinal herniorrhaphy⁵ is influenced by gender, employment status and physical intensity of work. Alternatives to conventional surgery include endovenous radio frequency ablation,⁶ ultrasound guided foam sclerotherapy⁷ and endovenous laser treatment.⁸ Early results imply a shortened period of convalescence compared to conventional surgery. They are, however, limited in their sample size and duration of long-term follow-up. One French study⁹ has examined the effect of social class and physical effort involved in work, on the convalescence period following varicose vein surgery. It has been demonstrated, however, that sick leave following other surgical procedures varies by country.^{3,10} The aim of this study was to evaluate

*Corresponding author. Mr D.J.A. Scott, Consultant Vascular Surgeon, Department of Vascular and Endovascular Surgery, St James's University Hospital, Leeds LS9 7TF, UK.
E-mail address: julian.scott@leedsth.nhs.uk

the factors which influence the RTW following day case varicose vein surgery in a single UK centre.

Materials and Methods

Over a period of 2 years, patients under the care of two consultant vascular surgeons (DJAS and DCB) attended the outpatient clinic for routine review approximately 6 weeks following day case varicose vein surgery. All patients in employment at the time of review were included. At the review, the surgeons recorded whether the patients were: (i) employed or self employed, (ii) their occupation, (iii) the time, in weeks, they took to return to work, (iv) whether they had experienced complications, (v) their gender and (vi) the surgical procedure performed. In the case of married women, their own occupation was recorded, rather than that of their husband. Occupation was categorised by a single author (APW) according to the registrar general's social scale¹¹ (Table 1). RTW was categorised into ≤ 1 , 2, 3, 4, 5 and ≥ 6 weeks.

Statistical analysis

Chi-squared analysis was used to test for association between RTW and gender and between the incidence of complications and return to work. For other analyses the data assumptions of the chi-squared test could not be met. The Mann–Whitney *U*-test was applied to employment status versus RTW. The Kruskal–Wallis *H*-test was used to test for an overall association between RTW and operation type and occupation class. Paired Mann–Whitney *U*-testing was used to determine how the groups differed. The software package SPSS was used for all statistical analyses. A value of $p < 0.05$ was taken to be statistically significant.

Results

A total of 307 patients were reviewed. Two hundred and fifteen patients, 77 (36%) men, and 138 (64%) women were included in the study. Ninety-two retired

Table 1. The registrar general's social scale

I	Professional
II	Managerial and technical
IIIN	Skilled non-manual
IIIM	Skilled manual
IV	Semi-skilled
V	Unskilled
VI	Armed forces

or unemployed patients were excluded. One hundred and ninety-two (89%) were employed and 23 (11%) self-employed (Table 2). The median patient age was 44 years (interquartile range 17 years).

Operative interventions

All operations were performed as a day case under general anaesthesia. Patients received a single dose of 20 mg enoxaparin (Clexane[®], Rhône-Poulenc Rorer, Kent) prior to surgery and a single dose of 750 mg of cefuroxime on induction. During surgery, a Flowtron Excel intermittent pneumatic compression boot (Huntleigh Healthcare, Luton) was applied to the non-operated leg. T.E.D. anti-embolism stockings (Tyco Healthcare, Gosport) were used in the early post-operative period. There were 153 cases of saphenofemoral junction ligation, great saphenous vein stripping with phlebectomies, 23 primary saphenopopliteal junction ligations with phlebectomies, two mid thigh perforator ligations and six phlebectomies alone. Ten patients underwent bilateral procedures including nine SFJ ligations and one unilateral SFJ ligation with contralateral MSA. There were 14 operations for recurrent varicose veins. Two patients underwent bilateral recurrent varicose vein surgery.

Employment status (Table 2)

Twenty-three (11%) patients described themselves as self-employed. The majority of patients belonged to occupation class V—unskilled manual.

Complications (Table 3)

Forty-nine patients (23%) experienced complications following surgery. There were two major complications (1%), one patient developed a deep vein thrombosis and another a pulmonary embolism. Forty-one (19%) cases were classified as minor including 17 cases (8%) of paraesthesia and 12 (6%) cases of superficial wound infection. Three patients complained of persistent pain after their surgery. The remaining minor complications occurred in single cases; bleeding from phlebectomy site, difficulty in walking, groin haematoma, hypotension, leg swelling, lymph leak, phlebitis, wound dehiscence and a thrombosed great saphenous vein. Six patients (2.3%) experienced events in the post-operative period, which although unrelated to surgery may have contributed to a more prolonged convalescence. They comprised an episode of acute gout, involvement in a

Table 2. Characteristics of patient population (N=214)

Age (year)	
Median (interquartile range)	44 (36–53)
Gender (%)	
Men	77 (36)
Women	138 (64)
Procedure (%)	
Primary SFJ	153 (71)
Primary SPJ	23 (11)
Bilateral procedures	10 (5)
Surgery for recurrence	14 (7)
Combined SFJ/SPJ	5 (2)
Bilateral recurrence ops	2 (0.9)
Phlebectomies	8 (4)
Occupation status (%)	
Employed	192 (89)
Self employed	23 (11)
Occupation class (%)	
I	20 (9)
II	33 (15)
IIIN	20 (9)
IIIM	38 (18)
IV	30 (14)
V	74 (35)
Complications (%)	
Minor	41 (19)
Major	2 (0.9)
Unrelated	6 (3)
Total	49 (23)

road traffic accident, undergoing herniorrhaphy soon after surgery, pregnancy, a throat infection and post-operative hypotension.

Return to work

The overall median time to return to work was 3 weeks (interquartile range 2–5 weeks). Mann–Whitney *U*-analysis demonstrated that self-employed patients were more likely to return to work early than employees ($p < 0.001$). Kruskal–Wallis *H*-testing of occupation class and RTW showed a significant association ($p < 0.001$, Table 4). To determine where the difference occurred groups were subjected to the Mann–Whitney *U*-test in pairs. This demonstrated that patients in occupational class I (professional, median RTW 2 weeks, interquartile range 1–3 weeks) return to work significantly earlier than patients in classes IIIN (skilled non-manual, median 3.5 weeks, interquartile range 2–5 weeks), IIIM (skilled manual, median 5

Table 3. Complications following surgery

	Number (%)	Return to work (weeks)	
		Median	Interquartile range
None	166 (77%)	3	2–5
Minor	41 (19%)	4	2.5–6
Major	2 (1%)	6	5–12
Unrelated	6 (3%)	5.5	3–9.25

Table 4. Influence of social class on return to work

Social class	Number (%)	Return to work (weeks)	
		Median	Interquartile range
I	20 (9%)	2	1–3
II	33 (15%)	3	2–4
IIIN	20 (9%)	3.5	2–5
IIIM	38 (18%)	5	2–5
IV	30 (14%)	4	2–6
V	74 (34%)	4	3–6

weeks, interquartile range 2–5 weeks), IV (semi-skilled, median 4 weeks, interquartile range 2–6 weeks) and V (unskilled, median 4 weeks interquartile range 3–6 weeks). In addition patients in class II (managerial/technical, median 3 weeks, interquartile range 2–4 weeks) return significantly earlier than classes IIIM, IV and V. Kruskal–Wallis analysis suggested an association between type of surgical procedure and RTW ($p < 0.001$, Table 5). Again, paired Mann–Whitney *U*-analysis was used to determine the nature of this association. Patients who had undergone bilateral surgery took significantly longer to return to work than patients in all other procedure groups (median 6 weeks, interquartile range 4–6 weeks), with the exception of those who had undergone combined saphenofemoral and saphenopoliteal surgery (median 4 weeks, interquartile range 4–6 weeks).

Women tended to return to work earlier than men (median 3.5 weeks and 4 weeks, respectively) although this difference was not significant (chi-squared analysis, $p = 0.1$). Patients who had experienced complications returned to work later than those who did not (median 4 weeks and 3 weeks, respectively, Table 3), again this trend was not significant ($p = 0.3$).

Discussion

Although surgeons may feel confident in counselling patients pre-operatively regarding their expected period of convalescence following varicose vein

Table 5. Influence of surgical procedure on return to work

Procedure	Number (%)	Return to work (weeks)	
		Median	Interquartile range
SFJ	153 (71%)	4	2–5
SPJ	23 (11%)	3	3–6
Bilateral procedure	10 (5%)	6	4–6
Combined SFJ/SPJ	5 (2%)	4	4–6
MSA/MTP	8 (4%)	2	1–3
Redo procedure	14 (7%)	3	2–4
Bilateral redo procedure	2 (1%)	4	3–5

surgery, this study addresses the influence of gender, employment status, occupation class, type of surgery and complications on return to work. Vaislic *et al.* found that within the French population civil servants and those whose occupation involved considerable physical effort were less likely to return to work within 2 weeks.⁹ No analysis was made of the effect of gender, the incidence of complications, the type of surgery, bilateral or unilateral procedures or surgery for recurrence. Our results agree with the findings of studies addressing return to work following laparoscopic cholecystectomy^{3,4} and open mesh repair of inguinal hernias.⁵ Self-employed patients return to work earlier than patients working for an employer, and that those involved in manual labour return later than those involved in less physical occupations.

It is estimated that one third of patients with varicose veins have bilateral disease.¹² Shamiyeh *et al.* found no difference in return to work between patients undergoing unilateral and bilateral primary varicose vein surgery under spinal anaesthesia.¹³ Our results demonstrate a significantly longer RTW following bilateral operations. There are many reasons why this may be the case. These results should be viewed with caution in the light of the small number of patients who had undergone bilateral procedures. These patients were not randomly chosen and would have had a part in the decision to embark on bilateral surgery. Factors influencing this decision may similarly influence the decision to return to work.

In the UK, patients self-certify for the first week of sick leave and beyond this further certification has to be sought from the general practitioner. McLauchlan *et al.* found that after laparoscopic cholecystectomy patients were advised to remain off work from anywhere between 1 and 8 weeks depending on the opinion of their GP.⁴ Rider *et al.* reported that most commonly the GP decided on when to return to work following inguinal hernia repair in heavy manual workers.¹⁴ In those performing light work, however, the decision was taken without consultation and these patients returned to work significantly earlier. Assuming these findings apply to the advice given to patients following varicose vein surgery, this may contribute to the wide range in RTW we observed. When a patient consults a GP regarding their convalescence these consultations may be predominantly patient led, with the patient having a clear idea of whether they are fit to return to work. Requests for extended periods of sick leave may be difficult to confront without jeopardising the doctor patient relationship.¹⁵ Surgeons recommending a provisional date when the patient may be

reasonably expected to return to work and communicating this to the GP may overcome these difficulties.

Studies examining RTW in different countries following the same surgical procedure have suggested reasons for variation between countries may relate to differences in financial compensation for sick leave. Vitale *et al.* looked at RTW following laparoscopic cholecystectomy in groups of American and French patients.¹⁰ Although the duration of post-operative discomfort was similar between both groups, overall French patients took longer to return to work. A higher proportion of French patients were employed in institutions that allowed for between 6 and 8 weeks paid leave of absence after surgery.

The time taken to return to work following varicose vein surgery impacts upon both the patient and society as a whole. A shortened period of convalescence has been used as justification for the development of novel techniques of varicose vein ablation. In the case of endovenous radio frequency obliteration patients must return to work 3.2 days earlier than those undergoing conventional surgery in order for the procedure to be cost effective.⁶ In European phase III trials of the microfoam sclerosant Varisolve (Provensis, Middlesex) patients treated with microfoam sclerotherapy returned to normal activities after only 2 days, compared with 13 days for those treated surgically (David Wright. 2003 UIP World Congress Chapter Meeting, San Diego, California). Our results make it difficult to explain differences in RTW in terms of a lower morbidity associated with novel techniques, as we did not demonstrate an association between the occurrence of complications and delay in RTW. It may be that patients willing to be recruited into such trials may not accurately reflect the typical demographic constitution of the population. Trials concerning novel treatments for varicose vein surgery should include information about the socio-economic background and employment status of their participants when suggesting early return to work as a benefit.

Our results imply that the factors that influence when a patient returns to work are independent of the procedure performed and outside the control of the operating surgeon.

Acknowledgements

The authors would like to thank Dr M. Bennett, Chapelthorpe Medical Centre, Standing Lane, Wakefield WF2 7GP for his comments on the manuscript.

References

- 1 Department of Health Hospital Episode Statistics; 2003–2004 [www.dh.gov.uk].
- 2 MEHTA S, POWELL L, COOPER JC. What patients really want to know about their surgery. *Ann R Coll Surg Engl (Supp)* 2003; **85**:360–363.
- 3 FROMM P, MELAMED S, NATIV T, GOFER D, FROMM J. Low job satisfaction predicts delayed return to work after laparoscopic cholecystectomy. *J Occup Environ Med* 2001; **43**(7):657–662.
- 4 McLAUHLAN GJ, MACINTYRE IM. Return to work after laparoscopic cholecystectomy. *Br J Surg* 1995; **82**(2):239–241.
- 5 JONES KR, BURNEY RE, PETERSON M, CHRISTY B. Return to work after inguinal hernia repair. *Surgery* 2001; **129**(2):128–135.
- 6 RAUTIO T, OHINMAA A, PERALA J, OHTONEN P, HEIKKINEN T, WIIK H *et al*. Endovenous obliteration versus conventional stripping operation in the treatment of primary varicose veins: a randomized controlled trial with comparison of the costs. *J Vasc Surg* 2002; **35**(5):958–965.
- 7 CABRERA J, CABRERA Jr J, GARCIA-OLMEDO MA. Sclerosants in microfoam. A new approach in angiology. *Int Angiol* 2001; **20**(4):322–329.
- 8 NAVARRO L, MIN RJ, BONE C. Endovenous laser: a new minimally invasive method of treatment for varicose veins—preliminary observations using an 810 nm diode laser. *Dermatol Surg* 2001; **27**(2):117–122.
- 9 VAISLIC C, CLERC P, CLOITRE G, DAN J, DE TILLY I, ESCALARD JM *et al*. Return to work after surgical treatment of varicosities of the lower limb. *Phlebologie* 1992; **45**(2):159–165.
- 10 VITALE GC, COLLET D, LARSON GM, CHEADLE WG, MILLER FB. Interruption of professional and home activity after laparoscopic cholecystectomy among French and American patients. *Am J Surg* 1991; **161**:396–398.
- 11 OPCS. *Classification of occupations 1980*. London, HMSO, 1980.
- 12 RIVLIN E, HADDAD M, LANDAU O, NUDELMAN I, ZELIKOVSKI A. Bilateral versus unilateral high ligation and stripping of the greater saphenous vein for varicose veins. *Vasa* 1991; **20**(3):267–269.
- 13 SHAMIYEH A, SCHRENK P, WAYAND WU. Prospective trial comparing bilateral and unilateral varicose vein surgery. *Langenbecks Arch Surg* 2003; **387**(11–12):402–405.
- 14 RIDER MA, BAKER DM, LOCKER A, FAWCETT AN. Return to work after inguinal hernia repair. *Br J Surg* 1993; **80**:745–746.
- 15 HUSSEY S, HODINTOTT P, WILSON P, DOWELL J, BARBOUR R. Sickness certification system in the United Kingdom: qualitative study of views of general practitioners in Scotland. *BMJ* 2004; **328**:88–91.

Accepted 22 May 2005
Available online 7 February 2006