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International Variations in Infrainguinal Bypass Surgery – A VASCUNET Report

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WHAT THIS PAPER ADDS

- This is the largest international series of infrainguinal bypass operations to be published and gives insight into variations in practice across the globe. The paper provides information on surgery in different countries, the proportions performed for claudication and critical ischaemia, the types of graft used, risk factors, demographics and outcomes.

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ABSTRACT

Objectives: To compare practice in lower limb bypass surgery in nine countries.
Design: A prospective study amalgamating and analysing data from national and regional vascular registries.
Methods: A table of data fields and definitions was agreed by all member countries of the Vascunet Collaboration. Data from January 2005 to December 2009 was submitted to a central database.
Results: 32,084 cases of infrainguinal bypass (IIB) in nine countries were analysed. Procedures per 100,000 population varied between 2.3 in the UK and 24.6 in Finland. The proportion of women varied from 25% to 43.5%. The median age for all countries was 70 for men and 76 for women. Hungary treated the youngest patients. IIB was performed for claudication for between 15.7% and 40.8% of all procedures. Vein grafts were used in patients operated on for claudication (52.9%), for rest pain (66.7%) and tissue loss (74.1%). Italy had the highest use of synthetic grafts. Among claudicants 45% of bypasses were performed to the below knee popliteal artery or more distally. Graft patency at 30 days varied between 86% and 99%.
Conclusions: Significant variations in practice between countries were demonstrated. These results should be interpreted alongside the known limitations of such registry data with respect to quality and completeness of the data. Variation in data completeness and data validation between countries needs to be improved for useful international comparison of outcomes.

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Introduction

Infrainguinal bypass (IIB) surgery is one of the most common procedures in vascular surgery and has been well described and studied for decades. One might expect practice and outcomes to be uniform throughout the world. In the last few years the members of several large national vascular registries have collaborated to compare vascular procedures at a national level through the Vascunet Committee of the European Society of Vascular Surgery.

Vascunet was originally formed by a group of enthusiasts as a working group within the European Society for Vascular Surgery to exchange ideas and promote discussion between those responsible for the National Registries and other interested individuals in Europe.[1] Previous non-peer reviewed publications[2,3] have demonstrated that amalgamation and analysis of vascular outcome data is possible at an international level and important geographical differences in demographic data have been highlighted. For this type of international comparison to be valuable however it is necessary to ensure a common dataset so that data comparison between countries is valid. With this in mind further work has been undertaken since the initial publications to define a standardised dataset across all the countries taking part in the collaboration.

This paper presents the analysis of amalgamated data on IIB from nine contributing countries in Europe and Australasia. Data from over 32,000 vascular patients have been analysed making this the largest database of its kind. In order to improve the validity of comparisons and ensure contemporary data, we have restricted the analysis to the last five years.

Methods

The dataset to be collected was agreed between all the participating countries. The aims of this were to keep the dataset to a minimum whilst providing useful comparative data, but also to include data fields which are collected by the majority of countries in the collaboration. It was accepted that due to the national variations in vascular data registries that not all countries would be able to contribute data in all fields. It was agreed however that national audit committees would be encouraged to adapt their own datasets in the future to include the minimum international dataset, a process that has been ongoing since 2005. Data collected was combined data from years prior to the commencement of this study and prospective data following the inception of the study up to 31st December 2009.

The defined dataset is shown in Table 1, and is available via the Vascunet website (www.esvs.org/social/vascunet). Interventions on existing bypasses were not included but repeat bypass grafts in patients who had had some other previous intervention were included.

Following definition of the dataset a data entry template was provided to each participating country and this was used for submission of national data to the international database. Data was submitted for patients admitted between 1st January 2005 and 31st December 2009.

Once the data was received from each country this was sorted and amalgamated into a single spreadsheet for analysis. The datasheet was then returned to each country for error checking and validation in order to ensure that no errors had occurred during

Table 1
Dataset with numbers of responses for each datafield by country.

	Australia	Denmark	Finland	Hungary	Italy	Norway	Sweden	Switzerland	UK
Age	2384	3962	1848	1358	10,279	1445	4793	1787	4236
Gender	2386	3962	1845	1363	10,279	1445	4793	1790	4235
Admission date	2385	3954	1848	0	10,279	1445	0	1741	4236
Admission mode	2379	3944	1710	1363	10,279	1445	4673	0	4220
Diabetes	2294	3935	1794	0	10,279	1445	4676	1790	3752
Cardiac history	0	3928	1781	0	10,279	1445	4624	1790	3788
Current smoker	2268	3884	1594	0	10,279	1445	4070	1790	3063
Pulmonary history	0	3929	1773	0	10,279	1445	4603	1790	0
Cerebrovascular event history	0	3922	1776	0	0	1445	4580	1790	0
Hypertension history	2291	3909	1787	0	10,279	1445	4590	1790	0
Indication	2386	3962	1848	1360	10,279	1445	4793	1790	3824
Side of operation	2374	3962	1824	0	10,279	1445	4790	1719	3706
ABI	0	2969	533	0	0	776	3521	772	1627
Previous ipsilateral intervention	0	3957	1847	1363	0	1445	0	1790	3265
Operation date	2386	3962	1847	1363	10,279	1445	4793	1790	4203
Proximal anastomosis site	2243	3962	1846	1363	0	1445	4585	1772	3701
Distal anastomosis site	2386	3962	1835	1362	0	1445	4625	1541	3701
Graft type	2386	3962	1848	1363	10,279	1445	4793	1790	4236
Graft type further detail	2025	2619	1074	562	1037	0	738	1152	0
Additional open procedure	2386	0	1847	1363	0	0	1141	0	2435
Additional endovascular procedure	0	0	1847	1363	0	0	1141	0	0
Wound complication	0	3905	408	1363	0	1445	4043	1790	2823
Haemorrhage	40	3900	1790	1363	0	1445	4043	1790	3171
Compartment syndrome	0	3912	124	0	0	1445	4044	1790	0
Graft patent at discharge	0	3916	1381	1342	0	1346	0	1569	0
Graft patent at 30 days	2384	0	1845	0	0	812	4606	1569	0
Amputation	2384	3962	1781	1363	0	1431	4718	1790	3212
Post treatment ABI	0	2358	323	0	0	775	2830	0	0
Acute coronary event	186	3912	1133	1363	0	1445	4041	1790	3111
Major stroke	52	3912	1135	253	0	113	4041	1790	2786
Discharge date	2386	3917	1828	0	0	1445	0	1747	3829
Died within 30 days of surgery	2386	3951	1778	1363	10,279	1445	3687	1395	4232
Date of death	0	1305	85	0	86	28	1394	47	145
Is post op data based on hospital discharge or 30 days?	2386	0	1848	1363	0	1432	4793	1790	4236