Role of language discordance in complication and readmission rate after infrainguinal bypass

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ABSTRACT

Objective: Studies have shown that language discordance between treatment teams and patients leads to worse patient outcomes, including longer hospital stays, higher rates of readmission, impaired comprehension of discharge instructions, and lower treatment adherence. Yet, there is a paucity of data evaluating the effects of language discordance on postoperative outcomes among vascular surgery patients. This study compared 30-day postoperative complications and readmissions after nonemergent infrainguinal bypass between non-English-speaking (NES) and English-speaking (ES) patients.

Methods: Consecutive patients who underwent nonemergent infrainguinal bypass for claudication, ischemic rest pain, and tissue loss at an urban, academic medical center between 2007 and 2014 were identified. Patients were stratified into NES or ES groups by their self-identified primary language. Crude comparisons and multivariable analyses were performed to assess the association of primary language status with 30-day wound infections, adverse graft events (wound infections, graft thromboses, or hematomas), readmissions, and Emergency Department return visits.

Results: The study included 261 patients who underwent an infrainguinal bypass: 51 NES and 210 ES patients. The NES patients were older (67.4 ± 9.8 vs 63.1 ± 9.9 years; $P = .005$) and had a higher rate of diabetes (78.4% vs 58.6%; $P = .009$) and a lower rate of chronic obstructive pulmonary disease (5.9% vs 28.6%; $P = .001$). Other comorbidities were comparable between the two groups. The NES patients were more likely to be Medicaid beneficiaries (51.0% vs 21.4%; $P < .001$). Across all outcomes compared, crude analyses showed no significant difference between NES and ES patients. Adjusted analysis revealed that language discordance did not affect the odds of adverse outcomes of wound infections (odds ratio [OR], 1.87; 95% confidence interval [CI], 0.90-3.88; $P = .095$), adverse graft events (OR, 1.23; 95% CI, 0.62-2.45; $P = .556$), readmissions (OR, 1.51; 95% CI, 0.77-2.95; $P = .478$), or Emergency Department return visits (OR, 1.28; 95% CI, 0.58-2.83; $P = .546$).

Conclusions: Our study suggests that language discordance does not affect 30-day complication and readmission rates after infrainguinal bypass. (J Vasc Surg 2017;■:1-6.)

The United States (U.S.) is a diverse nation of residents from various cultural, ethnic, and linguistic backgrounds. The 2011 American Community Survey obtained by the U.S. Census found that nearly 60.6 million residents speak a language other than English at home, and 41.8% identified themselves as having limited English proficiency or speaking English less than "very well."[1] Contemporary projections suggest that linguistic diversity in the U.S. will only continue to grow in the coming years.[2] Therefore, with mounting globalization and human migration, members of the medical treatment team—including physicians, nurse practitioners, physician assistants, nurses, and other healthcare providers—are increasingly faced with the challenges of providing care to patients whose primary language is not English.

Language discordance occurs when patients and providers do not speak the same language and has been well described to negatively influence patient-provider communication and health outcomes.[3,4] Studies have demonstrated that language discordance in the health care setting is associated with longer stays in the Emergency Department (ED), greater number of diagnostic studies, higher risk for unscheduled ED return visits, increased likelihood of hospital admission, longer inpatient stays, higher rates of readmission, worse comprehension of discharge instructions, poorer treatment adherence, and lower overall patient satisfaction.[4-17] Incorporation of professional interpreter services to the treatment team has been shown to reduce the inpatient length of stay (LOS), increase patient satisfaction, and improve other clinical outcomes; however, studies reveal that such resources are still infrequently used.[18-24]

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Language discordance between patients and providers is an issue that can be identified and intervened on to achieve the best possible surgical outcomes. Yet, there is a paucity of data evaluating the effects of language discordance on postoperative outcomes among vascular surgery patients. Therefore, the objective of this study was to investigate the effects of language discordance on outcomes after nonemergent infrainguinal bypass at our institution. We hypothesized that language discordance would increase the risks of morbidity after nonemergent infrainguinal bypass.

METHODS

The Boston University School of Medicine Institutional Review Board approved this study. The need for individual patient consent was waived.

Study design. Hospital medical records for all consecutive patients who underwent nonemergent infrainguinal bypass at Boston Medical Center between July 2007 and July 2014 were retrospectively reviewed. Patients were identified with Current Procedural Technology (American Medical Association, Chicago, Ill) codes for infrainguinal bypass with manual review of their medical record.

Patient selection. We identified all consecutive patients who underwent nonemergent infrainguinal bypass for indications of claudication, ischemic rest pain, and tissue loss between July 2007 and July 2014 using the Current Procedural Terminology codes for lower extremity revascularization (35556, 35566, 35570, 35571, 35583, 35585, 35587, 35656, 35666, and 35671). All patients are asked to select a "primary/preferred language" at hospital admission, and this information was prospectively recorded in the hospital electronic medical record database.

Variables and outcome definitions. Patients undergoing nonemergent infrainguinal bypass were stratified into two groups: non-English-speaking (NES; or those who listed a language other than English as their primary/preferred language) or English-speaking (ES). Demographic variables examined included age, gender, race, ethnicity, body mass index, smoking status, and insurance status. Medical comorbidities analyzed included hypertension, coronary artery disease, congestive heart failure, chronic obstructive pulmonary disease, cerebrovascular accident, diabetes mellitus, dialysis dependence (identified patients who required peritoneal dialysis or hemodialysis ≤30 days before the index procedure), and history of ipsilateral peripheral vascular intervention or bypass.

Outcomes evaluated included postoperative hospital LOS, 30-day wound infections (dehiscence and superficial, deep, and organ space surgical site infection), 30-day adverse graft events (wound infections, graft thromboses, or hematomas), unplanned readmissions ≤30 days, and ED return visits ≤30 days.

Statistical analysis. Bivariate comparisons of baseline patient demographics, comorbidities, procedural variables, and outcome measures between NES and ES groups were achieved by using the χ^2 test for categoric variables and the unpaired *t*-test for continuous variables. Variables with $P < .2$ and those considered to be clinically significant were entered in the multivariable regression models. Variables considered as possible confounders were age, gender, race, ethnicity, insurance status, current tobacco use, coronary artery disease, congestive heart failure, chronic obstructive pulmonary disease, cerebrovascular accident, renal failure, diabetes mellitus, urgency of case, outflow artery, and graft type. Logistic regression was used to compare 30-day wound infections, 30-day adverse graft events, readmissions ≤30 days, and ED return visits ≤30 days. The effect was expressed by odds ratio (OR) with corresponding 95% confidence intervals (CIs). Multivariable gamma regression was used to compare the groups on mean hospital LOS, and the effect was expressed by means ratio (MR) with corresponding 95% CI. The MR intuitively expresses relationship on a multiplicative scale or as a percentage change. Statistical significance was defined as $P < .05$. Statistical analyses were performed using SAS 9.3 software (SAS Institute Inc, Cary, NC).

RESULTS

During the study period, 324 patients underwent nonemergent infrainguinal bypass for indications of claudication, rest pain, and tissue loss at our institution. We excluded 48 patients with missing primary language data, 14 patients who received revision jump grafts, and a patient who underwent a bilateral procedure. The remaining 261 patients included in the final analysis were stratified into NES and ES groups by their primary/preferred language status. Of these, 210 (80%) were listed as ES patients. The major languages of the 51 NES patients (20%) included Spanish, Portuguese Creole, Haitian Creole, Albanian, and smaller numbers of others (Fig 1).

Patients in the NES cohort were older and were more likely to be Hispanic or Latino in ethnicity and to be Medicaid beneficiaries. They had comparable perioperative comorbidities with patients in the ES cohort, except for a higher rate of diabetes and lower rate of COPD. Although the difference in the type of bypass graft used between the two groups was not significant, infrapopliteal bypass procedures were performed more commonly in NES patients (Table).

Analysis of outcomes after infrainguinal bypass between NES and ES patients revealed no significant difference in postoperative hospital LOS (11.2 ± 8.1 vs 9.4 ± 8.8 days; $P = .202$), 30-day wound infection