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Using a multimedia presentation to improve patient understanding and satisfaction with informed consent for minimally invasive vascular procedures

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ABSTRACT

Objective: As vascular procedures become more complex, patient understanding of their treatment(s) can become more difficult. We wished to evaluate the utility of multimedia presentations (MPs) to improve patient understanding of their vascular interventions.

Methods: Patients undergoing endovascular aneurysm repair (EVAR), peripheral angioplasty, Hickman catheter and peripherally inserted central catheter (PICC) insertion were randomized into a control group receiving traditional verbal consent, and a MP group that were shown a two minute simplified video of their procedure on an iPad™ computer in addition to the traditional verbal consent. After obtaining consent, all patients completed a questionnaire assessing their comprehension of the procedure, and satisfaction with the consent process. Satisfaction was rated on a 5 point Likert scale with 5 being 'very helpful' in understanding the procedure.

Results: Ninety-three patients were recruited for this study, 62% of which were male. The intervention significantly increased total comprehension in all procedure types controlling for procedure type (multimedia vs. control; $F = 9.14$, $P = .003$). A second ANOVA showed there was a significant main effect by intervention ($F = 44.06$, $p < .000$) with those in the intervention group showing higher overall satisfaction scores after controlling for surgery type.

Conclusion: This study suggests that patients find the use of MP during the consent process to be helpful in patient understanding and that there is improved satisfaction. Given the rapid rate of innovation in vascular interventions, increased regular use of MPs to help patients understand their procedures would be beneficial in the care of patients undergoing vascular interventions.

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Introduction

Vascular interventions are becoming increasingly complex as advances in technology and the emergence of minimally invasive interventional procedures add to the armamentarium for vascular specialists, who traditionally used primarily open techniques. Increasingly, heterogeneous local populations with diverse cultural backgrounds present challenges in communication and understanding of these procedures. These factors have caused the traditional informed consent process to become more difficult for vascular interventions.¹

Traditionally, informed consent is obtained for procedures using the didactic method, where the treating physician verbally explains the nature, risks and benefits of the procedure to the patient. The patient is given the opportunity to ask questions, and then signs a consent form that he understands what has been explained to him/her. Due to the complex nature of surgical and interventional procedures, this method results in varying levels of understanding of the procedure by the patient.¹

Multimedia-based presentations (MP) of surgical and interventional procedures are now easily accessible with advancements in tablet computers and smartphones and have been evaluated in such surgical fields as orthopedic surgery.^{2–4} However, the vascular surgery population is different and often older, and frequently has a complex series of comorbidities. This pilot study aimed to examine the feasibility of using MP during the consent process for vascular interventions, and to determine whether utilization of a MP can enhance patient understanding and satisfaction with the informed consent process.

Patients and methods

Patient selection

Patients undergoing first-time intervention for peripherally inserted central venous catheter (PICC), Hickman catheter insertion, peripheral angioplasty with or without stenting, or endovascular aneurysm repair (EVAR), were invited to participate in this investigation. Each patient who agreed to participate was required to sign an informed consent document prior to initiation of the study procedure. The inclusion and exclusion criteria are listed in [Table 1](#). Prior to the procedure, each patient was randomized to either the MP group or the control group using the sealed envelope technique. Results were calculated using simple average scores, comparing between the different groups. Ethical approval for the trial was granted by the UHN Office for Research Ethics Committees (11-0930-BE).

Multimedia-based presentation

The Multimedia-based presentations (MP) consist of a two minute computer-generated video for each procedure that was loaded onto an iPad™ tablet computer (Apple Inc., Cupertino, CA). The MPs were produced by the device

Table 1 – Inclusion and exclusion criteria.

Inclusions criteria	Exclusion criteria
<ul style="list-style-type: none"> - Receiving one of the following procedures for the first time: <ul style="list-style-type: none"> • Peripherally inserted central venous catheter (PICC), • Hickman catheter insertion, • Peripheral angioplasty with or without stenting, or • Endovascular aneurysm repair (EVAR). - 18 years of age or older - Able to speak and understand the English language 	<ul style="list-style-type: none"> - Unable to understand English language - Not receiving a vascular intervention for the first time

manufacturers, but were unbranded for the purposes of this study. The MPs depicted a simplistic visual of the anatomy, the instruments, and the steps involved in the procedure. The videos did not contain audio.

Questionnaires

Questionnaires were developed to assess patient understanding and satisfaction during the consent process. The first section of the questionnaire assessed patient understanding of the procedure with a 5 question True/False test based on relevant questions to the procedure. The second section assessed patient satisfaction with the consent process and the use of a MP during informed consent.

Consent process

For all patients involved in the study, informed consent was obtained prior to the interventional procedure by a staff physician using the traditional didactic consent method using a standardized approach. Using randomization by the sealed envelope technique, half of the participants were then assigned to the MP group, and half were assigned to the control group. The MP group was shown the MP video after the didactic session by a medical student. All participants filled out the appropriate questionnaire, assessing their level of comprehension of the procedure and their satisfaction with the consent process.

2 × 4 ANOVAs were undertaken to look at the effects of treatment (Control vs. multimedia intervention) and procedure type on the outcomes of total comprehension and total satisfaction. Tests of ANOVA assumptions and outlier analysis were undertaken using standard procedures. Post-hoc tests were used as appropriate. Chi-square analysis was used to compare the equality of groups when it came to procedure type, and a univariate analysis was used as a post-hoc analysis to confirm one key finding.

Results

Ninety three participants were recruited for the study ([Table 2](#)), with twenty patients undergoing PICC and Hickman line insertion, 28 undergoing peripheral angioplasty and 25

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