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## Vascular Medicine

### THE UTILITY OF ENDOTHELIAL FUNCTION AS ASSESSED BY REACTIVE HYPEREMIA-PERIPHERAL ARTERIAL TONOMOMETRY IN PREDICTING DEEP VENOUS THROMBOSIS AFTER ORTHOPEDIC SURGERY

Poster Contributions

Poster Sessions, Expo North

Monday, March 11, 2013, 9:45 a.m.-10:30 a.m.

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Session Title: Venous Thrombosis and Pulmonary Embolism

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**Background:** Venous thromboembolism (VTE) is a common and sometimes lethal postoperative complication after arthroplasty. The risk stratification is urged to be established to prevent the fatal event. Endothelial dysfunction has been shown to be associated with thrombus formation. Reactive hyperemia peripheral arterial tonometry (RH-PAT) is a noninvasive test to evaluate endothelial function. We investigated the predictive value of RH-PAT for deep venous thrombosis (DVT) after lower extremity arthroplasty.

**Methods:** This is a prospective observational study of consecutive 100 osteoarthritis patients who underwent total knee or hip arthroplasty. To evaluate endothelial function, RH-PAT index (RHI) was measured using Endo-PAT 2000 the day before surgery. Qthrombosis is a clinical risk prediction algorithm to estimate the individual risk of VTE, and was calculated in each patient. Ultrasonography or venography was performed before and after surgery (postoperative day 7 to 14) to evaluate the presence of DVT.

**Results:** Mean age was  $71 \pm 10$  years old and 87% were female. DVT was diagnosed in 40 patients (40%) after surgery. Patients diagnosed as DVT after surgery were significantly older than those without DVT ( $73 \pm 8$  versus  $69 \pm 11$ ,  $p = 0.03$ ). RHI levels were significantly lower in patients with DVT compared with those without DVT ( $0.57 \pm 0.26$  versus  $0.73 \pm 0.24$ ,  $p = 0.004$ ). By multivariate logistic regression analysis with backward algorithm including age, QThrombosis score and prophylactic anticoagulant therapy, RHI was independently associated with postoperative DVT (RHI: odds ratio per 0.1, 0.70; 95% confidence interval 0.56 to 0.87;  $p = 0.001$ ). Receiver operating characteristics analysis demonstrated that RHI was a significant predictor of DVT after surgery (area under the curve 0.67,  $p=0.005$ ). Using the cutoff value of RHI of  $< 0.76$ , sensitivity and specificity for detection of DVT after orthopedic surgery were 80% and 50% respectively.

**Conclusions:** RHI was significantly associated with the incidence of DVT after orthopedic surgery. Endothelial function assessed by RH-PAT is potentially useful to identify high-risk patients for VTE after lower extremity arthroplasty.