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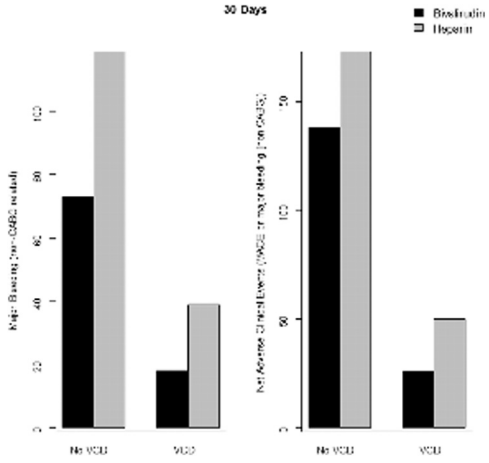
Reduced Bleeding Complications and Increased Event-free Survival With Femoral Vascular Closure Device Use and Bivalirudin in STEMI Patients Undergoing Primary Angioplasty in the HORIZONS-AMI Trial

Timothy A. Sanborn[1], Roxana Mehran[2], Philippe Genereux[3], Bernhard Witzenbichler[4], Sorin Brener[5], Ajay J. Kirtane[3], Tom McAndrew[6], Dominic Francese[6], Ran Kornowski[7], Dariusz Dudek[8], Eugenia Nikolsky[9], Gregg Stone[3]

[1]Northshore University Healthsystem, Chicago, IL, [2]Mount Sinai Hospital / Cardiovascular Research Foundation, New York, NY, [3]Columbia University Medical Center and the Cardiovascular Research Foundation, New York, NY, [4]Charité Campus Benjamin Franklin, Berlin, Germany, [5]New York Methodist Hospital, Brooklyn, NY, [6]Cardiovascular Research Foundation, New York, NY, [7]Tel Aviv University, Petach Tikva, Israel, [8]University Hospital, Krakow, Poland, [9]Rambam Health Care Campus, Haifa, Israel

Background: The HORIZONS-AMI trial demonstrated that bivalirudin alone (BIV), compared to heparin plus a glycoprotein IIb/IIIa inhibitor (GPI), resulted in significantly reduced rates of major bleeding and increased event-free survival in patients with acute STEMI undergoing primary PCI. However, the additional impact of femoral vascular closure devices (VCD) on bleeding complications and net adverse clinical events (NACE) in this STEMI population has not been reported.
Methods: The HORIZONS-AMI trial enrolled 3602 STEMI patients of whom 3360 patients underwent femoral access. The 2 primary 30-day endpoints were non-CABG-related major bleeding and NACE (major bleeding or major adverse cardiac events [MACE: death, reinfarction, target-vessel revascularization for ischemia, and stroke]). Bleeding was also assessed using TIMI and GUSTO scales. This post-hoc, subgroup analysis reports these endpoints at 30-day and 1-year follow-up, comparing VCD with no VCD and randomization to BIV and UFH + GPI.
Results: VCDs were used in 982 (29.2%) patients and not used in 2378 (70.8%) patients. Patients treated with a VCD who were also randomization to BIV had significantly reduced 30-day rates for non-CABG related major bleeding, TIMI and GUSTO bleeding, MACE and NACE compared to no VCD and UFH + GPI (Figure). These results persisted at 1-year follow-up. Multivariate analysis revealed a 30-day hazard ratio [95% CI] of 0.71 [0.53, 0.95] p=0.02 for major (non-CABG) bleeding and 0.58 [0.45, 0.74] p<0.001 for NACE with VCD use.



Conclusions: Use of a VCD and randomization to BIV resulted in reduced bleeding complications and increased event-free survival in this STEMI population.

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Ultrasound guidance for vascular access in patients undergoing coronary angiography via the trans-radial approach: A prospective clinical study.

Anthony C. Camuglia[1], Majed Malak[1], Shane Preston[1], Anand Sharma[1], Shahar Lavi[1]

[1]London Health Sciences Centre, University of Western Ontario, London, Ontario

Background: Trans-radial access (TRA) for invasive coronary assessment and percutaneous coronary intervention (PCI) has evolved as an alternative default strategy for vascular access to the femoral approach, and in many centers is used more frequently than femoral access. One of the barriers to more widespread adoption of TRA is achieving successful cannulation of the radial artery, both in a timely fashion, and with minimal needle passes so as to reduce the rate of arterial spasm. We sought to assess the value of using real-time ultrasound (RTUS) guidance to improve these parameters.
Methods: We performed a prospective, single center study of consecutive patients presenting for invasive coronary angiography (or PCI) via the trans-radial approach. The first phase of the study enrolled consecutive patients who underwent TRA without the assistance of RTUS followed by consecutive patients who underwent TRA using RTUS guidance. The primary outcome measure was the time between commencing needle attempts for arterial access and sheath insertion. Other outcome measures were number of needle passes through the skin to achieve arterial access and number of artery punctures to secure access with wire and sheath.
Results: 200 consecutive patients were studied. 100 consecutive patients underwent TRA without RTUS guidance followed by 100 patients with RTUS assistance. There were no statistically significant differences in any of the outcome measures. Mean time between commencing needle attempts for arterial access to sheath insertion with no RTUS guidance was 153 seconds (95% CI 115 – 190 seconds) versus 132 seconds (95% CI 100 – 163 seconds) with RTUS, p=0.55. Mean number of needle passes through the skin required with no RTUS guidance was 3.2 (95% CI 2.3 – 4.1) versus 2.57 (95% CI 2.0 – 3.1) with RTUS, p=0.15. Mean number of arterial punctures with no RTUS guidance was 1.1 (95% CI 1.0 – 1.2) versus 1.2 (95% CI 1.1 – 1.3) with RTUS, p=0.12.
Conclusions: Use of RTUS guidance to assist in TRA did not significantly reduce time to vascular access or the number of access attempts required. Our study does not support the routine use of ultrasound in obtaining vascular access via radial approach.

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Transradial versus Transfemoral Method of Two-Stent Implantation for True Bifurcation Lesions: Comparison of Immediate and Long-Term Outcomes

Zhan Gao[1], Bo Xu[1], Yuejin Yang[1], Zhongwei Sun[1], Jinqing Yuan[1], Jue Chen[1], Shubin Qiao[1], Yongjian Wu[1], Hongbing Yan[1], Yelin Zhao[1], Run-Lin Gao[1]

[1]Fu Wai Hospital, National Center for Cardiovascular Diseases, Beijing, China

Background: The safety and efficacy of two-stent implantation through transradial (TR) versus transfemoral (TF) approach for treatment of true bifurcation lesions have not been investigated. The study intended to compare the immediate and long-term outcomes of two-stent strategy between TR and TF percutaneous revascularization in this complex coronary anatomy.
Methods: Among 805 consecutive patients with true bifurcation lesions treated with two-stent implantation via either TR (n=508) or TF (n=297) approach from April 2004 to April 2009 at our center were analyzed retrospectively. The baseline, procedural outcomes, angiographic characteristics, in-hospital, and long-term clinical events were compared according to vascular approach method.
Results: The demographic, clinical, procedural, and angiographic characteristics were similar between groups, except less prior percutaneous coronary intervention and left main bifurcation disease in TR group compared to TF group (all p<0.05). The duration of hospital stay (7.10 ± 4.17 days vs. 9.32 ± 5.57 days, p<0.0001) and in-hospital occurrence of Bleeding Academic Research Consortium (BARC) defined bleeding (3.9% vs. 9.1%, p<0.01) were significantly lower in TR group. Using logistic regression to derive the propensity score model, 249 matched pairs of patients were compared. During a mean follow-up period of 55±22 months, in a multivariate regression analysis, TR method was not predictive of major adverse cardiac events (adjusted hazards ratio [HR]: 1.33, 95% confidence interval [CI]: 0.83-2.14), cardiac death (adjusted HR: 0.67, 95% CI: 0.11-3.99), myocardial infarction (adjusted HR: 1.43, 95% CI: 0.82-2.50), target vessel revascularization (adjusted HR: 0.93, 95% CI: 0.45-1.93), and stent thrombosis (adjusted HR: 0.56, 95% CI: 0.19-1.66).
Conclusions: In contrast to TF vascular access, two-stent implantation via TR approach for true bifurcation lesions is feasible and associated with similar in-hospital outcomes, abbreviated hospitalization, reduced bleeding, and comparable long-term clinical safety and efficacy.

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Percutaneous Coronary Intervention Using Rotational Atherectomy: A Multicentre Comparison of Radial Versus Femoral Approach

Peter J. Scott[1], Shantu Bundhoo[2], James Sapontis[3], Colm Hanratty[4], Richard A. Anderson[5], Jonathan Byrne[6]

[1]Kings College London, London, NH, [2]Cardiothoracic Services, Cardiff, United Kingdom, [3]King's College London, London, London, [4]Belfast City Hospital, Belfast, Lisburn Road, [5]University Hospital of Wales, Cardiff, Wales, [6]Kings College London, London, London

Background: Rotational Atherectomy (RA) is a well established adjuvant device for use during Percutaneous Coronary Intervention (PCI). The femoral artery has historically been the arterial access of choice for RA, facilitating the use of large-bore guide catheters. Transradial access has become a default for many European centres, but the use of RA has previously been limited. We present a large, contemporary, multicentre comparison RA PCI via the radial and femoral routes.
Methods: Patients from three regional cardiology centres from the United Kingdom undergoing RA PCI from 2008 to 2012 were included in the study. Patients were