

Comparison of Transradial Percutaneous Coronary Intervention in Patients with Stable and Unstable Coronary Artery Disease

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ABSTRACT

Background: The transradial approach for percutaneous coronary intervention (PCI) is still not widely used in our country. We evaluated the results of transradial PCI performed at a tertiary hospital, which has progressively incorporated this technique to its daily clinical practice. **Methods:** This is a retrospective study of patients treated from 2007 to 2012 at Instituto Dante Pazzanese de Cardiologia. Clinical, angiographic and procedural profile and in-hospital outcomes of patients with stable and unstable coronary artery disease (CAD) treated with the transradial approach were compared. **Results:** We included 2,507 patients, of which 72.6% had stable and 27.4% had unstable CAD. Patients with stable CAD had a more complex clinical profile, characterized by being older, more frequently females, with a higher incidence of comorbidities. The angiographic and procedural characteristics were not different for most of the variables analyzed. The success rate was high, but higher in the stable CAD group (94.6% vs. 92.4%; $P = 0.05$). The incidence of death (0.2% vs. 0.3%; $P = 0.61$), peri-procedural infarction (4.7% vs. 6.6%; $P = 0.07$), stroke (0.1% vs. 0.1%; $P > 0.99$), PCI (0.1% vs. 0.3%; $P = 0.30$), coronary artery bypass graft (0 vs. 0.4%; $P = 0.06$), major bleeding (0.2% vs. 0.6%; $P = 0.09$) or vascular complications (1% vs. 0.6%; $P = 0.47$) was low and did not differ between groups. **Conclusions:** Transradial PCI has proved to be safe and effective in patients with stable and unstable CAD, treated at a tertiary

RESUMO

Comparação da Intervenção Coronária Percutânea por Via Radial em Pacientes com Doença Arterial Coronária Estável e Instável

Introdução: A intervenção coronária percutânea (ICP) por via radial ainda é pouco utilizada em nosso meio. Avaliaram-se aqui os resultados da ICP por via radial, realizada em um hospital terciário, que, progressivamente, tem incorporado tal técnica à prática clínica diária. **Métodos:** Estudo retrospectivo, de pacientes tratados entre 2007 e 2012, no Instituto Dante Pazzanese de Cardiologia. Compararam-se os perfis clínico, angiográfico e do procedimento e os resultados hospitalares dos pacientes tratados por via radial com doença arterial coronária (DAC) estável e instável. **Resultados:** Foram incluídos 2.507 pacientes, sendo 72,6% portadores de DAC estável e 27,4% de DAC instável. Os pacientes portadores de DAC estável tinham perfil clínico mais complexo, caracterizado por serem mais idosos, mais frequentemente do sexo feminino e com maior incidência de comorbidades. As características angiográficas e do procedimento não mostraram diferenças na maioria das variáveis analisadas. A taxa de sucesso foi elevada, porém maior no grupo DAC estável (94,6% vs. 92,4%; $P = 0,05$). A incidência de óbito (0,2% vs. 0,3%; $P = 0,61$), infarto periprocedimento (4,7% vs. 6,6%; $P = 0,07$), acidente vascular cerebral (0,1% vs. 0,1%; $P > 0,99$), ICP (0,1% vs.

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hospital that has progressively incorporated this technique to its daily practice.

DESCRIPTORS: Angioplasty. Radial artery. Angina, stable. Acute coronary syndrome.

The transradial approach for percutaneous coronary intervention (PCI) was originally introduced by Kiemeneij et al.¹ Its benefits, including reduced complications of the puncture site, early ambulation, and diminished hospitalisation time, have been demonstrated in several trials conducted in Brazilian centers and in other countries.²⁻¹⁰

Among all the potential benefits of this type of access, safety is undoubtedly the most attractive. With radial access, hemorrhagic and vascular complications (bleeding, pseudoaneurysm, arteriovenous fistula, and bruising) are rare and generally easily circumvented. However, the occurrence of complications is influenced by the learning curve.^{2,10}

The transradial approach is still not routinely used in interventional cardiology centers for diagnostic and therapeutic procedures. Globally, less than 10% of the procedures are performed by this route.¹¹ The Registro Central Nacional de Intervenções Cardiovasculares (Central Brazilian Registry of Cardiovascular Interventions – CENIC) showed that in 2008, only 12.6% of the procedures were performed by this technique in Brazil.² Previous trials have shown that, in the beginning of the learning curve, technical failures and the necessity of crossover to the femoral technique are relatively frequent.^{12,13}

Most trials evaluating the transradial approach compared to the femoral route revealed benefits in the presence of unstable coronary artery disease (CAD), especially in ST-segment elevation myocardial infarction (STEMI), because these patients have greater probability of bleeding from the access route, due to the adjunct medication used (antiplatelet, antithrombotic, thrombolytic, etc.).

The aim of this study was to evaluate the in-hospital results of PCI by transradial approach, performed in a busy tertiary hospital that has progressively incorporated this technique into daily clinical practice, comparing patients with stable and unstable CAD.

METHODS

This was a retrospective study, using the database of a consecutive series of patients with stable CAD

0,3%; $P = 0,30$), cirurgia de revascularização miocárdica (0 vs. 0,4%; $P = 0,06$), sangramento maior (0,2% vs. 0,6%; $P = 0,09$) ou complicação vascular (1% vs. 0,6%; $P = 0,47$) foi baixa e não diferiu entre os grupos. **Conclusões:** ICP por via radial mostrou-se segura e eficaz, tanto em pacientes com DAC estável como instável, tratados em hospital terciário que progressivamente tem incorporado essa técnica à rotina diária.

DESCRITORES: Angioplastia. Artéria radial. Angina estável. Síndrome coronariana aguda.

(stable angina or silent ischemia) and unstable CAD (with or without ST-segment elevation), treated with PCI by radial approach with 6F catheter at Instituto de Cardiologia Dante Pazzanese, São Paulo, Brazil, from December of 2007 to October of 2012.

Data from hospital outcomes were entered on a standardized form, comprising clinical, angiographic, and procedural characteristics, in addition to the clinical evolution of the patient until discharge.

Procedure

Through wrist hyperextension and infiltration of 1-2 mL of 2% xylocaine, the radial artery was punctured 1 cm proximal to the radial styloid process using a needle with a polyethylene catheter (Jelco® n° 20-22) and using the Seldinger technique. After the puncture, a 0.021-inch guidewire was introduced, followed by a small skin incision with a scalpel blade and insertion of a 6F sheath. A solution containing 5,000 IU heparin sulphate was administered through the sheath. At the end of the procedure, the sheath was immediately removed, and hemostasis was obtained with a compression band, the TR Band™ (Terumo Medical – Tokyo, Japan). A clinical examination of the puncture site and an evaluation of the radial pulse were performed at the time of hospital discharge.

Definitions

Angiographic success was defined as a reduction of the target lesion to a stenosis diameter < 30%, with maintenance or restoration of the normal antegrade flow (Thrombolysis in Myocardial Infarction [TIMI] 3).¹⁴⁻¹⁶ Procedural success was considered when angiographic success and the absence of major clinical complications (death, nonfatal myocardial infarction [MI], or emergency coronary artery bypass graft [CABG] surgery) were obtained.

MI associated with the procedure was defined as the development of new Q waves and/or elevation of CK-MB (> three times the baseline level).

Vascular complications were defined as presence of hematoma > 10 cm at the site of arterial puncture; major bleeding, characterized as a fall in hemoglobin

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