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# Percutaneous Coronary Interventions Using a New 5 French Guiding Catheter: Results of a Prospective Study

Wolfgang A. Schöbel,\* MD, I. Spyridopoulos, MD, H.M. Hoffmeister, MD, and L. Seipel, MD

The aim of this prospective study was to analyze the technical feasibility, the success rate, and the special complications of percutaneous coronary interventions (PCIs) using a newly released 5 Fr guiding catheter with an inner diameter of 0.058". The study was performed in 150 consecutive patients subjected to coronary angioplasty. In 89% of the patients, the intervention was started with a 5 Fr catheter (JR4 or JL4); in 16 patients a 6 or 7 Fr catheter was used because of unstable clinical conditions according to the decision of the interventional cardiologist. In 12 out of 134 patients, the guiding catheter had to be changed during the intervention from 5 Fr to a 6 or 7 Fr catheter due to poor backup support. In 112 out of 118 patients, the intervention was successfully performed using a 5 Fr catheter (95%); in 12 out of 16 patients, after changing the guiding catheter, the overall success rate was 93%. In patients with type A and B lesions who were initially treated using a 5 Fr catheter, the procedural success rate was 100% (81 out of 81), whereas in patients with type C lesions the procedural success rate was 83% (43 out of 53;  $P = 0.000053$ , Fisher's exact test). Furthermore, in patients with a diameter stenosis < 90%, the procedural success rate was 100% (57 out of 57), whereas in patients with a diameter stenosis of 90%–100%, the procedural success rate was 87% (67 out of 77;  $P = 0.0050$ ). Stent implantation was performed successfully in 24 patients (18%) using the 5 Fr guiding catheter. This study confirms that PCI was technically feasible using a 5 Fr guiding catheter in the majority of consecutive patients with a success rate of 95%. There were significant differences in the success rate depending on the lesion type and the diameter stenosis. Complications were very rare and were not related to the guiding catheter. Limitations of the 5 Fr guiding catheters arose mainly from a poor backup support in long lesions and severe stenosis. *Cathet Cardiovasc Intervent* 2001; 53:308–312. © 2001 Wiley-Liss, Inc.

**Key words:** guiding catheter; 5 French; percutaneous coronary intervention

## INTRODUCTION

Using 6 Fr guiding catheters for elective percutaneous coronary interventions (PCIs) has been shown to be more effective than using larger-diameter catheters, leading to a decrease in vascular complications and reduction of the procedural time as well as the amount of contrast medium in a prospective, randomized, multicenter trial [1].

The area of the peripheral puncture site is decreased using 5 Fr sheaths (2.2 mm<sup>2</sup>) in comparison with 6 Fr (3.1 mm<sup>2</sup>) by 31%, in comparison with 7 Fr (4.3 mm<sup>2</sup>) by 49%, and in comparison with 8 Fr (5.6 mm<sup>2</sup>) by 61%. Using 5 Fr sheaths performing a femoral approach, an easier hemostasis at the puncture site could be expected, as well as a shorter bed rest in supine position, an earlier discharge, and a decreased number of vascular complications. Previously used small guiding catheters (6 Fr and smaller) did not allow stent insertion because of an inner lumen of less than 0.058" [2–6].

Now, a new 5 Fr guiding catheter with an inner diameter of 0.058" (Z2, Medtronic AVE) is on the market. This guiding catheter allows the use of standard balloon

catheters and the insertion of recently commercially available stents with a diameter of up to 4.0 mm and a length of up to 28 mm. However, no prospective data about the technical feasibility of PCI using 5 Fr guiding catheters exists. Thus, the aim of this prospective single-user study was to analyze the technical feasibility, the success rate, and the special problems of PCI using the recently available new 5 Fr guiding catheter.

## MATERIALS AND METHODS

### Patients

This study was performed in 150 consecutive patients subjected to PCI primarily by the same interventional

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