

Editorial

Same-day Discharge After Elective Percutaneous Coronary Intervention: A Safe Strategy, but for Which Patients?



Angioplastia ambulatoria: una estrategia segura, pero ¿para qué pacientes?

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Percutaneous coronary intervention (PCI), in its different forms, is the most commonly performed interventional procedure in developed countries.¹ Certain technical advances, which minimize the profile of the catheters used while maintaining a high degree of efficacy, have resulted in a PCI procedure with a high level of safety in both the short- and long-term. This means that hospital discharge on the day of the procedure can be considered for many patients who traditionally would have required hospital admission after revascularization. This concept of same-day discharge after PCI was analyzed in the study by Córdoba-Soriano et al.² published in *Revista Española de Cardiología*. The study is the first to gather experience and report safety data on same-day discharge after PCI in Spain, and included procedures performed in 3 different centers with a large volume of angioplasties (more than 700 annually per hospital). It also constitutes one of the largest registries on PCI with same-day discharge recorded in the literature to date.

EXISTING EVIDENCE

The concept of same-day discharge following angioplasty is not a new one. Since the late 1990s, the safety and feasibility of this strategy have been demonstrated by a large number of observational studies. Among the randomized clinical trials that compare the strategy of same-day discharge vs hospital admission following PCI, 2 deserve comment. The first is the Canadian EASY study,³ published in 2006, which included 1005 patients, of whom almost two thirds had unstable angina and up to 20% had raised markers of myocardial damage and constituted a high-risk group. All underwent transradial PCI and received a bolus of abciximab that was then continued as an infusion only in the group that was admitted to hospital. No differences were observed in terms of mortality, infarction, urgent revascularization, hemorrhagic complications, complications related to vascular access, or readmission rates, thus confirming the safety of this strategy. The second significant clinical trial is the EPOS study,⁴ which was carried out in a single center in Amsterdam and published in 2007. This study

included a total of 800 patients with stable coronary artery disease who underwent scheduled, elective PCI following an initial diagnostic coronary angiography; in this study all procedures were via a femoral approach. Similarly to the EASY study, there were no differences in terms of complications between the same-day discharge group and the overnight hospital stay group. It should be noted that in both studies there was a not insignificant percentage of patients (12% in the EASY study and 18% in the EPOS study) who were initially assigned to the same-day discharge group but who were ultimately admitted to hospital for various reasons (eg, procedural complications, ongoing chest pain, clinical decision).

When observational studies are used to compare treatment groups, selection bias and observational studies are inevitable, and it is preferable to use randomized clinical trials, as the evidence from this type of study can truly confirm the safety of this revascularization strategy. However, it is worth comparing the results of the registry by Córdoba-Soriano et al.² with those of other similar registries. Indeed, they are in line with most of the large series published to date,⁵ with a major cardiovascular event rate (including complications related to vascular access) of less than 1%. This point allows us to confirm that same-day discharge following PCI, within the framework of the inclusion criteria applied in this registry, is a highly safe strategy.

APPLICABILITY

Another key point that this registry aimed to analyze was the applicability, or, in other words, the possibility of carrying out PCI with same-day discharge depending on the procedure and patient characteristics, as well as the outcome of the procedure.

The studies published to date differ greatly regarding their inclusion criteria. The only scientific society that has developed specific recommendations on this aspect is the Society for Cardiovascular Angiography and Interventions (SCAI).⁶ These recommendations, which were published in 2009, establish that candidates for PCI with same-day discharge are younger (< 70 years), without comorbidities and with stable, single-vessel coronary artery disease (except for lesions of the left main vessel, bypass graft, proximal left anterior descending artery, bifurcations, or chronic occlusions, or when rotational atherectomy is required). They recommend this strategy provided the patient is already on dual

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antiplatelet therapy, the result of the procedure has been optimal (good angiographic outcome, no dissection, secondary branches not affected) and that there are no complications related to vascular access.

The study discussed in this editorial used inclusion criteria that were very similar to those proposed by SCAI, but were less comparable to those of other registries due to their wide heterogeneity. Of note, in contrast to the EASY study,³ but in line with the SCAI criteria, only patients with stable angina were included. In the study by Córdoba-Soriano et al.,² 74% of all PCIs performed were in patients with acute coronary syndrome (who were automatically excluded) and a further 15% were excluded at the outset for various reasons related to access, the patient, and the lesions treated. Thus 10% were theoretically candidates for early discharge, but this only happened in 8% of all PCIs. These figures, which translate into a significant number of revascularization procedures, are slightly lower than those of previous registries, in which eligibility ranged between 13.7% and 30.7%.⁷ Some of these differences may be explained by regional variability in the type of patients treated and the use of radial access. Regarding this point, it should be noted that 24% of patients with PCI and same-day discharge lived in municipalities without a hospital, highlighting confidence in the health service (which includes transfer services and emergency care) among patients and physicians.

From the literature review, it was difficult to find conclusive evidence to identify the patient profile for candidates for PCI with same-day discharge. In this regard it seems sensible to lean toward safety, and limit this early discharge strategy to patients who are stable, adequately pretreated, have few comorbidities, will undergo low-risk angioplasty, and who achieve an optimal result. In our opinion, the SCAI criteria⁶ represent a reasonable compromise. In these low-risk patients, most complications occur during the revascularization procedure itself, and those that occur afterwards are usually of low clinical relevance and relate to vascular access and hemostasis, such that spending a night in hospital would not offer any advantage. Any center that implements a protocol of this type should observe these recommendations and adapt them to their everyday clinical practice, and take on the responsibility of regularly analyzing the outcomes and safety.⁸

Although the study by Córdoba-Soriano et al. had femoral access as an exclusion criteria, some earlier clinical trials and registries included procedures that used this vascular access approach. In fact, as mentioned above, in the EPOS study,³ all procedures were performed via femoral access, in both the admission group and the same-day discharge group, with a vascular complication rate that was not insignificant but similar in the 2 groups (5%–6%). However, very few of these complications (1.1%) were serious enough to require follow-up. By comparison, in one of the largest existing registries to date, by number of patients included, published by Rao et al.,⁹ in 2011, more than 95% of the procedures used femoral access. The results of this registry confirmed that PCI with same-day discharge was safe, as there were no differences in terms of mortality, readmission, or bleeding. However, a higher rate of vascular complications was recorded in the same-day discharge group (0.75% vs 0.25%, $P < .001$) despite the use of femoral closure devices in a high proportion of the patients.

Radial access has been demonstrated to have a lower complications rate than femoral access. It is also more comfortable for the patient, with a faster recovery time. A reduction in mortality has also been demonstrated, even in high risk patients.¹⁰ With all these factors in mind, it seems fair to say that radial access is more appropriate for this early-discharge strategy, although it is true that the reduction in size of femoral catheters, along with the use of closure devices, means that early discharge may also be considered when a femoral approach is used, particularly in centers where angioplasty via radial access is not standard practice.

ECONOMIC IMPACT AND THE IMPACT ON HOSPITAL MANAGEMENT

In all fields of medicine, any newly-implemented procedure or protocol must be subject to an exhaustive cost-effectiveness analysis.¹¹ Although Córdoba-Soriano et al.² did not analyze this, previous studies conducted outside of Spain have estimated that this type of strategy could entail a 50% relative reduction in direct costs related to hospital admission.¹² Although it is difficult to extrapolate these estimates to Spain, it is obvious that, if adverse event rates are the same, performing PCI with same-day discharge would cost less. One effect that does not require further demonstration is the immediate freeing-up of beds, with the consequent improvement in managing admissions, a chronic problem in many of our hospitals. Similarly, early discharge has a significant effect on wellbeing in most patients.

PATIENT EDUCATION

Patient education is equally as important as selecting the correct patient profile. It is undeniable that patients perceive outpatient procedures as minor or less important than inpatient procedures. Such trivialization of the procedure could lead to worse therapeutic adherence; therefore, clear communication with the patient and his or her family is of utmost importance to ensure that patients understand the most common complications that could occur and what action to take if they do. To this end, it is useful to provide clear written instructions at discharge. Prior to discharge, it should be confirmed that patients have sufficient support at home and that, in addition to having the required antiplatelet therapy, they understand the huge importance of adhering to this treatment to avoid one of the most feared complications: acute stent thrombosis.

In conclusion, we can confirm that the safety of same-day discharge following PCI has been demonstrated, provided that it is performed in selected patients with low risk. The results of the registry by Córdoba-Soriano et al.² verified for the first time in this country the applicability and safety of PCI with same-day discharge. The strategy, when it is feasible, may carry a significant reduction in cost, improving the management of inpatient beds as well as being more convenient for the patient. Inevitably, when it comes to broadening the spectrum of patients who may benefit from this strategy, each patient profile must be demonstrated as safe to undergo this strategy. Economic studies in this country are also needed to determine the real impact of this strategy in Spain.

CONFLICTS OF INTEREST

None.

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