Coronary stenting during percutaneous coronary intervention (PCI) represents the standard of care for treatment of coronary stenosis. However, conventional stents may lead to suboptimal results in complex coronary lesions with risk of malapposition and consequent stent thrombosis, in particular in case of significant coronary ectasia and coronary bifurcations. Moreover, in the setting of primary PCI, the presence of thrombus and vessel wall vasoconstriction in the acute phase makes it difficult to choose the appropriate stent size, potentially leading to stent undersizing and acute stent malapposition.

A coronary self-expanding stent (STENTYS S.A., Paris, France) has been introduced in clinical practice as an alternative to balloon-expandable stents in challenging lesion subsets. The STENTYS self-apposing stent has been shown to be superior compared with balloon-expandable stents with regard to stent apposition [1,2].

We tested the efficacy and safety of this stent in patients undergoing PCI in our centre. We retrospectively evaluated 109 patients who were treated with the STENTYS stent from July 2011 to February 2015. The choice to use the STENTYS stent and the choice between a bare metal (BMS) or a paclitaxel-eluting (PES) STENTYS was at the discretion of the operator. After the procedure, antplatelet therapy consisted of aspirin (75–300 mg, indefinitely) and clopidogrel or prasugrel or ticagrelor (75 mg/10 mg/90 mg for a month or 12 months).

The primary end point was the occurrence of major adverse cardiac and cerebrovascular events (MACCE) at long-term follow-up. MACCE was defined as the composite of cardiac death, myocardial infarction (MI), target vessel revascularization (TVR) and stroke. Secondary end points were definite and probable stent thrombosis (ST) and target lesion revascularization (TLR). Myocardial infarction was defined according to the ESC third universal definition of myocardial infarction [3].

TVR, TLR and ST were defined according to the Academic Research Consortium (ARC) definitions [4].

All patients had clinical follow-up; coronary angiography was only repeated if clinically indicated.

Statistical analyses were carried out using SPSS for Windows, version 11.0 (SPSS Inc., Chicago, Illinois). Continuous variables were presented as mean ± standard deviation. Chi-square tests (Fisher corrected when appropriate) were used to compare discrete variables (reported as raw numbers [%]); p-values of < 0.05 were considered significant.

Baseline clinical characteristics are shown in Table 1A. Patients treated with a STENTYS stent for stable angina and non-ST-elevation myocardial infarction/unstable angina (NSTEMI/UA) had significantly more ectatic coronary lesions than patients treated for ST-elevation myocardial infarction (STEMI) (51 patients and 24 patients respectively; p = 0.035).

The main angiographic and procedural characteristics are reported in Table 1B. The mean follow-up was 23.6 ± 12.6 months. MACCE occurred in six patients (5.5%) (Table 2). One patient (0.9%) died due to heart failure. Four patients (3.7%) had myocardial infarction in the target vessel area. One patient (0.9%) experienced an ischemia driven-TV. Definite stent thrombosis occurred in two patients (1.8%). TLR was performed in five patients (4.6%).

The APPOSITION III registry evaluated one-year clinical outcomes of patients presenting with STEMI who were treated with primary PCI using the STENTYS Self-apposing stent. The primary endpoint of MACE at one year was 9.3% [5]. In our study, we analyzed an all comers population with a high rate of acute coronary syndrome as the first clinical presentation; two patients complicated by cardiogenic shock, two patients treated with rescue PCI; and patients with a high percentage of complex lesions (61.5% of type B2-C lesions); in 11%, an additional stent was used and this second stent was placed overlapping the first stent. Despite this, in our series the STENTYS stent showed a low rate of clinical events.

Keywords:
Percutaneous coronary intervention ST-segment elevation myocardial infarction Coronary stenting during percutaneous coronary intervention (PCI) Self-expanding stent
Moreover, it was described that the APPOSITION III registry clinical outcomes improved considerably when post-dilation was performed with one-year cardiac death/TV-MI and definite ST rates as low as 2.4% and 1.9%, respectively [5]. In our study, post-dilation was left to the discretion of the operator and was performed in 100% of the procedures.

Self-expanding stent deployment is different compared with the traditional stents. According to our experience, a learning curve is present as a result; this patient experienced a periprocedural MI and underwent emergency bypass surgery. A second patient had a thrombotic occlusion of the side branch two days after the initial procedure. In this patient the absence of disconnection of the struts towards the side branch may have contributed to an acute thrombosis of the vessel. A second patient had a thrombotic occlusion of the side branch two days after the initial procedure. In this patient the stent was placed in the main branch too distally because of "jump forward" phenomenon [6] and this did not allow for the disconnection of the stent in the side branch. In another patient, the STENTYS was positioned in the bifurcation without disconnection of the struts in the side branch. This patient experienced an acute MI ten months after the initial procedure, caused by a thrombotic occlusion of the side branch with patency of the main branch after the discontinuation of dual antiplatelet therapy for gastric bleeding requiring transfusions. According to our experience in these two cases the absence of disconnection of the struts towards the side branch may have contributed to an acute thrombosis of the vessel.

Our study had several limitations. It was a non-randomized, retrospective study from a single center; the number of patients who were treated with the STENTYS stent was relatively small; there is no comparative data with balloon-expandable stents. Moreover, it was described that the APPOSITION III registry clinical outcomes improved considerably when post-dilation was performed with one-year cardiac death/TV-MI and definite ST rates as low as 2.4% and 1.9%, respectively [5]. In our study, post-dilation was left to the discretion of the operator and was performed in 100% of the procedures.

**Conflicts of interest**

The authors report no relationships that could be construed as a conflict of interest.
References


