All-Cause Mortality and Major Stroke Significantly Reduced With Iliofemoral CoreValve Replacement

Written by Toni Rizzo

Transcatheter aortic valve replacement (TAVR) is less invasive than surgical aortic valve replacement for patients with degenerative aortic stenosis who have a high risk of surgical complications. The purpose of the Safety and Efficacy Study of the Medtronic CoreValve System in the Treatment of Symptomatic Severe Aortic Stenosis in High Risk and Very High Risk Subjects Who Need Aortic Valve Replacement [CoreValve Extreme Risk; NCT01240902], presented by Jeffrey J. Popma, MD, Beth Israel Deaconess Medical Center, Boston, Massachusetts, USA, was to evaluate the safety and efficacy of the CoreValve transcatheter heart valve for the treatment of symptomatic severe aortic stenosis in patients with a ≥50% risk of operative mortality or serious, irreversible morbidity at 30 days.

Patients at high risk of surgical complications in whom an 18 French vascular access sheath could be placed into the iliofemoral vessel were randomized to treatment with a CoreValve by iliofemoral (n=487) or noniliofemoral (n=147) access. Patients included in the trial had severe aortic stenosis, defined as aortic valve area (AVA) ≤0.8 cm^2 or AVA index ≤0.5 cm^2/m^2; a mean gradient >40 mm Hg or peak velocity >4 m/second at rest or with dobutamine stress (if left ventricular ejection fraction was <50%); and NYHA Functional Class II or higher. The primary endpoint was all-cause mortality or major stroke at 12 months. Clinical and echocardiographic assessments were performed at baseline (n=471), 1 month (n=435), and 1 year (n=355). There was no control arm in the trial.

The primary analysis was performed in the as-treated population (n=471). The patients were elderly (aged 83.1±8.6 years), 49% were men, and 91.9% had severe symptoms (NYHA Class III or IV). The composite rate of all-cause mortality and major stroke was 9.3% (95% CI, 6.7 to 12.0) at 1 month and 25.5% (95% CI, 21.6 to 29.4; p<0.0001) at 1 year. Variables predictive for the primary endpoint were Society of Thoracic Surgeons (STS) score >15 (p=0.02), coronary artery disease (p=0.003), and assisted living (p<0.001). The primary endpoints of all-cause and cardiovascular mortality rates at 1 year were 24.0% and 17.9%, respectively. The major stroke rate was 4.1% at 1 year.

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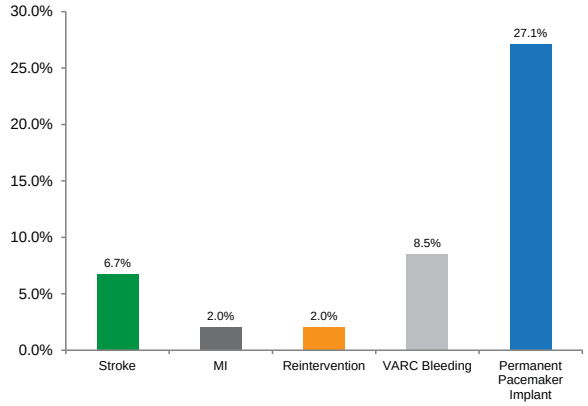
The incidence of major secondary endpoint rates were assessed at 1 year (Figure 1). Of the patients alive at 1 year, 90% of patients had improvement of ≥1 NYHA class and 60% of patients improved by ≥2 NYHA classes. Echocardiography showed that effective orifice area increased from 0.73 cm^2 at baseline to 1.82 cm^2 at discharge and to 1.89 cm^2 at 1 year. The mean gradient decreased from 47.4 mm Hg at baseline to 9.4 mm Hg at discharge and to 8.8 mm Hg at 1 year.

At 1 month, moderate paravalvular leak was present in 41.6% of patients and severe paravalvular leak was present in 11.0%. At 1 year, 28.8% of patients had moderate paravalvular leak and 4.1% had severe paravalvular leak. The severity of paravalvular leak declined in the majority of patients with moderate paravalvular leak at 1 month who survived to 1 year (80%). Patients with severe paravalvular leak had higher mortality rates when compared with patients without paravalvular leak (17.9% vs 85.7%; p<0.001).

The CoreValve Extreme Risk study evaluated iliofemoral implantation of the CoreValve prosthesis in patients at extreme risk for mortality and morbidity from surgery. At 1 year after implantation, 25% of patients had either died or had a stroke. The rates of moderate and severe aortic regurgitation were low and improved over time. Patients with severe paravalvular leak had higher mortality compared with patients with no paravalvular leak. These results provide evidence for the safety and efficacy of TAVR with the CoreValve in patients at high risk of surgical complications.

Figure 1. Major Secondary Endpoints



MI=myocardial infarction; VARC=Valve Academic Research Consortium.

SORT-OUT VI: Zotarolimus-Eluting Stent Noninferior to Biolimus-Eluting Stent

Written by Toni Rizzo

First-generation drug-eluting stents have reduced the risk of restenosis compared with bare-metal stents; however, these stents may have increased risk of stent thrombosis. Newer generation drug-eluting stents, which are constructed with biocompatible or biodegradable polymers, may have greater efficacy, safety, and device performance. The Randomized Clinical Comparison of Biomatrix Flex and Resolute Integrity trial [SORT-OUT VI; NCT01956448], presented by Bent Raungaard, MD, Aalborg University Hospital, Aalborg, Denmark, compared the efficacy and safety of a zotarolimus-eluting stent with a biolimus-eluting stent in a population-based setting.

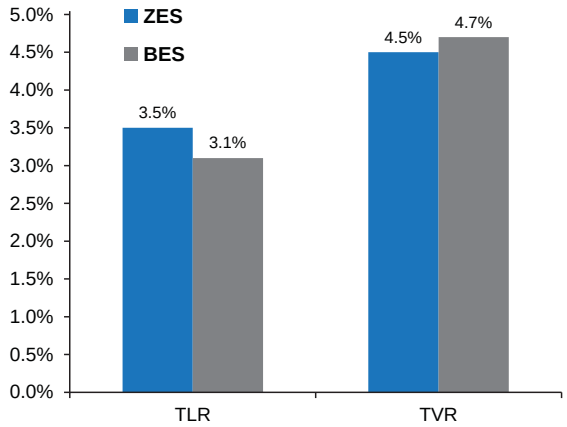
SORT-OUT VI was a prospective randomized, all-comers study designed to reflect clinical practice. A total of 2999 patients were randomized to receive either a zotarolimus-eluting permanent polymer stent (n=1502) or a biolimus-eluting biodegradable stent (n=1497). To be considered for the trial, patients had to have either stable coronary artery disease or acute coronary syndromes with ≥1 coronary lesion with a >50% diameter stenosis in a vessel with a reference diameter of 2.25 to 4.0 mm. Patients were excluded if they had a life expectancy <1 year, were allergic to aspirin, clopidogrel, prasugrel, ticagrelor, zotarolimus, or biolimus, or were not candidates for 12 months of dual antiplatelet treatment. The primary endpoint was a composite of major adverse cardiac events (MACE) defined as cardiac death, myocardial infarction (MI) or target lesion revascularization (TLR) at12 months. Patient-driven clinical event detection was used, with data accessed from the Danish Civil Registration System, National Patient Registry, and Western Denmark Heart Registry.

Most baseline patient characteristics were well balanced between the two groups. The mean subject age was 65.8 years and 76% of the patients were men. More patients receiving the biolimus-eluting stent had undergone previous percutaneous intervention (PCI; 22.0% vs 18.7%; p=0.03). In the zotarolimus-eluting stent group, more patients had >1 lesion (25.3% vs 22.1%; p=0.04) and the total stent length per patient was longer (21.0 vs 18.0 mm; p<0.01).

At 12 months, the primary endpoint of MACE had occurred in 5.3% of patients with a zotarolimus-eluting stent compared with 5.1% of those with a biolimus-eluting stent (difference, 0.2%; upper one-sided 95% CI, 1.8%; noninferiority p=0.006).

At 12 months, cardiac death had occurred in 1.5% of the zotarolimus-eluting stent group compared with 1.7% of the biolimus-eluting stent group (HR, 0.85; 95% CI, 0.48 to 1.50; p=0.58). MI was reported in 1.3% of patients in the zotarolimus-eluting stent group compared with 0.9% of patients in the biolimus-eluting stent group (HR, 1.43; 95% CI, 0.72 to 2.84; p=0.30). TLR was required in 3.5% of patients with the zotarolimus-eluting stent and 3.1% of biolimus-eluting stent (HR, 1.11; 95% CI, 0.75 to 1.65; p=0.80; Figure 1), while target vessel revascularization was required in 4.5% of patients with the zotarolimus-eluting stent and 4.7% of those with the biolimus-eluting stent (HR, 0.95; 95% CI, 0.68 to 1.32; p=0.75; Figure 1).

Figure 1. Target Lesion and Target Vessel Revascularization



BES=biolimus-eluting stent; TLR=target lesion revascularization; TVR=target vessel revascularization; ZES=zotarolimus-eluting stent.

Definite stent thrombosis was reported in 0.6% of patients with the zotarolimus-eluting stent compared with 0.4% of patients with the biolimus-eluting stent (HR,