Echocardiographic follow-up of the CoreValve aortic bioprosthesis up to 1 year: results from the Italian Registry

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Purpose
Transcatheter aortic valve implantation (TAVI) represents a major breakthrough in the treatment of patients with severe aortic valve stenosis. Our aim was to evaluate the effects of the implantation of the CoreValve prosthesis (Medtronic, Minneapolis, MN) by means of serial echocardiographic examinations.

Methods
Since June 2007, a nation-wide web-based registry of CoreValve implantations was started in Italy, and 14 hospitals enrolled all consecutive patients undergoing TAVI with this device. Up to June 2010, 875 patients have been included in the registry. All patients were followed-up at 1, 3, 6, 12, and 24 months after TAVI. Changes in echocardiographic parameters from baseline up to 1-year follow-up was performed with repeated measures ANOVA.

Results
Of the 875 patients enrolled, 519 (59.2%) received the small device (26mm), and 356 (40.8%) the large one (29mm). The subclavian access was used in 102 cases (11.7%). Procedural success was obtained in 97.4% of the patients. Overall mortality was 5.0% in-hospital, 7.2% at 30 days, and 20.6% at 12 months. Of the 500 patients who survived up to the 1-year follow-up, 288 patients had a complete echocardiographic assessment at baseline, 1 month, 6 months, and 1 year. We observed an immediate highly significant improvement (P<0.0001) both in transaortic gradient and in left ventricular ejection fraction, which remained constant throughout 1 year of follow-up (Table). A relevant regression of left ventricular hypertrophy was also observed. A more than mild paravalvular leak was found in 22% of the patients at 1 month, with no significant changes throughout 1 year. Finally, 252 patients (87.5%) showed an improvement ≥1 NYHA class at 12 months.

Conclusions
Serial echocardiographic examination showed evident hemodynamic improvement at 1-month after CoreValve implantation, remaining stable up to 1 year and entailing improvement in LV ejection fraction and reduction in LV hypertrophy.