

## 0150

### Feasibility and safety of early discharge after transfemoral transcatheter valve implantation with balloon-expandable prosthesis: a prospective study

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**Introduction** There is currently no consensus on the duration of hospitalization required after transfemoral transcatheter valve implantation (TF-TAVI).

We recently reported, retrospectively, that early discharge (within 3 days) was feasible in 31% and safe without any death and a low rate of re-hospitalization at 30 days. We therefore aimed to confirm the feasibility and safety of early discharge after TF-TAVI in a prospective study.

**Methods** After implementation of an early discharge pathway in our center in January 2014, we included prospectively, between January 2014 and January 2015, 130 consecutive patients scheduled for TF-TAVI with Edwards prosthesis using exclusively local anesthesia. The primary end-point combined death and re-hospitalization from discharge to 30-day follow-up. The proportion of early discharge (within 3 days) and the cause of "non-early" discharge were also assessed.

**Results** During the studied period, the mean length of stay was  $4.0 \pm 2.7$  days and 76 (58.6%) patients were discharged early within 3 days including 55 (42.3%) patients discharged within 2 days after the procedure. The main causes of non-early discharge were conduction abnormalities in 33 (25%) patients, major vascular complications in 18 (13.8%) patients, social issues in 11 (8.5%) patients, heart failure in 3 (2.3%) patients, and acute kidney injury in 2 (1.5%) patients. Finally, between discharge and 30-day follow-up, there was no death and only 5 (6.5%) patients required re-hospitalization.

**Conclusions** Early discharge is feasible in slightly over 50% of cases in selected patients scheduled for TF-TAVI using a balloon-expandable and local anesthesia, and is associated with no death and a very low rate of readmission at 30 days. The two main causes of non-early discharge are occurrence of new conduction disturbances and major vascular complications.

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## 0131

### A phenotypic study of ARHGAP24 mitral valve prolapse suggests a genetic origin for fibro elastic deficiency

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Mitral valve prolapse (MVP) by Barlow disease is recognized a genetic disease. Fibro-elastic deficiency (FED)-MVP is considered a pure degenerative condition. FLNA, the first gene involved in MVP, encodes for Filamin-A, a cytoskeleton associated protein. It interacts with a protein named Filgap, encoded by ARHGAP24 (Chr. 4), in the mechanical transduction. We hypothesized that ARHGAP24 mutations could elicit MVP with same pathway.

Four probands with ARHGAP24 mutations were identified among 96 MVP. By a familial echocardiographic screening we enrolled 19 adults of whom 13 had an ARHGAP24 mutation. The mutated group was matched with a control group of 39 healthy adults. Anterior (AML) and posterior (PML) mitral leaflets length and thickness were measured. The coaptation point position was the ratio of coaptation height on the systolic annulus diameter. MVP (displacement >2mm above the annulus line), minimal systolic displacement (MSD, displacement <2mm) and abnormal antero-posterior coaptation position (AAC, ratio <60%) were assessed.

The conjunction of MSD and AAC defines a MVP prodromal form (MVP-prod).

There was no difference between the two groups on baseline characteristics. Leaflets were thin in the mutated group (PML:  $2.7 \pm 1$  vs  $2.2 \pm 0.5$ mm in control,  $P=0.21$ , AML:  $2.5 \pm 0.9$  vs  $2.1 \pm 0.4$ mm,  $P=0.25$ ), as reported in FED-MVP. Only the PML was elongated ( $8.2 \pm 1.6$  vs  $6.0 \pm 1.2$ mm<sup>2</sup>,  $P=0.0003$ ) in the mutated group, leading to an anterior displacement of the coaptation point ( $51 \pm 11$  vs  $66 \pm 7$ %,  $P=0.0003$ ). Abnormal mitral phenotype (70% of MVP, 23% of MVP prod) and mitral regurgitation (93 vs 38%,  $P=0.0007$ ) were frequent in the mutated group. Two probands were operated for severe MR related to chordal rupture; histological examination confirmed the leaflets thinness.

ARHGAP24 is the first gene for autosomal dominant inherited MVP. Our limited series of patients exhibit typical features of FED-MVP. Our results could change the paradigm of a pure degenerative disease for FED-MVP.

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## 0287

### Diagnostic and prognostic value of NT-proBNP on percutaneous mitral commissurotomy (PMC)

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Studies that investigate the secretion of BNP in diseases affecting the atrium are rare. The relationship between N-terminal proBNP (NT-proBNP) and the echocardiographic (TTE) and hemodynamic data were studied in cases of pure and isolated rheumatic mitral stenosis (RMS). 67 patients with MS ( $41 \pm 11$  years), and 29 healthy individuals (age  $36 \pm 11$  years) were included in the study. Detailed TTE was performed before, one and six months after PMC. We measured NT pro BNP in systemic venous and left atrial (LA) before, immediately after, and one and 30 days after the procedure.

**Results** The plasma levels of NT-proBNP were significantly higher in MS patients than in controls ( $103.2 \pm 116.8$  VS  $21.5 \pm 8.5$ pg/mL,  $p=0.004$ ). We revealed a strong correlation between levels of NT pro-BNP in peripheral vein (PV) and in LA ( $r=0.819$ ,  $p=0.001$ ). NT-proBNP was higher in the LA than PV. We revealed a positive correlation with LA volume ( $0.470$ ,  $p=0.001$  and  $p=0.001$ ,  $0.681$  respectively at the LA and at the PV), the absolute value of LV strain ( $r=0.524$ ,  $p=0.001$  and  $r=0.568$ ,  $p=0.001$ ) and the pulmonary artery pressure (PAP) ( $r=0.312$ ,  $p=0.01$  and  $r=0.586$   $p=0.001$ ). Negative correlations with LVEF ( $r=-0.421$ ,  $p=0.001$  and  $r=-0.462$ ,  $p=0.000$ ) and the longitudinal movement of the VD ( $r=-0.380$ ,  $p=0.002$  and  $r=-0.374$ ,  $p=0.001$ ) were observed. NT pro BNP falls immediately after PMC in the sinus rhythm (SR) group patients but not in the atrial fibrillation (AF) group. Moreover, LA remodeling at six months is more pronounced in SR (SOG= $0.04 \pm 0.07$  VS  $0.02 \pm 0.06$  in the AF group; LA volume= $5.94 \pm 6.5$  VS  $1.17 \pm 8.6$

**Conclusion** In patients with RMS, NT-proBNP was positively correlated with LA enlargement and the PAP and could be a valuable marker to reflect the structural changes of the LA after cMP, in patients with SR but not in those with AF.

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## 0400

### Degenerative calcific mitral stenosis in patients referred for high surgical risk aortic stenosis: detection and quantification by multi-detector computed tomography

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**Background** Mitral annular calcifications (MAC) is a common finding in elder patients referred for transcatheter aortic valve implantation (TAVI), sometimes responsible of significant degenerative calcified mitral stenosis

(CaMS), but prevalence of both is poorly defined. Multidetector computed tomography (MDCT) allows fine quantification of calcifications and is a reliable tool in rheumatic mitral stenosis, but its contribution in CaMS remains unknown. Our objective was to estimate prevalence of MAC and CaMS in patients referred for TAVI using MDCT, and determine morphological factors leading from MAC to CaMS.

**Methods and results** A cohort of 346 consecutive patients referred for TAVI evaluation was screened by MDCT for MAC. One hundred and seventy four patients were positive for MAC. Among these patients, 165 patients had mitral valve area (MVA) assessable by MDCT planimetry (mean age 84 years). Analysis by segment revealed calcifications on: A1 30.9%, A2 29.1%, A3 42.4%, P1 56.4%, P2 78.8%, P3 69.7%. Mean mitral calcification volume and MVA were  $1020 \pm 1398 \text{ mm}^3$  and  $246 \pm 90 \text{ mm}^2$ , respectively. CaMS were severe, moderate and mild in 2.4%, 21.8% and 9.7% patients, respectively. Correlation between mitral calcification volume and MVA was significant but moderate ( $r = -0.433$ ). On multivariate analysis, MVA was independently linked to mitral calcification volume, aortic annular area and specific patterns of mitral leaflet calcification underlining the role of A2 (AUC 0.81). Interobserver reproducibility of MVA was high (ICC 0.935).

**Conclusions** MDCT allows detailed assessment of MAC in TAVI populations, demonstrating high prevalence, and quantification of CaMS with high reproducibility. Mitral analysis should become routine during MDCT screening before TAVI as it may significantly alter the therapeutic strategy.

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## 0544

### Factors predicting mitral restenosis after successful percutaneous mitral commissurotomy

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**Introduction** Percutaneous mitral commissurotomy (PMC) is the alternative treatment of choice for mitral stenosis (MS). Its immediate and medium term results are comparable to those of surgical commissurotomy, however in the long term there is a risk of restenosis. The purpose of this study is to determine the factors predicting restenosis after PMC.

**Methods** 322 patients (66% women), average age:  $35 \pm 13$  years (9-75 years) having a tight MS and treated by PMC with Inoué balloon. The anatomic aspect of the mitral apparatus before PMC was studied according to the criteria of the Wilkins score with a concomitant study of the state of mitral commissures. The primary success of PMC was defined as follow: mitral area (MA) post-PMC  $> 1.5 \text{ cm}^2$  and gain in MA  $> 25\%$  and mitral regurgitation (MR)  $\leq$  grade 2. Mitral restenosis was defined as a MA  $< 1.5 \text{ cm}^2$  and/or loss  $> 50\%$  of initial gain in MA.

**Results** The rate of primary success of PMC was 86% and mean MA post PMC was  $1.82 \pm 0.33 \text{ cm}^2$  compared to MA pre-PMC of  $1 \pm 0.18 \text{ cm}^2$  ( $p < 0.0001$ ).

Opening of two commissures was observed in 74% of patients. After an average period of  $62 \pm 32$  months, only 12% of patients had a dyspnea stage III-IV of NYHA, MA was  $1.64 \pm 0.3 \text{ cm}^2$  ( $p < 0.001$ ) and mitral restenosis happened in 47 patients (20%) after a period of  $60.48 \pm 27$  months (22 – 124 months).

The independent predictors of mitral restenosis after a successful PMC were: previous surgical commissurotomy, Wilkins score  $> 8$ , MA after PMC  $< 1.8 \text{ cm}^2$  and absence of bicommissural opening post PMC.

**Conclusion** A favorable anatomy of mitral apparatus and the optimisation of immediate result of PMC are the guaranty for the maintain of good result in the long term.

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## 0263

### Short- and long-term outcomes of surgery for severe tricuspid regurgitation: Algerian experience

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**Introduction and objectives** There is little data available for Algeria on the outcomes of surgical treatment for severe tricuspid regurgitation. The aim of this study was to analyze clinical and echocardiographic outcomes in a series of patients who received surgical treatment for severe tricuspid regurgitation and to compare outcomes according to the operative approach to valve repair or replacement.

**Methods** Retrospective study in 239 consecutive patients with severe tricuspid regurgitation undergoing valve surgery between April 2006 and February 2014 in military hospitals of Algeria and Constantine.

**Results** A total of 112 ringless and 85 ring annuloplasties were performed and 9 bioprostheses and 33 mechanical prostheses were implanted. Perioperative mortality was 18.5% and was associated with age and cardiopulmonary bypass time. During clinical follow-up (median, 41 [interquartile range, 24-89] months), 2 reoperations were required in the ring annuloplasty and mechanical prosthesis groups; prosthetic thrombosis was diagnosed in 4 patients in the latter group. Total mortality after follow-up was 29.9% and was associated with age  $> 70$  years and extracorporeal circulation time. The emergence of new severe tricuspid regurgitation was associated with age and ringless annuloplasty ( $P = .04$ ).

**Conclusions** Ringless repair was significantly associated with recurrence of severe tricuspid regurgitation. The use of mechanical prostheses was associated with a high rate of thrombosis. No significant differences in perioperative or total mortality were found between the different methods used for repair or valve replacement.

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## 0290

### Left atrial remodeling after percutaneous left atrial appendage closure

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**Objectives** The importance of the left atrial appendage (LAA) on left atrial (LA) hemodynamics is unknown. We sought to evaluate the effect of LAA percutaneous closure (LAAPC) on left atrial remodeling in patients with paroxysmal atrial fibrillation (AF) and permanent AF.

**Methods** All patients referred for LAAPC with Amplatzer Cardiac Plug (ACP) and Watchman device were enrolled. Cardiac computed tomography (CT) for LA volume measurement and transthoracic echocardiography (TTE) for diastolic function assessment were performed at baseline and 3 months after LAAPC. An average of 3 consecutive measurements were performed for TEE parameters in all patients.

**Results** Sixty-three patients (mean age  $73 \pm 9$  years) were included. 38% ( $n = 24$ ) in sinus rhythm (SR) at baseline and 55% ( $n = 35$ ) in permanent AF. Patients in SR at baseline and permanent AF at 3 months were excluded ( $n = 4, 7\%$ ). The mean CHA<sub>2</sub>DS<sub>2</sub>-VAsC score was  $4.3 \pm 1.3$ . There was no significant difference in the functional status and BNP level ( $155.6 \pm 107$  vs  $\pm 150.7 \text{ pg/mL}$ ;  $p = 0.85$ ) between baseline and 3 months follow-up. Left atrial volume excluding the LAA ( $145 \pm 55 \text{ cm}^3$  baseline vs  $144 \pm 50 \text{ cm}^3$  at 3 months;  $p = 0.30$ ) showed no significant change after 3 months in overall population, neither in the SR ( $99.7 \pm 19.1$  vs  $103.8 \pm 21 \text{ cm}^3$ ;  $p = 0.32$ ) or the permanent AF groups ( $173.2 \pm 54$  vs  $171.7 \pm 48.6 \text{ cm}^3$ ;  $p = 0.59$ ). MV peak E-wave ( $84.2 \pm 22.7$  vs  $86.7 \pm 26 \text{ cm/s}$ ;  $p = 0.62$ ) and A-wave velocities ( $65.4 \pm 14.4$ ;  $68.5 \pm 22.2 \text{ cm/s}$ ;  $p = 0.66$ ) did not differ between baseline and follow-up but E/E' ratio was increased in the overall population after LAAPC ( $7.9 \pm 2.1$  vs  $9.1 \pm 3.6 \text{ cm/s}$ ;