Background: Modalities (undersizing annuloplasty – UA- vs mitral valve replacement – MVR-) and outcome of surgical treatment of functional mitral regurgitation (FMR) are still debated.

Objectives: Early and mid-term outcome of patients operated for symptomatic severe FMR; Comparison of respective results of UA and MVR.

Methods: Inclusion criteria: Severe FMR due to either ischemic or non ischemic cardiac disease; Heart failure symptoms despite optimal medical treatment; LVEF<40%. Primary endpoints: In-hospital mortality; Late CV mortality Secondary endpoints: Evolution of LVEF after surgery; Recurrence of MR.

Results: 59 consecutive patients included between 1997 and 2011, mean age=65±10.1, ischemic disease in 41 (70%),heart failure symptoms in all, LVEF= 36±6%.ERO=41±17 mm².Surgical procedures included 12UA and 47 MVR with only 8 (13%)concomitant CABG. MBG and UA groups were comparable for age, ischemic etiology, LVEF, ERO and sPAP (all p>0.5).In-hospital mortality: 3.3% overall, 8.3% in UA group and 2.1% in MVR group (p=0.36).Eight-year survival free from CV death: 58±13% in the total population, 60±18% in the UA group and 72±10% in the MVR group (p=0.48). By multivariable analysis, older age (1.22 [1,05-1,42], p=0.008) and LV end-diastolic diameter (1.25 [1.05-1.49], p=0.01) independently predicted late mortality with borderline effect of pre-op LVEF (1.10[0.99-1.2], p=0.08) whereas type of surgery did not (1.7 [0.38-7.55], p=0.48). LVEF did not change between pre-op and late FU echo in the MVR group (36±6% vs 36±10%, p=0.68) but tended to decrease in the UA group (37±5.8% vs 31±12%, p=0.1). In the UA group, 50% of patients experienced recurrence of significant MR (mean post-op ERO=19±4 mm²) whereas no patients in the MVR group presented with post-op MR.

Conclusions: Despite severe clinical and echocardiographic presentation, surgical treatment of FMR can be performed with an acceptable operative risk and mid-term survival. MVR is a reasonable approach, which does not expose patients to MR recurrence, particularly frequent after UA.

Minimally invasive approach for mitral valve surgery, as safe and as reliable than sternotomy. Does it should be the standard approach?

Experience in 368 patients

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To assess the reliability of minimally invasive approach, as this approach is contest in France we review part of our experience in one center.

Methods: From January 2009 to April 2012, 368 patients were operated of isolated mitral surgery in a single center. In a retrospective study we analyze follow-up with focus on surgical approach to emphasize on the safety of minimally invasive strategy.

During that period video-assisted procedure was perform for 222 patients and 146 underwent standard sternotomy.

Results: Results on different parameters are analyzed, we report no difference in mortality, in-hospital stay length, stroke, bleeding, use of catecholamine between the two groups. Cross clamping, ECC times were longer in minimally invasive group. ICU time was longer in standard sternotomy group. In terms of results in efficiency upon plasty results, results were better in the minimally invasive group with 90,4% success of plasty when planned.

All parameters are detailed in the study.

Reliability of the procedure is modulated by experience of surgeon, two surgeons are mainly involved in minimally invasive program, they are more experienced in mitral plasty so that explain good repair vs replacement rate in this group.

Conclusion: On the basis of this retrospective study we conclude than minimally invasive approach is as safe as standard approach for mitral surgery and as reliable on repair rate in mitral regurgitation.

Preoperative atrial fibrillation predicts outcome after valve repair for mitral valve prolapse

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Background: The aim of this study is to assess the impact of preoperative AF on outcome in patients undergoing MVR for mitral valve prolapse (MVP).

Methods: Between 1991 and 2009, 348 consecutive patients underwent MVR for MR due to MVP (follow-up: mean duration 105±50 months). Echocardiography was performed preoperatively and 9 to 12 months after surgery. Post operative left ventricular dysfunction (LVD) was defined as ejection fraction (EF) < 50%. Results: There were 81 patients (23.3%) in AF at baseline. Preoperative EF decreased from 62.2±6.6% to 59.8±10.1% post operatively (p< 0.0001). Patients in AF were older (70.9 vs. 64.11 years, p=0.0001), more often in NYHA III – IV class (p=0.028), had a significantly higher EuroSCORE (4.4±5.7 vs. 2.8±2.4, p=0.0001). At baseline, patients in AF had a lower preoperative EF (64±11 vs. 68±9%, p=0.001). Early mortality was 4.9% in patients with preoperative AF vs. 1.9% in sinus rhythm (n=5, p=0.13). Multivariate analysis did not identify AF as a predictor of early mortality whereas EuroSCORE (p=0.001) and low preoperative EF (p=0.001) were independent risk factors for early mortality. On multivariate analysis adjusted for EuroSCORE, NYHA III – IV class and preoperative LVEF, preoperative AF was identified as an independent predictor of overall mortality (OR 1.9; p=0.03) and of occurrence of heart failure (OR 2.2, p=0.054). After adjustment for gender, EuroSCORE, NYHA III-IV class and preoperative EF, preoperative AF and pre-operative EF were the 2 predictors of post-operative LVD (OR 2.2 p=0.025 and OR 1.04, p=0.03 respectively).

Conclusion: Preoperative AF is an independent predictor of long term mortality and post-operative LVD after MVR for MVP.

What are long-term results of percutaneous mitral commissurotomy in patients with few or no symptoms?

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Purpose: Percutaneous mitral commissurotomy (PMC) has enabled patients (pts) to be treated at an earlier stage of their disease than by surgery. However, very long-term results have not been specifically studied in this context.

Methods: From 1986 to 1995, 237 patients in NYHA class I or II underwent PMC in our department. Mean age was 46±12 years; 74 patients (31%) had atrial fibrillation and 22 (9%) had a history of commissurotomy. Most patients were in NYHA class II (232 pts; 98%). As assessed by echocardiography, mean valve area was 1.1±0.2 cm² (1.5±1 cm² in all cases); 40 patients (17%) had pliable valves and mild subvalvular disease, 145 (61%) had severe subvalvular disease, and 52 (22%) had calcified valves. PMC used a single-balloon in 5 pts, a double-balloon in 93 and the Inoue balloon in 139.

Results: After PMC, valve area increased to 1.9±0.3 cm² as assessed by 2D echo. Severe mitral regurgitation (grade 3/4) occurred in 4 patients (1.7%). There were no other severe immediate complications. Good immediate results (valve area ≥ 1.5 cm² without mitral regurgitation ≥ 2/4) were obtained in 223 patients (94%). The 20-year actuarial rate of survival without surgery or repeat PMC and in NYHA class I or II was 41±4% in the whole population.

After good immediate results, the 20-year rate of good functional results was 42±5%. A Cox multivariate model identified 2 predictors of good late functional results after good immediate results: young age (p=0.05) and a large valve area after PMC (p=0.002). In the 142 patients aged ≤50 years, the 20-rate of good functional results was 50±6%.
Conclusion: In patients with severe mitral stenosis and few or no symptoms, PMC: 1) Can be safely performed 2) Provides good immediate and long-term results in a large variety of patients. 3) Should be considered in particular in patients aged ≤50 years, in whom it prevents functional deterioration in half of the cases 20 years after PMC.

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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 ±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 has been studied according to the criteria of the Wilkins score with a concomitant study of the state of mitral commissures. The primary success of PMC is defined as follows: mitral area (MA) >1,5 cm² and gain in MA >25% and mitral regurgitation (MR) ≤ grade 2. Mitral restenosis is defined as a MA <1,5 cm² 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±0,33 cm² compared to MA pre-PMC of 1±0,18 cm² (p <0.0001). Opening of two commissures has been observed in 74% of patients. After an average period of 6±32 months, only 12% of patients had a dyspnea stage III-IV of NYHA, MA was 1,64±0.3 cm² (p=0.001) and mitral restenosis happened in 47 patients (20%) after a period of 60,48±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 cm² 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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Percutaneous mitral balloon commissurotomy in patients with restenosis after surgical commissurotomy: a comparative study
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Methods: We performed percutaneous mitral balloon commissurotomy (PMC) in 361 patients to compare the effectiveness of PMC between patients with mitral restenosis after surgical commissurotomy (group 1) and patients with unoperated mitral stenosis (group 2). Thirty-nine had undergone closed or open mitral commissurotomy 8.4 years before.

Results: There were no significant differences in clinical profiles between the two groups. The mitral valve area was increased from 1.1 0.31 to 1.94 0.58 cm² in group 1 and 0.94 0.3 to 2.07 cm² in group 2 (p<0.05). The mitral gradient was decreased from 14.6±5.9 to 6.2±6.6 mm Hg in group 1 and 18±7.0 to 7.5±3.3 mm Hg in group 2 (p<0.05). The increment of mitral regurgitation and significant left to right shunt after PMC were not significantly different (8.9% versus 13.7%, 4.2% versus 8.4% respectively). Optimal results were attained in 81% of the patients in group 1 and in 88.3% of the patients in group 2 (p<0.05).

Conclusion: These results suggest PMC in mitral restenosis after surgical commissurotomy can be safe in selected patients and may be equally effective as in unoperated mitral stenosis.

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Relationship between cut-off values of peak aortic valve velocity and those of other Doppler echocardiographic parameters of severity in patients with aortic stenosis and normal flow
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Background: Previous studies have reported inconsistencies between echocardiographic parameters of severity in aortic valve stenosis (AS). Peak aortic valve velocity (Vmax) strongly predicts outcome in AS patients. The present study was therefore designed to identify the cut-off values of echocardiographic parameters of severity in normal flow (NF) AS corresponding to a Vmax ≥3 m/s, ≥4 m/s, ≥5 m/s or ≥5.5 m/s. This study was therefore designed to identify the cut-off values of echocardiographic parameters of severity that correspond to Vmax ≥3, 4, 5 and 5.5 m/s.

Methods and results: We retrospectively reviewed the echocardiograms of 528 consecutive patients with AS, left ventricular (LV) ejection fraction >0.50 and NF (stroke volume index>35 mL/m²). The accuracy of mean pressure gradient (MPG), aortic valve area (AVA), and indexed AVA for BSA (IAVA) to predict Vmax≥3, 4, 5 and 5.5 m/s ranged from 0.89 to 0.99, and the best predictor was MPG for various levels of Vmax. The best values of MPG, AVA, and IAVA to predict Vmax≥3 m/s were 22 mmHg, 1.15 cm², 0.60 cm²/m², respectively. While a cut-off of Vmax≥4 m/s to define severe AS was consistent with a value of 30 mmHg for MPG, corresponding values for AVA and IAVA of 0.90 cm² and 0.48 cm²/m² respectively were substantially different from those recommended in current guidelines. MPG≥60 and 65mmHg, AVA≥0.76 and ≥0.68 cm², and IAVA≥0.41 and ≥0.35 cm²/m² were identified as predictors of Vmax≥5 m/s and ≥5.5 m/s (very severe AS), respectively.

Conclusions: Guidelines recommended cut-off values for AVA and IAVA are not consistent with those of Vmax and MPG. The results of the present study may serve as safeguards in case of apparent inconsistencies between echocardiographic parameters of severity in NF AS.

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Short and long-term outcome of low flow, low gradient severe aortic stenosis with preserved left ventricular ejection fraction: results from a cardiac catheterization study
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Background: The exact prevalence, characteristics and impact on both short- and long-term outcome of low flow, low gradient severe aortic stenosis (LFLG) despite preserved left ventricular ejection fraction (LVEF), remain debatable. The aim of our study is to describe the outcome of a large group of patients with LFLG AS using cardiac catheterization data.

Methods and Results: Between 2000 and 2010, 770 patients with preserved LVEF (>50%) and severe AS (valve area <1cm²) without significant other valvular heart disease having underwent cardiac catheterization, were retrospectively analyzed. Mean age was 74±8 years, 42% were female, 46% had associated coronary artery disease. LFLG (indexed LV stroke volume<35 mL/m² and mean pressure gradient<40 mm Hg) were found in 13% of patients (n=99), normal flow/high gradient (NFHG) in 14% and NFLG in 22%.

In comparison with classical patients with NFHG, those with LFLG were significantly older, and more often female. The cardiac catheterization hemodynamic data including the systemic compliance, vascular systemic resistances and the valvulo-arterial impedance were significantly impaired in LFLG patients as compared to those with NF-HG. Thirty-days mortality was higher in patients with LFLG when compared to NFHG (9 vs. 4%, p<0.06) and 10-year survival was significantly reduced in LFLG (32±8%) when compared to NFHG (66±4%; p=0.0005) (figure). Furthermore, after adjustment for...