Left atrium variables

<table>
<thead>
<tr>
<th></th>
<th>Before BMV</th>
<th>After BMV</th>
<th>1 month after BMV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, mL</td>
<td>77±22</td>
<td>66±18</td>
<td>62±18</td>
</tr>
<tr>
<td>Indexed volume, mL/m²</td>
<td>56±14</td>
<td>48±12</td>
<td>45±13</td>
</tr>
<tr>
<td>Anteroposterior diameter, mm</td>
<td>44±5</td>
<td>41±5</td>
<td>40±6</td>
</tr>
<tr>
<td>Inferosuperior diameter, mm</td>
<td>67±6</td>
<td>66±6</td>
<td>65±6</td>
</tr>
<tr>
<td>Mediolateral diameter, mm</td>
<td>48±6</td>
<td>45±6</td>
<td>45±4</td>
</tr>
<tr>
<td>Area, cm²</td>
<td>27±5</td>
<td>25±4</td>
<td>25±4</td>
</tr>
</tbody>
</table>

**Change in indexed LA volume after BMV**

- **Before BMV:**
  - 20
  - 50
  - 70
  - 90
  - 110
- **Post BMV:**
  - 20
  - 40
  - 60
  - 80
  - 100
- **1 month after BMV:**
  - 20
  - 40
  - 60
  - 80
  - 100

Change in indexed LA volume after BMV

In conclusion, PMC is a safe and effective treatment in a wide range of patients with mitral stenosis.

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**Immediate results of percutaneous mitral commissurotomy**

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CHU Ibn Rochd Casablanca, Cardiologie, Casablanca, Maroc)

In developing countries mitral stenosis is a frequent heart disease. The therapeutic management of mitral stenosis has been substantially improved through the development of percutaneous mitral commissurotomy, whose safety and efficacy have been demonstrated in many studies. The aim of this work is to study the immediate results of percutaneous mitral commissurotomy (PMC) in patients with severe mitral stenosis managed in Center of cardiology- University Hospital Ibn Rochd-Casablanca.

Of 150 patients there were 20 men and 130 women including 10 pregnant women (third trimester of pregnancy), their mean age was 35 ± 10 years. One hundred were in NYHA class II, 40 in class III and 10 in class IV. Eighty patients with atrial fibrillation.

All patients had transthoracic echocardiography before and after the procedure and transesophageal echocardiography before the PMC. Wilkins score calculated in all patients with an average 7 ± 4. Grade I+ mitral regurgitation was present in 70 and grade 2+ in 13. Mitral regurgitation grade I or II developed in 8 patients. The PMC was converted into a mitral replacement surgery in one patient. Tamponade occurred in one patient. No patient died.

Mitral surface area and hemodynamic parameters improved significantly after PMC; mean left atrial pressure fell from 18.76 ± 6.18 to 10.65 ± 4.38 mmHg (P < 0.001), mean transmitral gradient from 14.03 ± 4.70 to 4.63 ± 2.05mmHg (p < 0.001) and mitral valve area from 0.99 ± 0.22 to 1.88 ± 0.41cm² (p < 0.001).

In conclusion, PMC is a safe and effective treatment in a wide range of patients with mitral stenosis.

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**Prognostic significance of moderate renal dysfunction in patients with pulmonary arterial hypertension**

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**Rationale:** In pulmonary arterial hypertension (PAH), the raise of vascular resistance lead to right ventricular dysfunction, fluid retention and death. In this setting, we evaluated the determinants of moderate renal dysfunction and its impact on mortality.

**Material and methods:** 38 consecutive PAH patients were prospectively enrolled. Right ventricular dysfunction was assessed by echocardiography using two-dimensional strain, tissue Doppler imaging and tricuspid annular displacement (TAPSE). Right-sided catheterism, 6-minute walking distance and biological sampling was performed within 48 hours. Moderate Renal dysfunction was defined by a creatinine clearance below 60 ml/min.

**Results:** In the overall cohort, renal dysfunction was associated with decreased cardiac output, SVO₂, TAPSE, haemoglobin levels, 6 min walking distance and increased BNP levels. By univariate analysis, predictors of mortality were TAPSE < 15 mm (OR: 10.25 95% CI [1.06-29.44]; p = 0.028), BMI < 25 kg/m² (OR: 5.00 95% CI [1.04-23.84]; p = 0.043) and renal dysfunction (OR: 9.43 95% CI [1.96-45.29]; p = 0.005). By multivariate analysis, renal dysfunction remains the sole independent predictor of mortality at one year follow-up (OR: 5.597 95% CI [1.06-29.44]; p = 0.042).

**Conclusion:** Moderate renal dysfunction is a powerful marker of prognosis in PAH.

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**Comparison of semi-quantitative and quantitative assessment of AR severity. Clinical implications.**

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**Background:** Recent studies have emphasized the importance of quantitative assessment of valvular regurgitation. However, in clinical practice mainly semi-quantitative methods remain used despite an unclear diagnostic value. We aimed to define the sensitivity and specificity of semi-quantitative methods compared to the PISA for the diagnostic of severe aortic regurgitation (AR).

**Methods:** Degree of AR was prospectively evaluated using the PISA method and 4 semi-quantitative measurements (cardiac output (CO), pressure half time (PHT), vena contracta (VC) and diastolic flow reversal (DFR)) in 224 patients with a wide range of AR severity. Criteria for severe AR were an ERO 30mm², a CO 10 l/min, a PHT < 200ms, a VC 6 mm or a DFR 18 cm²/s.

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Results: Using the PISA method 76 patients (34%) had severe AR. Sensitivity, specificity, VPP, VPN of the recommended thresholds of the 4 semi-quantitative methods for severe AR based on ERO are presented in the Table. Overall, semi-quantitative methods had a good specificity but a poor sensitivity except the VC which presented both a good sensitivity and specificity.

Conclusion: For assessment of AR severity, current thresholds are specific but poorly sensitive except the VC which provides a correct discriminative value. Thus, semi-quantitative methods should be integrated in the comprehensive evaluation of AR severity but severe AR should not be excluded only based on semi-quantitative criteria. Our results emphasize the need for quantitative assessment of AR severity in clinical practice and may explain the better prognostic value of quantitative methods than traditional variables.

<table>
<thead>
<tr>
<th>Threshold</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>PPV, %</th>
<th>NPV, %</th>
<th>AUC</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO100/ml</td>
<td>38</td>
<td>95</td>
<td>81</td>
<td>73</td>
<td>0.70</td>
</tr>
<tr>
<td>VC6mm</td>
<td>91</td>
<td>77</td>
<td>65</td>
<td>95</td>
<td>0.90</td>
</tr>
<tr>
<td>DFR18cm/s</td>
<td>51</td>
<td>86</td>
<td>71</td>
<td>71</td>
<td>0.77</td>
</tr>
<tr>
<td>PHT200ms</td>
<td>12</td>
<td>100</td>
<td>100</td>
<td>60</td>
<td>0.81</td>
</tr>
</tbody>
</table>

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Balloon aortic valvuloplasty: insights into subsequent treatments and long term outcome
Karim Bejar (1), Ali Farhat (1), Bogdan Borz (1), Mathieu Godin (1), Car-los Sanchez Giron (1), Chiara Fraccaro (1), Camille Hauville (1), Christo-phe Tron (1), Ibrahim Baala (2), Hélène Eltchaninoff (1), Alain Cribier (1) (1) CHU Rouen, Cardiologie, Rouen, France - (2) CHU de Rouen, Chirur-gie cardioïaque, Rouen, France - (3) CHU de Rouen, Biochimie, Rouen, France

Introduced in 1986 as a therapeutic option for degenerative aortic stenosis, balloon aortic valvuloplasty (BAV) know actually a new development and has become a faster, safer and more efficient with marked technological improvements. However, early restenosis remains the Achilles’ heel for the long term outcome. Actually, many critically ill patients declined for surgical aortic valve replacement could undergo a BAV followed by whether a transcatheter aortic valve implantation (TAVI) or a conventional aortic valve replacement (AVR).

In this study, we aimed to analyze the long-term outcome after BAV stratified by subsequent treatments.

From 2005 to 2008, 323 patients were treated by BAV with a retrograde trans-femoral approach. Mean age was 80 ± 10 years. Mean Euroscore was 18.3±12.6%. After BAV, effective orifice area increased from 0.68±0.24 to 1.12±0.39cm² (p<0.001) and mean gradient decreased from 44±19 to 29±11mmHg (p<0.001). Early mortality rate (<7days) was 3.4% (n=11). Hemodynamic data controlled in 90 patients (72.9%) before any other treat-ment and with a delay of 9±8 months showed a significant re-increase of mean gradient to 35±15.1 mmHg (p<0.001).

At long term, 210 patients received medical treatment alone, 31 (9.6%) patients underwent subsequent aortic replacement, 54 (16.7%) had a trans-cath-eter aortic valve implantation (TAVI) and 28 (8.7%) had repeat BAV at least one time with a delay of 7.3±4.9, 5.9±6.1 and 9.8±8.5 months respectively. With a Kaplan-Meier analysis, survival after isolated BAV was very poor (5.1% at 5 years), whereas patients treated by BAV followed by AVR or TAVI had a significantly better survival rate (55.7% at 5 years).

BAV leads to short term hemodynamic improvement in patients with aortic stenosis. This helps to bridge some critical situations allowing to further perform a more radical treatment in better clinical conditions.

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Myocardial injury after transcatheter aortic valve implantation: are transfemoral and transapical approaches equal?
Christophe Tron (1), Karim Bejar (1), Hélène Eltchaninoff (1), Pierre-Yves Litzler (2), Matthieu Godin (1), Bruno Cauliez (3), Carlos Sanchez-Giron (1), Alain Cribier (1) (1) CHU de Rouen, Cardiologie, Rouen, France - (2) CHU de Rouen, Chirurgie cardioïaque, Rouen, France - (3) CHU de Rouen, Biochimie, Rouen, France

Transcatheter aortic valve implantation (TAVI) induces a certain amount of myocardial injury assessed by an increase in cardiac troponin after the procedure. The goal of this study was to compare troponin levels after TAVI performed using either the transfemoral (TF) or transapical (TA) route.

Methods: We enrolled 103 consecutive pts with severe symptomatic aortic stenosis and a high surgical risk who underwent TAVI using the Edwards-Sapien valve. TF TAVI was performed in 74 pts under local anesthesia after surgical cut-down of the femoral artery while the other 29 pts underwent a TA TAVI. For the 2 approaches, the valve was implanted during rapid pacing. Cardiac Troponin I (lower limit of detection: 0.2 µg/l, suggested diagnostic value for myocardial infarction: 1.0 µg/l) was measured before, 8 hours and 24 hours after TAVI.

Results: Pts undergoing TA TAVI were significantly more often males (69 % vs 45 %, p<0.05), younger (79 ± 8 vs 84 ± 6 years, p<0.01) and had more often previous bypass surgery (48% vs 23%, p<0.03) than TF pts. The propor-tion of pts with previous myocardial infarction, previous PCI, presence of at least one significant (>50%) coronary stenosis at the time of implantation, was similar between the TF and TA population. Logistic Euroscore, ejection fraction, creatinin level were similar in the 2 groups. After TAVI, the effective orifice area increased from 0.65 ± 0.15 to 1.90 ± 0.30 cm² (p< 0.0001) and the transvalvular mean gradient decreased from 44±14 to 9±4 mmHg (p<0.0001).

Troponin level was similar at baseline in the TF and TA populations (0.08 ± 0.14 µg/l TF vs 0.11 ± 0.34 µg/l TA), peak troponin was very significantly higher after TA TAVI than after TF TAVI (65.20 ± 61.06 µg/l TA vs 5.23 ± 7.94 µg/l TF; p<0.0001).

Conclusions: Troponin elevation after TA TAVI is much higher than after TF TAVI. Whether differences seen in the degree of myocardial injury have prognostic value will require further studies.

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Percutaneous aortic balloon valvuloplasty as first-line treatment in high-risk patients scheduled for transcatheter aortic valve implantation
David Attias, Claire-Marie Tissot, Dominique Himbert, Gregory Ducrocq, Bernard Jung, Eric Brochet, Delphine Détaint, Marie-Pierre Dilly, Patrick Nataf, Alex Vahanian
CHU Bichat, Cardiologie, Paris, France

Purpose: To assess the results of first-line percutaneous aortic balloon valvuloplasty (PABV) in high-risk patients referred for transcatheter aortic valve implantation (TAVI).

Methods: Of 253 high-risk patients referred for TAVI between October 2006 and September 2009, 41 were considered transiently unsuitable for either aortic valve replacement (AVR) or TAVI and underwent PABV as potential bridge to intervention. In the others, primary TAVI or AVR was performed in 140 cases, and medical therapy alone in 72.

Results: Indications for PABV were: unstable haemodynamic condition (n=27, of whom 12 cardiogenic shocks), TAVI not immediately available for logistic reasons (n=6), associated cancer requiring further explorations (n=3), combined acute coronary syndrome requiring urgent percutaneous revascularization (n=1). No death occurred during PABV. Twenty-three patients actually underwent secondary TAVI (n=19) or AVR (n=4) (bridge PABV), while 18 did not undergo further intervention (PABV alone) because of technical (n=10) or general (n=8) contraindications, death before intervention (n=2) or patient's refusal (n=1). The main baseline characteristics and clinical outcomes of the different subgroups are presented in the Table. There was no significant difference in one-year sur-vival between the primary TAVI / AVR and bridge PABV groups (p=0.08), and between the medical treatment and PABV alone groups (p=0.36).

Conclusion: In very high-risk patients with aortic stenosis and temporary contraindications to AVR or TAVI, 1) PABV may be used as a bridge to inter-vention with good mid-term outcomes, 2) PABV alone can be safely perfor-med but is associated with a poor mid-term outcome.