ROBOTIC ASSISTED MITRAL VALVE SURGERY:

SINGLE-CENTER EXPERIENCE AND COMPARISON OF TWO DIFFERENT ROBOTIC SYSTEMS

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BACKGROUND

- Robotic assisted surgery represents an interesting tool for the treatment of patients affected by mitral valve disease.
- Here we report our experience with the Da Vinci System in order to assess safety, describing early postoperative outcomes and mid-term results
- Moreover, the aim of the present study is to compare results obtained in two different study periods.

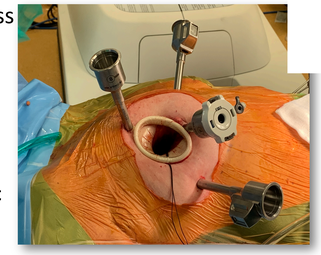
METHODS

- Retrospective study on 74 consecutive patients with severe degenerative mitral valve regurgitation underwent robotic assisted mitral valve repair
- Study Period: November 2011-December 2020
- These procedures were performed in two different study periods:
  - from November 2011 to January 2013 (39 patients – Group 1 – Da Vinci Si system)
  - from February 2020 to December 2020 (35 patients – Group 2 – Da Vinci Xi system)
- The robotic program was suspended for 7 years





- Technically, the working port consisted of a 3 cm lateral right mini-thoracotom intercostal space; four additional 7-mm port access atrial retractor. Cardiopulmonary bypass (CPB) was established through femoral vessels cannulation while antegrade crystalloid cardioplegia delivere into the aortic root after conventional aortic cross clamp



- Follow-up was 100% complete, with a mean and median value of 44 ± 44 and 29 months, respectively

RESULTS

- There were 68 male (92%) and 6 female (8%) patients, with a mean age of 58 ± 18 years
- Preoperative mitral valve lesion:
  - posterior leaflet prolapse/flail in 61 cases (82.5%)
  - anterior leaflet prolapse/flail in 4 cases (5.5%)
  - Barlow syndrome in 9 cases (12%)
- Posterior leaflet resection was performed in 51 patients (62%) and neochordae implantation in 39 (53%)
- There was no conversion to full sternotomy
- Mean CPB and cross-clamp times were 145 ± 40 and 99 ± 25 minutes
- **Group 2 showed a significant reduction in cross-clamp time (87 ± 18 vs 112 ± 25 minutes, p=0.02), with a slight reduction of CBP time (136 ± 35 vs 155 ± 43 minutes, p=0.18)**
- No in-hospital mortality
- **In Group 1, 1 stroke and 1 postoperative myocardial infarction occurred; in group 2 no adverse events were recorded**
- Postoperative echocardiography showed no residual mitral regurgitation in all cases
- **Mean Intensive Care Unit stay was 47 ± 66 hours, with a no significant reduction in Group 2 (42 ± 32 vs 52 ± 86 hours, p=0.13)**
- At follow-up, 2 non-cardiac deaths were reported: the 9-years survival was 95 ± 3%. Freedom from reintervention was 100%.

CONCLUSION

- Minimally invasive robotic assisted mitral valve surgery with the Da Vinci system is feasible, safe and associated with excellent early and mid-term results
- The comparison between the study Groups has highlighted a reduced cross-clamp time for Group 2: this result, considering the 7-years period of inactivity, that has certainly mitigated the learning-curve effect, could be related to the robotic system; the new Da Vinci XI system, used from February 2020 for Group 2, offers several advantages as automatic calibration of the endoscope, HD 3D vision and larger movements allowed to the robotic arms, that make the valve procedure easier, with a significant reduction of the ischemic time