Journal Homepage: -www.journalijar.com
INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)
Article DOI:10.21474/IJAR01/8442
DOI URL: http://dx.doi.org/10.21474/IJAR01/8442
ISSN NO. 2320-5407

RESEARCH ARTICLE

PERCUTANEOUS BALLOON VALVULOPLASTY FOR BIOPROSTHETIC TRICUSPID VALVE STENOSIS.

M.A.Hasni, H.Sanoussi, N.Azib, M.Elghanmi, N.Fellat, N.El Haitem and R.Fellat.
Service De Cardiologie A, Chu Ibn-Sina, Rabat.

Manuscript Info

Manuscript History
Received: 20 November 2018
Final Accepted: 22 December 2018
Published: January 2019

Abstract

Percutaneous Balloon Valvuloplasty for Bioprosthetic Tricuspid Valve Stenosis (PBVBTV) is an accepted therapeutic option for symptomatic severe bioprothetic tricuspid valve stenosis, whereas a surgical tricuspid valve replacement remains the treatment of choice. There have been little reports of successful PBVBTV for bioprosthetic tricuspid valve stenosis. Herein we present a case performed at our hospital, with successful, reduction in valve gradient and lasting clinical improvement.

We describe the standard technique used for PBVBTV. We present results from a literature review that identified 16 reported cases of PTTBV for bioprosthetic severe tricuspid stenosis, with favorable results. We conclude that PBVBTV maybe considered for a select patients in which symptomatic improvement and hemodynamic stability are desired immediately, and specially for patients who are inoperable or at high surgical risk.

Introduction:-

Case Report:-

A 69-year-old woman presented two years after tricuspid valve replacement with right-sided heart failure and edema of the lower extremities resistant to diuretic treatment without dyspnea or other related signs over the previous few months, Shis past medical history included a mitral-aortic valve replacementandtricuspid valve annuloplasty, with a Starr-Edwards mechanical prosthetic valve aortic and mechanical prosthesis type stars in mitral position, for mitral stenosis with aortic and tricuspidregurgitation of rheumatic fever etiology in1989, fifteen years afterthe patient underwent tricuspid valve replacement on a beating heart via a right mini thoracotomy with a 27mm Carpentier-Edwards bioprosthesis for tricuspid regurgitation (TR),with an uncomplicated postoperative evolution.

On admission, shis pulse 67 beats/minute, blood pressure was 146/65 mmHg, respirations 20 breaths/minute, with an oxygen sat-uration of 100% on room air. Physical examination was compatible with right heart failure (Jugular vein distention and edema of the lower extremities up to the knees), with metallic aortic and mitral valve sounds clearly heard.Pulmonary auscultation revealed bibasilar crackles.

Corresponding Author:-M.A.Hasni.
Address:-Service De Cardiologie A, Chu Ibn-Sina, Rabat.

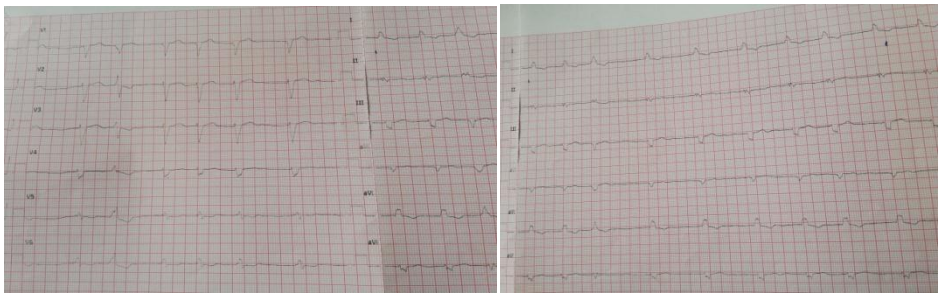

Fig 1:-ECG: normal sinus rhythm and incomplete left bundle branch block.

Transesophageal echocardiographydemonstrated severe bioprosthetic Tricuspid valve stenosis and a mild regurgitation.The mean diastolic gradient across the tricuspid bioprosthesis was 15 mmHg - Annular diameter at 24 mm and Vmax of TR was 2.5 m/s. a functional aortic an mitral Prosthetic valve (with a transmitral gradient of 5 mmHg and aortic prosthesis with a mean gradient of 12 mmHg)with an ejection fraction of 63%.right ventricle moderately dilated at 36 mm with systolic function deteriorates a tricuspid annular plane systolic excursion =15 mm, and a fractional area change at 28%.

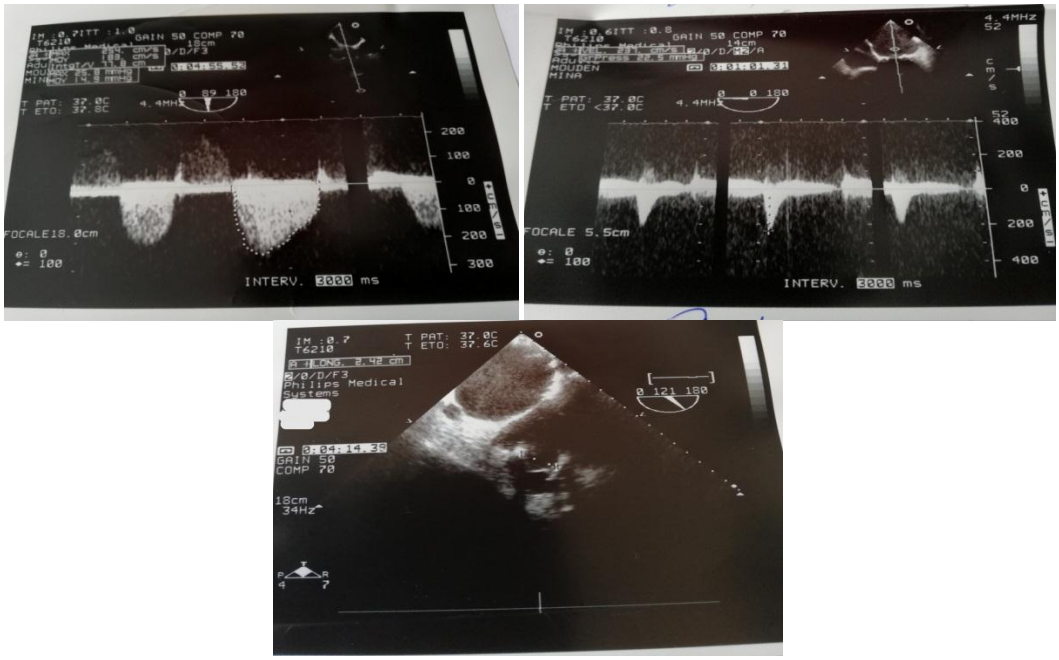

Fig 2:-Transesophageal echocardiography: A/Mean diastolic gradient across the tricuspid bioprosthesis at 15 mmHg – B/tricuspid regurgitation – c/ tricuspid annular diameter.

Therefore, we proceeded to percutaneous dilatation of the tricuspid bioprosthesis, dual Vascular access, arterial and venous under regional anesthesia, At right heart catheterisation, The Inoue balloon and the Brockenbrough catheter 0 035 exchange, with stretching metal tube inserted,percutaneously the balloon was then passed over the 0-025 inch wire to the right atrial cavity with withdrawing the metal tube.Right atrial pressure was 24/20 (mean 21) mm Hg and the arterial pressure was 130/80 mm Hg. The Inoue balloon was positioned around the superior border of the right atrium and descending to cross the bioprothése. The balloon was then inflated with progressive inflations of mm by mm from 24 mm up to 34 mm each in two times.Right atrial pressure dropped from 21 mm Hg before to 16 mm Hg after dilation.

And the post dilatation echocardiography: good opening of the functional bioprosthesis without aliasing - the gradient across the bioprosthetic tricuspid valve at 2.8 mmHg - minimal RT without worsening of the regurgitation.

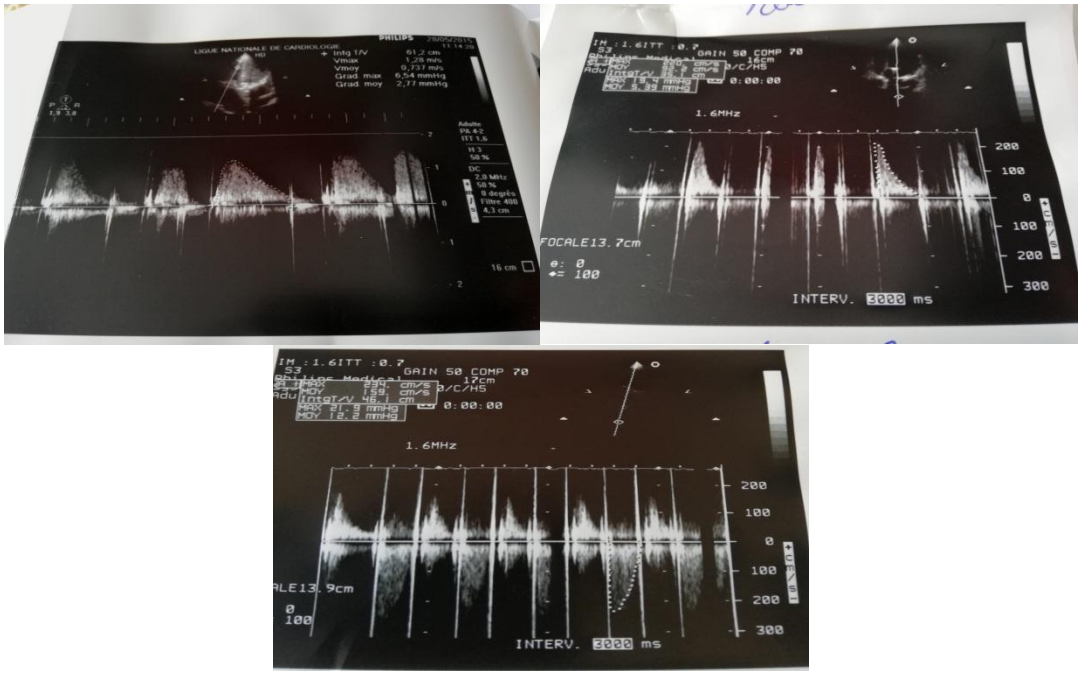

Fig 3. Transthoracic Echocardiography: A/the post dilatation bioprosthetic tricuspid valve gradient at 2.8 mmHg – B and C/ **a** transmitral gradient of 5 mmHg and a mean gradient of aortic prosthesis at 12 mmHg

Discussion:-

Percutaneous Balloon Valvuloplasty for Bioprosthetic Tricuspid Valve Stenosis is not performed as often as it is in other bioprosthetic valves.1 Herein we present a case performed at our hospital. The leaflet calcification, thrombus, pannus ingrowth, or vegetation gets complicated usually by the obstruction and dysfunction of bioprosthetic valve. Balloon tricuspid valvuloplasty intervention, as the percutaneous mitral valve dilatation, based by fracturing calcium, tearing leaflets, and perforating cusps.2Weidentified 16 cases of percutaneous valvuloplasty for bioprosthetic tricuspid stenosis In our literature review. The age of patients ranged from 19 to 73 years (mean age, 48.2 ± 6.2 yr), without difference in immediate outcomes for each age group. With improvement of mean pressure gradient and symptomatic benefits in all the case reports identified in the literature. The preprocedural mean pressure gradient was 12 mmHg. After percutaneous valvuloplasty, the gradient improved with a mean residual of 7 mmHg. Successful of the all proceedings with immediate reduction of transvalvular gradient also postprocedural symptomatic improvement. Although in many of the case reports the objective data quantifying the symptoms is not available, most patients were reported to have presented with pedal edema and severe dyspnea before intervention and to have immediatlypostprocedural improvement in those symptoms. For some patients the improvement lasted as long as 16 months,3 whereas in others necessitating a repeat percutaneous procedure or tricuspid valve replacement only a few months postprocedural because recurrence of those symptoms. The successfuly procedure for our case, there were no major procedure-related sequelae reported; In our literature review a variety of interventional techniques were used in the cases identified. 09 patients (47%) had single balloons, whereas 07 (37%) had double balloons.3-4,5In twoo cases (16%), sequential dilation with balloons of increasing sizes was used.6

In the immediate postprocedural period neither single- nor multiple-balloon techniques led to severe valvular regurgitation. Long-term follow-up data, when available,did, identify cases of restenosis.7,3a immediate gradient reduction and clinical improvement in their 19-year-old patient observed by Wren and Hunter 7, but also the restenosis at 3 months that necessitated repeat valvuloplasty. The surgical valve replacement was proposed of cases with found to have calcific deposits on both atrial and ventricular surfaces.7the pathologic study of bioprosthetic valve showed mostly fibrous and softly calcific changes on the valve cusps. Of note, both groups7,3 equally reported a right atrial thrombus as percutaneous valvuloplastysequela. The stasis in the right atrial caused by recurrent severe stenosis—leads to a prothrombotic state of patients who might have sustained endothelial damage from instrumentation during the procedure. It is worth noting that there have been no randomized controlled trials to prove the efficacy of percutaneous valvuloplasty . Although these case reports suggest that a percutaneous dilatation

for stenosis of bioprosthetic tricuspid is effective and is associated with low morbidity, isolated case reports carry a degree of publication bias.

Furthermore evidence is required before we can recommend the percutaneous valvuloplasty as a frontline therapy for such patients; in the meantime, surgical correction of stenosedbioprosthetic valves remainsthe reference method of treatment.

References:-

1. Hamatani Y, Saito N, Tazaki J, Natsuaki M, Nakai K, Makiyama T, et al. Percutaneous balloon valvuloplasty for bioprosthetic mitral valve stenosis. Heart Vessels 2013;28(5):667-71.
2. Waller BF, McKay C, VanTassel J, Allen M. Catheter balloonvalvuloplasty of stenotic porcine bioprosthetic valves: part II:mechanisms, complications, and recommendations for clinicaluse. ClinCardiol 1991;14(9):764-72.
3. Slama MS, Drieu LH, Malergue M, Dibie A, Temkine J,Sebag C, et al. Percutaneous double balloon valvuloplasty forstenosis of porcine bioprostheses in the tricuspid valve position:a report of 2 cases. CathetCardiovascDiagn 1993;28(2):142-8.
4. Chow WH, Cheung KL, Tai YT, Cheng CH. Successfulpercutaneous balloon valvuloplasty of a stenotic tricuspid bioprosthesis.Am Heart J 1990;119(3 Pt 1):666-8.
5. Block PC, Smalling R, Owings RM. Percutaneous doubleballoon valvotomy for bioprosthetic tricuspid stenosis. CathetCardiovascDiagn 1994;33(4):342-4
6. Egred M, Albouaini K, Morrison WL. Images in cardiovascularmedicine.Balloon valvuloplasty of a stenosedbioprosthetictricuspid valve. Circulation 2006;113(18):e745-7.
7. Wren C, Hunter S. Balloon dilatation of a stenosedbioprosthesisin the tricuspid valve position. Br Heart J 1989;61(1):65-7.