Volume : 5 | Issue : 12 | December 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 78.46

Original Research Paper

Retrospective Study of Cardiac Valvular Surgeries in A Tertiary Care Center

Surgery

KEYWORDS : Valvular heart diseases, presentation, treatment modalities, AHA guidelines.

Dr.K.Manitha — Assistant Professor, Department of Cardio Thoracic Surgery, Gandhi Medical College, Secunderabad, Telangana.

Dr.G.Ravindra — Professor, Department of Cardio Thoracic surgery, Gandhi Medical College, Secunderabad, Telanagana.

ABSTRACT

Aim and objective – To study the characteristics of valve pathology, presentation of patients, treatment modalities and adherence to AHA guidelines in our institution.

INTRODUCTION:

Diseases of heart valves constitute a major cause of mortality and morbidity in our country. Valve surgeries are the commonest cardiac surgeries second to cardiac bypass. Valvular heart diseases may be classified by underlying etiology and by physiologic abnormality.

Classification of valvular heart diseases: Table -1

In this country valvular heart diseases secondary to Rheumatic Valvulitis constitutes a major form of heart disease. Though its exact prevalence is not known ,school surveys had established that rheumatic heart disease affects 1.8-11/1000 school going students.(valvular heart disease www.indian army.gov.in).All heart diseases impart hemodynamic overload on the right or/and left side of heart or both sides of heart. Proper management leads to a near normal life span whereas improper management may lead to shortened life span and congestive heart failure. The management of valvular heart diseases in our hospital has progressed from medical management to CMV to valve replacements /repair.

We present here a review of valvular heart disease surgeries in our institution during the period 2006 -2016.Though heart surgeries have been done in our institution since early nineties a major number of surgeries have been done since 2006.

METHODS

The database of our institution from 2006-2016 was analyzed with regards to patient demographics, presentation, NYHA status, any previous operations, associated comorbidities indications for surgery, type of surgery, follow up.

Results – A total of 550 patients underwent treatment for valvular heart disease during the above period. In majority single valve was affected, the common pathology being Rheumatic and the most common presentation is of stenotic valve pathophysiology.

ANALYSIS:

The data base was restricted to june2016 from 2006.All the patients about 550 were taken from the department of cardiothoracic surgery during the above stated period. The type of valve involved is mostly single valve disease. The mitral valve is the most commonly involved valve, followed by aortic. Single valve involvement of Tricuspid valve was very rare. Most were native valve diseases. Multiple valve disease was usually left sided.

Gender distribution of patients with valve disease: Table-2

Age of Presentation	MVR		AVR		DVR		TV Repair	
	Male	Female	Male	Female	Male	Female	Male	Female
0-10	2	2	-	-	-	-	-	-
11-20	30	40	6	2	6	2	17	23
21-30	74	91	13	5	11	10	56	82
31-40	28	105	11	7	14	11	11	80
41-50	23	42	3	5	9	5	17	37
51-60	15	12	6	3	2	2	7	7
61-70	7	7	1	5	3	-	7	4
71-80	1	-	1	-	-		1	

Table-3

S.No	Heart Valve involved	Total
1.	MVR	400
2.	DVR	75
3.	AVR	70
4.	OMV	3
5.	TVR	2

The etiology of the valves affected was as follows:

In mitral valve stenosis rheumatic heart disease was the most common pathology. In MR also rheumatic etiology was common. Ischemic MR was seen in a few. Aortic stenosis was mixed with isolated single aortic valve involvement in young adults being rheumatic. Aortic valve involvement in multiple valve pathology was also rheumatic. Degenerative Aortic stenosis was seen in older sub group of patients.

The clinical characteristics was follows:

Mitral valve was affected in majority of patients, with stenotic presentation, followed by multiple valve pathology, then aortic valve. Majority of patients with isolated mitral valve involvement were females .The commonest age of presentation was between 20-50 years. Degenerative aortic valve presented in later years. Patients presented in class II and Class III on medical management.

INVESTIGATIONS

TTE: Trans thoracic was the commonest investigation done to confirm the diagnosis, and assess the severity.

TEE: Trans esophageal was done, in cases of inconclusive diagnosis, in patients in atrial fibrillation /stroke to look for atrial thrombus, in patients of endocarditis, prosthetic valve dysfunction.

Cardiac catheterization: Right and left heart catheterization was done to assess severity of valve lesions, severity of pulmonary artery hypertension, reversibility of pulmonary artery hypertension and also for left ventricular function.

Volume : 5 | Issue : 12 | December 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 78.46

CORONARY ANGIOGRAPHY: This was done in all patients over 40 years of age to rule out concomitant coronary artery disease.

Routine tests to assess fitness for surgery
INTERVENTIONS PERFORMED:
Patents with single valve disease involving either mitral or aortic had valve replacement surgery. Those with double valve involvement underwent replacement and /or repair. A few had no procedure done and discharged on conservative management.

Fig:1 Algorithm for the management of Mitral Regurgitation.

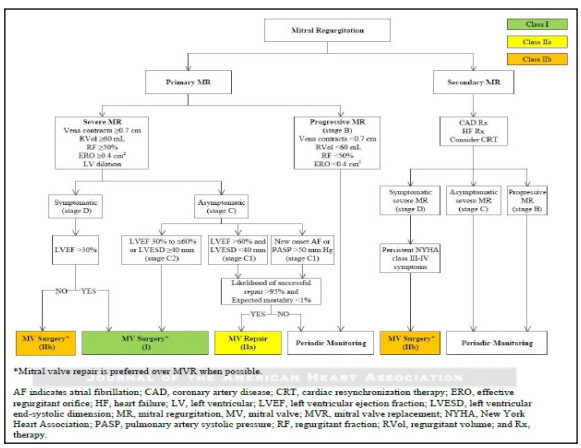


Fig:2 Algorithm for the management of Mitral Stenosis

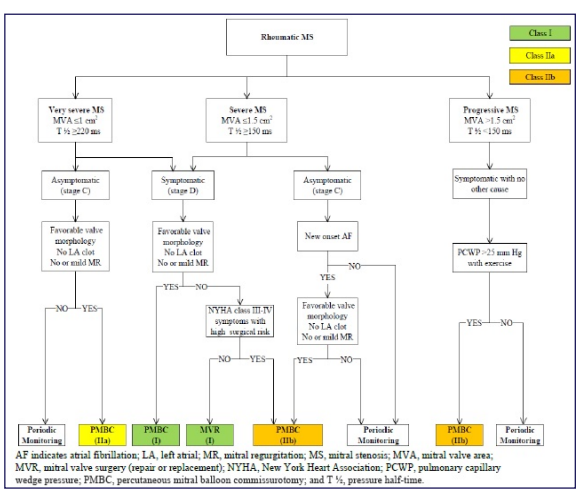


Fig:3 Algorithm for the management of Aortic Stenosis

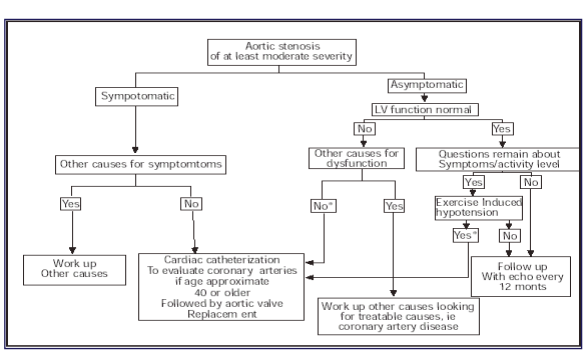
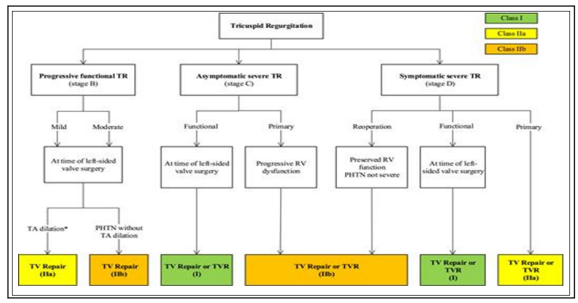


Fig:4 Algorithm for the management of tricuspid regurgitation.



DISCUSSION:
Open heart surgeries had a start in the year in our hospital. It was during early 2000 that the department had a boost in terms of faculty and equipment and cardiac surgeries were taken up in large scale to other institutions valve surgeries were the commonest surgeries in our institution followed by coronary bypass and simple congenitals, and aortic/or vascular surgeries.

Valve pathology in these patients was mostly rheumatic,followed by degenerative rarely congenital.Demography decided the valve pathology.As these patients come from poorer socioeconomic status and illiterate background, the very crowded unhygienic regions where rheumatic fever prevails, chronic rheumatic heart disease is the commonest pathology. Mitral valve lesions were almost always rheumatic in all age groups.Aortic lesions either isolated or in double valve lesions along with mitral valve, in young patients had rheumatic etiology. Older patients had degenerative pathology.Tricuspid valve involvement was always along with mitral, or both aortic and mitral never isolated.

Geography and demography had a say in deciding treatment option along with condition of the patient.In most patients valve replacement was the treatment of choice.Isolated aortic valve lesion in young patients had aortic valve replacement with mechanical valve. Older patients had a choice of bioprosthetic valve or mechanical valve.Those patients who could afford a bioprosthetic valve had such valve replacement.Some older patients had mechanical valve due to financial constraints.

Repair or replacement was the option for isolated mitral valve lesions. Young males in class III or IV without complications had MVR with mechanical valve.Those with class II symptoms but associated with complications like atrial fibrillation, thrombus in left atrium, stroke and other embolic episodes also had MVR with mechanical valve.

The decision for intervention in young females depended on their age, marital status and/or completion of family and also severity of disease. Young females with severe disease or those with moderate disease but associated with complications had MVR with mechanical valve irrespective of family status. Those with mild to moderate disease without any complications were managed conservatively wherever possible till they could complete their family. Young females who had moderate disease but did not complete the family and who wished to complete their family had either a CMV or OMV, till 2013.The demography of the female patients attending our institution does not allow for a bioprosthetic valve followed by a redo surgery at a later date with permanent mechanical valve due to their poor socio economic status. In most patients the chance of them returning for a repeat surgery is remote. So a defini-

tive treatment is warranted the first time .In an occasional patient who wanted a child or two after undergoing valve surgery anticoagulation was based on ACCP's 2012 evidence baser recommendations from 2013.Earlier there was a strict protocol of no children after valve surgery.

In those with severe disease but of older age of both genders requiring bioprosthetic valve but could not afford a redo surgery ,and in those living in remote areas where anticoagulation monitoring is not proper a CMV or OMV was done to alleviate the symptoms.

Patients with double valve disease involving aortic and mitral valve had rheumatic pathology, were young and had definitive valve replacement with mechanical valve independent of gender. When the double valve disease involved mitral and tricuspid the decision depended on the pathology of tricuspid lesion. If the tricuspid was involved in primary disease process and had a stenotic pathology then tricuspid repair like commissurotomy, was done. In those patients who had regurgitation either primary or secondary underwent repair procedures like Devegas, bicuspidisation,annuloplasty among others.

Repairs were not undertaken on a larger scale as the patients presented very late in disease and the valves were not suitable for repair. Also the availability of surgeons competent in repairs was at a premium.

CONCLUSION

Rheumatic heart disease is the most common cause of valvular heart disease in our Institution. Degenerative valve disease was seen in aortic valve. Under certain circumstances the remoteness of the patient dictated the treatment rather than adherence to guidelines. Experience of the operating surgeon and sometimes, financial constraints had a say in the treatment option.

REFERENCES:-

1. Nishimura RA, Otto CM, Bonow RO, et al. 2014 AHA/ACC guideline for the management of patients with valvular heart disease: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. J Am Coll Cardiol 2014; 63:e57.
2. Kutumbiah P. Rheumatic fever and rheumatic heart disease in India; review of 25 years of study and progress. Indian J Pediatr. 1958;25:240–5. [PubMed]
3. Clark JT. The geographical distribution of rheumatic fever. J Trop Med Hyg. 1930;33:249–58.
4. Hughes TA, Yusuf M. Heart disease in the Punjab with special reference to mitral stenosis. Indian Med Gaz. 1930;65:483.
5. Kutumbiah P. A study of the lesions in rheumatic heart disease in South India. Indian J Med Res.1940;27:631–41.
6. Kutumbiah P. Rheumatism in childhood and adolescence. Part 1. Indian J Pediatr. 1941;8:65–86.
7. Banerjea JC. Incidence of rheumatic heart disease in India. Indian Heart J. 1965;17:201–2. [PubMed]
8. Devichand Etiology and incidence of heart disease in India, with special reference to acquired valvular lesions. Indian Heart J. 1959;11:117–9.
9. Mathur KS. Problem of heart disease in India. Am J Cardiol. 1960; 5:60–5.
10. Padmavati S. Epidemiology of cardiovascular disease in India. I. Rheumatic heart disease. Circulation.1962; 25:703–10. [PubMed]
11. Shah B, Sharma M, Kumar R, Brahmadathan KN, Abraham VJ, Tandon R. Rheumatic heart disease: Progress and challenges in India. Indian J Pediatr. 2013; 80(Suppl 1):77–86. [PubMed]
12. Saxena A, Ramakrishnan S, Roy A, Sethi S, Krishnan A, Misra P, et al. Prevalence and outcome of subclinical rheumatic heart disease in India. The RHEUMATIC (Rheumatic Heart Echo Utilisation and Monitoring Actuarial Tends in Indian Children) Study. Heart. 2011; 97:2018–22. [PubMed]
13. Kumar RK, Paul M, Francis FT. RHD in India: are we ready to shift from secondary prophylaxis to vaccinating high-risk children? Curr Sci. 2009; 97:397–404.
14. Carapetis JR, Steer AC, Mulholland EK, Weber M. The global burden of group A streptococcal disease.Lancet Infect Dis. 2005; 5:685–94. [PubMed]
15. Carapetis JR. Rheumatic heart disease in Asia. Circulation. 2008;118:2748–53. [PubMed]
16. Kumar R, Raizada A, Aggarwal AK, Ganguly NK. A community-based rheumatic fever rheumatic heart disease cohort: twelve-year experience. Indian Heart J. 2002; 54:54–8. [PubMed]
17. Feinstein AR, Spagnuolo M. Mimetic features of rheumatic-fever recurrences. N Engl J Med.1960; 262:533–40. [PubMed]
18. Guidelines for the diagnosis of rheumatic fever. Jone criteria. 1992 update. Special Writing Group of the Committee on Rheumatic fever, Endocarditis and Kawasaki disease of the Council on Cardiovascular Disease in the young of the American Heart Association. JAMA. 1992;268:2069–73. [No authors listed][PubMed]
19. Kinsley RH, Girdwood RW, Milner S. Surgical treatment during the acute phase of rheumatic carditis. In: Nyhus LM, editor. Surgery annual. Vol. 13. New York: Appleton-Century-Crofts; 1981. pp. 299–323. [PubMed]
20. Kinare SG. Chronic rheumatic valvular heart disease. Ann Indian Acad Med Sci. 1972; 8:47–51.
21. Tubridy-Clark M, Carapetis JR. Subclinical carditis in rheumatic fever: a systematic review. Int J Cardiol.2007;119:54–8. [PubMed]
22. Geneva 29 Oct-1 Nov 2001. Geneva, Switzerland: WHO; 2004. WHO. Rheumatic fever and rheumatic heart disease: report of a WHO expert consultation.
23. Reményi BO, Wilson N, Steer A, Ferreira B, Kado J, Kumar K, et al. World Heart Federation criteria for echocardiographic diagnosis of rheumatic heart disease-an evidence-based guideline. Nat Rev Cardiol.2012; 9:297–309. [PubMed]
24. Kothari SS, Ramakrishnan S, Kumar CK, Juneja R, Yadav R. Intermediate-term results of percutaneous transvenous mitral commissurotomy in children less than 12 years of age. Catheter Cardiovasc Interv.2005; 64:487–90. [PubMed]
25. Kothari SS, Ramakrishnan S, Juneja R, Yadav R. Percutaneous transvenous mitral commissurotomy in patients with severe mitral stenosis and acute rheumatic fever. Pediatr Cardiol. 2006;27:347–50. [PubMed]
26. Zühlke L, Watkins D, Engel ME: Incidence, prevalence and outcomes of rheumatic heart disease in South Africa: a systematic review protocol. BMJ Open. 2014, 4: e004844-10.1136/bmjopen-2014-004844. doi:10.1136/bmjopen-2014-004844View ArticlePubMedPubMed Central Google Scholar
27. Remenyi B, Carapetis J, Wyber R, Taubert K, Mayosi BM: Position statement of the World Heart Federation on the prevention and control of rheumatic heart disease. Nat Rev Cardiol. 2013, 10: 284-292. 10.1038/nrcardio.2013.34.**View ArticlePubMedGoogle Scholar**
28. Enriquez-Sarano M, Akins CW, Vahanian A: Mitral regurgitation. Lancet. 2009, 373: 1382-1394. 10.1016/S0140-6736(09)60692-9.View ArticlePubMedGoogle Scholar
29. Bhandari S, Subramanyam K, Trehan N: Valvular heart disease: diagnosis and management. J Assoc Physicians India. 2007, 55: 575-584.PubMedGoogle Scholar
30. Zakkar M, Amirak E, Chan KMJ, Punjabi PP: Rheumatic Mitral Valve Disease: Current Surgical Status. Prog Cardiovasc Dis. 2009, 51: 478-481. 10.1016/j.pcad.2008.08.008.View ArticlePubMedGoogle Scholar
31. ANZSCTS: National Cardiac Surgery Database Program, Standard Operating Procedures Manual v1.1. 2012, Melbourne: CCRE, Monash University,Google Scholar
32. Bernal JM, Ponton A, Diaz B, Llorca J, Garcia I, Sarralde A, Diago C, Revuelta JM: Surgery for rheumatic tricuspid valve disease: a 30-year experience. J Thorac Cardiovasc Surg. 2008, 136: 476-481. 10.1016/j.jtcvs.2008.02.065.View ArticlePubMedGoogle Scholar
33. Choudhary SK, Talwar S, Dubey B, Chopra A, Saxena A, Kumar AS: Mitral valve repair in a predominantly rheumatic population. Long-term results. Tex Heart Inst J. 2001, 28: 8-15.PubMedPubMed CentralGoogle Scholar
34. Essop MR, Nkomo VT: Rheumatic and Nonrheumatic Valvular Heart

Volume : 5 | Issue : 12 | December 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 78.46

Disease: Epidemiology, Management, and Prevention in Africa. Circulation. 2005, 112: 3584-3591. 10.1161/CIRCULATIONAHA.105.539775.View ArticlePubMedGoogle Scholar

35. Ben-Farhat M, Betbout F, Gamra H, Maatouk F, Ben-Hamda K, Abdellaoui M, Hammami S, Jarrar M, Addad F, Dridi Z: Predictors of long-term event-free survival and of freedom from restenosis after percutaneous balloon mitral commissurotomy. Am Heart J. 2001, 142: 1072-1079. 10.1067/mhj.2001.118470.View ArticlePubMedGoogle Scholar
36. Fawzy ME, Fadel B, Al-Sergani H, Al Amri M, Hassan W, Abdulbaki K, Shoukri M, Canver C: Long-Term Results (Up to 16.5 Years) of Mitral Balloon Valvuloplasty in a Series of 518 Patients and Predictors of Long-Term Outcome. J Interv Cardiol. 2007, 20: 66-72. 10.1111/j.1540-8183.2007.00212.x.View ArticlePubMedGoogle Scholar
37. Fawzy ME, Shoukri M, Hassan W, Nambiar V, Stefadouros M, Canver CC: The impact of mitral valve morphology on the long-term outcome of mitral balloon valvuloplasty. Catheter Cardiovasc Interv. 2007, 69: 40-46. 10.1002/ccd.20936.View ArticlePubMedGoogle Scholar
38. Gamra H, Betbout F, Ben Hamda K, Addad F, Maatouk F, Dridi Z, Hammami S, Abdellaoui M, Boughanmi H, Hendiri T, Ben Farhat M: Balloon mitral commissurotomy in juvenile rheumatic mitral stenosis: a ten-year clinical and echocardiographic actuarial results. Eur Heart J. 2003, 24: 1349-1356. 10.1016/S0195-668X(03)00257-4.View ArticlePubMedGoogle Scholar
39. Blaustein AS, Ramanathan A: Tricuspid valve disease. Clinical evaluation, physiopathology, and management. Cardiol Clin. 1998, 16: 551-572. 10.1016/S0733-8651(05)70031-X.View ArticlePubMedGoogle Scholar
40. Yau TM, El-Ghoneimi YA, Armstrong S, Ivanov J, David TE: Mitral valve repair and replacement for rheumatic disease. J Thorac Cardiovasc Surg. 2000, 119: 53-60. 10.1016/S0022-5223(00)70217-0.View ArticlePubMedGoogle Scholar
41. Remenyi B, Webb R, Gentles T, Russell P, Finucane K, Lee M, Wilson N: Improved Long-Term Survival for Rheumatic Mitral Valve Repair Compared to Replacement in the Young. World Journal for Pediatric and Congenital Heart Surgery. 2013, 4: 155-164. 10.1177/2150135112474024. View ArticlePubMedGoogle Scholar
42. De Santo LS, Romano G, Della Corte A, Tizzano F, Petraio A, Amarelli C, De Feo M, Dialetto G, Scardone M, Cotrufo M: Mitral mechanical replacement in young rheumatic women: analysis of long-term survival, valve-related complications, and pregnancy outcomes over a 3707-patient-year follow-up. J Thorac Cardiovasc Surg. 2005, 130: 13-19. 10.1016/j.jtcvs.2004.11.032.View ArticlePubMedGoogle Scholar
43. Wang Z, Zhou C, Gu H, Zheng Z, Hu S: Mitral valve repair versus replacement in patients with rheumatic heart disease. J Heart Valve Dis. 2013, 22: 333-339.PubMedGoogle Scholar
44. Bakir I, Onan B, Onan IS, Gul M, Uslu N: Is rheumatic mitral valve repair still a feasible alternative?: indications, technique, and results. Tex Heart Inst J. 2013, 40: 163-169.PubMedPubMed CentralGoogle Scholar
45. Sarralde J, Bernal J, Llorca J, Ponton A, Diez-Solorzano L, Gimenez-Rico JR, Revuelta JM: Repair of rheumatic tricuspid valve disease: predictors of very long-term mortality and reoperation. Ann Thorac Surg. 2010, 90: 503-508. 10.1016/j.athoracsur.2010.03.105.View ArticlePubMedGoogle Scholar
46. Chaudhry F, Upadya S, Singh V, Cusik D, Izrailtyan I, Sanders J, Hargrove C: Identifying patients with degenerative mitral regurgitation for mitral valve repair and replacement: a transesophageal echocardiographic study. J Am Soc Echocardiogr. 2004, 17: 988-994. 10.1016/j.echo.2004.05.007.View ArticlePubMedGoogle Scholar
47. Wheeler EO, Wilkins GT, Reynolds TR, et al.. Rheumatic mitral valve disease and tricuspid valve disease. In: The Practice of Cardiology, 2nd ed, Eagle KA, Habe E, DeSanctis R, Austen WG (Eds), Little, Brown, and Company, Boston 1989. p.655.
48. John S, Bashi VV, Jairaj PS, et al. Closed mitral valvotomy: early results and long-term follow-up of 3724 consecutive patients. Circulation 1983; 68:891.
49. Pavankumar P, Venugopal P, Kaul U, et al. Closed mitral valvotomy during pregnancy. A 20-year experience. Scand J Thorac Cardiovasc Surg 1988; 22:11.
50. Reyes VP, Raju BS, Wynne J, et al. Percutaneous balloon valvuloplasty compared with open surgical commissurotomy for mitral stenosis. N Engl J Med 1994; 331:961.
51. Cohn LH, Allred EN, Cohn LA, et al. Long-term results of open mitral valve reconstruction for mitral stenosis. Am J Cardiol 1985; 55:731.
52. Crawford FA Jr. Residual pulmonary artery hypertension after mitral valve replacement: size matters! J Am Coll Cardiol 2005; 45:1041.
53. Magne J, Mathieu P, Dumesnil JG, et al. Impact of prosthesis-patient mismatch on survival after mitral valve replacement. Circulation 2007; 115:1417.
54. Bolman RM 3rd. Survival after mitral valve replacement: does the valve type and/or size make a difference? Circulation 2007; 115:1336.
55. Choudhary SK, Dhareshwar J, Govil A, Airan B, Kumar AS. Open mitral commissurotomy in the current era: Indications, technique, and results. Ann Thorac Surg. 2003;75:41–6. [PubMed]
56. Kumar AS, Rao PN. Restoration of Pliability to Mitral leaflets during reconstruction. J Heart Valve Dis.1995;4:251–3. [PubMed]
57. Murala JS, Kumar AS. Long -term results of cusp level chordal shortening for Anterior Mitral Leaflet prolapse. Tex Heart Inst J. 2004;31:246–50. [PMC free article] [PubMed]
58. Kumar AS, Rao PN, Saxena A. Mitral valve Reconstruction: Eight years experience in 531 patients. J Heart Valve Dis. 1997;6:591–3. [PubMed]
59. Choudhary SK, Talwar S, Dubey B, Chopra A, Saxena A, Kumar AS. Mitral valve repair in a predominantly rheumatic population: Long term results. Tex Heart Inst J. 2001;28:8–15. [PMC free article][PubMed]