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725-2 Repair of Left Ventricular Aneurysm — Clinical and Echocardiographic Long-Term Results of Plication Versus Endoaneurysmorrhaphy

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Recently ventricular endoaneurysmorrhaphy (EA) has replaced plication (PL) as the surgical procedure of choice for aneurysm repair. There are little data comparing the two techniques. This study compared 27 patients who underwent EA with 20 patients who had PL. Mean age and NYHA functional class were 63.7 ± 9 years and 3.6 ± 0.5 . The two groups matched with respect to age, gender, co-morbid risks, NYHA class, urgency of the operation and frequency of concomitant procedures. Left ventricular function was worse in EA (LVEF: $25.0 \pm 7.9\%$ vs. $30.5 \pm 9.1\%$, $p = 0.0066$). Mean follow-up time in 44 patients (94%) was 41.0 ± 26.5 months (range 3–86 months). To assess the geometric adaptation to surgery long-term echocardiograms were performed in 27 patients (EA-17, PL-10), and included measurements of LV volume, and LV sphericity (apical/mid-LV diameter ratio and a sphericity index developed).

	PL (n = 20)	EA (n = 27)	p Value
Operative mortality	2 (10%)	1 (3.7%)	0.3164
Perioperative complications	7 (35%)	12 (44%)	0.1933
5-year survival	$56.5 \pm 11.8\%$	$66.9 \pm 14.3\%$	0.4361
Freedom from cardiac death	$65.1 \pm 11.9\%$	$85.6 \pm 14.4\%$	0.3353
Patients in NYHA class I/II	53%	88%	0.0101*
Postop % increase in LVEF	$17.6 \pm 47.6\%$	$51.3 \pm 64.2\%$	0.0360*
LVvol (cc)	169.9 ± 54.4	171.6 ± 59.1	0.9438
Ap/Mid LV diameter ratio	0.79 ± 0.11	0.79 ± 0.09	1.0
Sphericity Index	0.61 ± 0.12	0.61 ± 0.09	1.0

Conclusion: Despite having a similar effect on LV geometry, EA resulted in substantially improved long-term clinical outcome and improved LVEF. The mechanism remains to be explored.

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725-3 Should Mitral Regurgitation Surgery Be Performed in Minimally Symptomatic Patients? Analysis of the Impact of Class III–IV Symptoms on Postoperative Outcome

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Severe symptoms remain the most usual indication for surgery in patients with mitral regurgitation. However, the impact of delaying surgery until class III or IV symptoms occur is not known. In 639 patients with mitral regurgitation of organic etiology, 249 were operated in class I or II and 390 in class III or IV between 1980 and 1991. As compared to patients with minimal symptoms (I–II) those with severe symptoms (III–IV) were older (66 ± 12 vs 61 ± 13 years, $p < 0.0001$), had more often atrial fibrillation (54% vs 31%, $p < 0.0001$), a higher creatinine (1.3 ± 0.6 vs 1.2 ± 0.5 , $p < 0.015$) and underwent frequently a valve repair (49% vs 71%, $p < 0.0001$). The outcome of surgery was not as good in patients with severe symptoms (III–IV) as in those with minimal symptoms: postoperatively, low cardiac output was more frequent (23% vs 9%, $p < 0.0001$), more days were spent in hospital (14 ± 13 vs 11 ± 6 days, $p < 0.0001$) operative mortality was higher (7.7% vs 1.6%, $p = 0.0005$). Also, the incidence of postoperative congestive heart failure was higher (at 5 years 21% vs 12%, $p = 0.002$) and survival was lower (at 5 years 71% vs 87%, $p = 0.0001$) in patients preoperatively in class III–IV. After stratifying for the baseline differences and the other predictors of outcome, in multivariate analysis the preoperative functional class remained an independent predictor of operative mortality (odds ratio 2.0, $p = 0.009$) and late survival (risk ratio 1.34, $p = 0.003$). In patients in class I–II, younger than 75 years, operative mortality was only 1%.

We conclude that in patients with mitral regurgitation class III–IV symptoms are independent predictors of worse postoperative outcome of surgery. Therefore, in patients at a low operative risk and especially if repair is feasible, surgery should preferably be performed at an early stage with no or minimal symptoms.

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725-4 Importance of Associated Aneurysmal Disease in the Long Term Care of Patients With Ascending Aortic Aneurysms: Outcome of 392 Patients up to 40 Years After Operation

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Over a 40 year period 392 pts underwent graft replacement of the ascending aorta. The mean age was 49 ± 14 years. There were 302 (77%) males. Other aneurysms had been resected previously in 17 (4.3%) pts: 10 thoracic/thoraco-abdominal (TA), and 7 abdominal. Co existent aneurysms involved the arch in 51 pts (13.0%) descending aorta in 67 pts (6.7%), TA in 34 pts (8.7%) and abdominal aorta in 30 pts (6.7%). Perioperatively, 13 fatal ruptures of other aneurysms occurred. Long-term 67 subsequent aneurysms developed in 39 pts (9.9%). These consisted of descending: 13 pts, TA 10, abdominal: 14, arch: 7 and sinus of Valsalva in 13, peripheral in 8, and other 2. Marfan's syndrome was the dominant risk factor for subsequent aneurysm formation, accounting for 39% of subsequent aneurysms. Rupture of an undiagnosed subsequent aneurysm caused 81 (29.6%) of late deaths. These data demonstrate the importance of complete evaluation of the aorta in pts presenting with "isolated" ascending aneurysms and the need for diligent long-term follow-up of the entire aorta by CT scan or MRI on a regular basis.

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725-5 Reduced Mortality and Morbidity for Ascending Aortic Aneurysm Resection

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Recent advances have significantly improved the results of ascending aortic aneurysm surgery (AAA). We operated on 115 consecutive patients with AAA (> 5 cm.), including Marfan's Syndrome, arteriosclerosis and post-stenotic dilatation from 1990 to 1995. 54 patients (Group I) had valve-graft conduit; Group II (46 patients) had aortic valve replacement and supracoronary graft and Group III (15 patients) had only an ascending aortic graft. There were 62 M and 53 F the mean age was 61. Reoperations were done in 15%, coronary artery bypass grafting in 20% and 38% of Group I had Marfan's Syndrome. Operative mortality in Group I (valve-graft conduit) was 1 of 54 (1.8%); in Group II, 1 of 46 (2%) and in Group III, 0. Overall, operative mortality was 2 of 115 (1.7%). Postoperative incidence of bleeding, non-fatal stroke and myocardial infarction was 3%, 2% and 1%, respectively. Length of stay in the past year has decreased to < 7 hospital days.

Operations on the ascending aneurysmal aorta have a low mortality and morbidity due to improved control of hematologic factors, better myocardial protection and consistent use of transesophageal echocardiogram.

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725-6 Late Clinical and Functional Results After Left Ventricular Aneurysm Intracavitary Repair: 6 Years Follow Up in 100 Patients

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Left ventricular aneurysm intracavitary repair (LVAIR) is a new operative technique which utilizes an endocardial patch to exclude the aneurysm and normalize LV geometry. Between March 1989 and July 1991, 100 patients underwent LVAIR with concomitant coronary artery bypass grafting. To assess the immediate and long term clinical and functional results of the procedure we evaluated operative and late mortality, preoperative and postoperative functional NYHA class and ejection fraction using nuclear ventriculography. The mean duration of follow up was 40 months (range 0 to 75 months). Early mortality (within 30 days) was 4%. Functional class improved after LVAIR in 99% of patients, and ejection fraction improved significantly in 68% of patients. Actuarial survival was 86% at one year, 84% at 2 years and 77% at 6 years. Out of 50 patients who had preoperative, postoperative and follow up nuclear ventriculography, 84% showed continued improvement in ejection fraction.

Mean EF% Preop	25 ± 7] $p = 0.0001$] $p = 0.0001$
Mean EF% Postop (<30 days)	37 ± 8	
Mean EF% Postop (>2 years)	41 ± 10	

The results indicate that LVAIR is associated with low operative mortality, symptomatic relief, improvement of left ventricular function, and long term survival. Benefits continue 6 years postoperatively.

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