

Survival following aortocoronary bypass graft surgery

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Survival was studied in 807 of the 1000 patients who had pure saphenous vein graft surgery between October 1969 and June 1974. Survival curves up to 6 years were determined for the entire population and various subsets on the basis of preoperative findings and surgical techniques using the actuarial method of Cutler and Ederer.

The 6-year survival was 82% for patients who had pure saphenous vein grafts and 66% for the 126 patients who also had internal mammary artery implantation or left ventricular wall resection or both (*Table*). Survival was significantly greater when the following preoperative conditions were noted: absence of heart failure, absence of significant angina (prophylactic surgery), normal electrocardiogram at rest, one or two obstructed arteries, ejection fraction ≥ 0.45 . Survival did not appear to be influenced by the patient's age, risk factors, duration of illness before surgery, or previous myocardial infarction; the 6-year survival was not different for stable as opposed to unstable angina. Patients with one, two, or more grafts had a similar life span, but patients with optimal correction had a significantly greater longevity (bypass of all major coronary arteries with a stenosis $\geq 70\%$).

Table. Factors influencing survival after aortocoronary bypass graft surgery

| | No. of patients operated on | Six-year cumulative survival | |
|-----------------------------------------------------|--------------------------------|-------------------------------|-------------------------------|
| | | Early mortality in- cluded | Early mortality ex- cluded |
| Pure bypass | 807 | 82% | 86% |
| +Vineberg or wall resection | 126 | 66% $p < 0.01$ | 73% $p < 0.001$ |
| Prophylactic surgery | 63 | 90% | 90% |
| Stable angina | 563 | 81% $p < 0.05$ | — N.S. |
| Heart failure absent | 895 | 82% | 86% |
| Heart failure present | 38 | 35% $p < 0.001$ | 45% $p < 0.001$ |
| ECG normal | 214 | 92% | 93% |
| ECG abnormal | 571 | 78% $p < 0.001$ | 84% $p < 0.01$ |
| No. of obstructed arteries: 1-2 | 519 | 86% | 88% |
| No. of obstructed arteries: 3 | 288 | 75% $p < 0.001$ | 84% N.S. |
| Ejection fraction: < 0.45 | 157 | 67% | 72% |
| Ejection fraction: ≥ 0.45 | 650 | 86% $p < 0.001$ | 89% $p < 0.001$ |
| Correction optimal | 681 | 83% | 87% |
| Correction incomplete at surgery | 106 | 74% $p < 0.05$ | 82% N.S. |
| Correction optimal | 65 | | 98% |
| Correction not optimal 6-18 months after surgery | 283 | | 82% $p < 0.025$ |
| All grafts patent | 113 | | 94% |
| All grafts obstructed 6-18 months after surgery | 41 | | 67% $p < 0.001$ |

When early mortality (first month) is excluded, the only factors which appear to determine late survival are heart failure, electrocardiogram, and ejection fraction (*Table*). The 6-year survival was also significantly greater in patients whose grafts were patent 6 to 18 months after surgery as opposed to that of patients in whom all

grafts were occluded. Also, patients who still had an optimal correction as determined by angiographic control studies 6 to 18 months after surgery had lived longer than patients in whom the correction was not optimal (successful bypass of all major arteries with a stenosis $\geq 70\%$ at 1 year).