

Szilagyí D E, Smith R F, DeRusso F J, Elliott J P & Sherrin F W. Contribution of abdominal aortic aneurysmectomy to prolongation of life.
Ann. Surg. 164:678-99, 1966.

[Department of Surgery, Henry Ford Hospital, Detroit, MI]

This was a retrospective study of the survival experience of two nonsynchronous groups of patients with the diagnosis of abdominal aortic aneurysms, one group (248 cases) with, the other (105 cases) without, surgical correction, appropriately standardized for comparison. The surgically treated patients doubled their life expectancy. Thirty-five percent of the surgically untreated cases died of rupture. [The SCI® indicates that this paper has been cited in over 170 publications since 1966.]

D. Emerick Szilagyí
Division of Vascular Surgery
Department of Surgery
Henry Ford Hospital
Detroit, MI 48202

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"Because of a number of easily observable clinical features of abdominal aortic aneurysms, surgeons intuitively adopted an aggressive attitude in their management as soon as the technique of aneurysmectomy became available (in 1951). The early operative mortality rate was rather high, however, and soon questions were raised whether the surgical treatment of any but the largest aneurysms of the abdominal aorta was justified. To decide this issue, there were a number of practical reasons that made a clinical controlled study unfeasible. The great benefit of the surgical treatment in many cases was obvious and its denial to randomly selected patients seemed ethically unjustified. In the Henry Ford Hospital, a fortuitous and fortunate situation existed that made it possible to construct two cohorts of patients with abdominal aortic aneurysms, the study of which could be expected to supply an answer to the question of what the actual benefit of surgical treatment was.

"Our internists were particularly conservative in managing abdominal aortic aneurysms, and during the 1950s seldom referred patients to the surgeon. When we became interested in the problem of the evaluation of the worth of abdominal aortic aneurysmectomy, we were pleasantly surprised to find that a relatively large group of patients (223 cases) who had not received surgical treatment was available. Since the group of

nonsurgical cases was not strictly comparable to the surgical group, primarily because it contained cases that had been deemed to be unsuitable for surgical treatment owing to risk factors, a method had to be devised to reduce the disparity of the two groups. We achieved this by excluding from the groups we compared all those whose principal risk factors exceeded certain predetermined limits.

"Having overcome the main statistical difficulty, our next problem was to find a suitable method for determining survival experience. Since the life-table method of analysis now universally used was not at that time available, we worked out a method of our own which allowed the comparison of the survival experience of the two groups in spite of the differences in the length of survival of the patients and the variations in the time of their entry into the study. Later recalculation of the data with standard life-table methods yielded almost identical results.

"An important aspect of this study was the demonstration that while the rupture of the untreated aneurysm was by far the most common cause of death in untreated cases (34.9 percent), the ravages of coronary atherosclerosis were only second in importance (having been the cause of death in 17 percent of the two groups). The study also brought forth that, even in the cases with the aortic aneurysm removed, coronary atherosclerosis remained an important factor of mortality and eventually led to the death of 12 percent of the survivors of the operation. In subsequent years, the considerable operative mortality of 13.6 percent was reduced dramatically (to around three percent), further enhancing the value of surgical treatment.

"Our study remained the only large survey of this problem simply because the necessary clinical material either was not available or was not recognized in other centers. As more and more patients with abdominal aneurysms were subjected to surgical treatment, the opportunity for such a study completely disappeared. Our demonstration of the value of surgical treatment undoubtedly had an important role in the general acceptance of the current approach to the treatment of these lesions. See reference 1 for a recent publication in this field."

1. Szilagyí D E. Abdominal aortic aneurysms: natural history and operative indications. (Stipa S & Cavallaro A, eds.) *Peripheral arterial diseases: medical and surgical problems*. London: Academic Press, 1982. p. 27-37.