

# This Week's Citation Classic®

**Brooks J R & Culebras J M.** Cancer of the pancreas: palliative operation, Whipple procedure, or total pancreatectomy? *Amer. J. Surg.* 131:516-20, 1976.

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This paper compares the results of three surgical procedures for cancer of the pancreas. It was our conviction that total pancreatectomy was the procedure of choice, rather than a Whipple procedure (a partial pancreatectomy), for cancer of the head of the pancreas. This is because, in 40 percent of the patients with cancer of the head of the pancreas, there was tumor in the body and tail of the pancreas that was not removed with the Whipple procedure. On the other hand, patients with a localized ampullary tumor should have a Whipple procedure, and patients with lymph node involvement or other evidence of spread should have a palliative procedure. [The *SCI*® indicates that this paper has been cited in more than 130 publications.]

## Which Surgery Is Best for Pancreatic Cancer?

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As I looked at surgery in 1950, following training at the Peter Bent Brigham Hospital, and as I was starting out in practice, research, and teaching at Harvard Medical School and the Brigham, it seemed to me that the way to approach one's academic life in this specialty would be to pick a common disease to cure. I became interested in duodenal ulcer early on. Not long after my laboratory interest in this field was under way, however, duodenal ulcer became a less common disorder, partly because of human disease trends and partly because of the H-2 blocking agents. I then turned to another common disease—diabetes. The Brigham Surgical Research Laboratory was working on kidney transplantation. I turned my mind to pancreatic homotransplantation, where I felt there was a need.

Our laboratory carried out a significant amount of research resulting in the first at-

tempt at human homotransplantation of the pancreas for diabetes. This consisted of homotransplantation of pancreatic fragments from the stillborn fetuses of diabetic mothers to the mothers' thighs. This occurred in 1960, prior to the development of immunosuppression. Following that, and using a diffusion chamber technique, insulinoma tissue was transplanted to other diabetics. The results were short-lived. Our laboratory then moved on to study total pancreatic homotransplantation with the help of immunosuppression.

When these results became discouraging, we moved to a study of the treatment of pancreatic neoplasm, which led to the development of a series of total pancreatectomies for malignancy of the pancreas. During those 20 to 30 years, various research fellows joined my laboratory, among them Jesus Culebras, who had a great deal to do with the case study and follow-up investigation required of those patients with malignancy of the pancreas.

As Culebras, the coauthor, notes, there are several reasons for this paper's impact on the surgical world. First, the time-honored, excellent surgical tradition of the Brigham Hospital supported the results. Second, the title of the article catches the eye, raising a question that all surgeons were asking at the time of its publication. Third, the conclusion is logical: if one type of resection does not completely eradicate all of the tumor of an organ, then it should be extended. On the other hand, if the tumor has gone beyond the limits of resectability, palliation is all that should be done. Fourth, as the *American Journal of Surgery* has a worldwide distribution, the title caught the eyes of many.

In the 15 years since publication, much of these data have been upheld. However, it appears at this time that total pancreatectomy does not result in any higher five-year cure rate (15 percent) than Whipple pancreatectomy, pointing to the obvious incurability of the majority of pancreatic neoplasms. Two recent papers summarize these data.<sup>1,2</sup>

1. Brooks J R, Brooks D C & Levin J D. Total pancreatectomy for ductal cell carcinoma of the pancreas: an update.

*Ann. Surg.* 209:405, 1989.

2. Chist D W, Sitsman J V & Comuron J L. Improved hospital morbidity, mortality and survival after the Whipple procedure. *Ann. Surg.* 206:358, 1987.

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