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Insulin Placement Properly in the Portal Vein

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When injected insulin was first given to patients with diabetes nearly a century ago, it represented a milestone in medical care. Contrasts between this exogenous insulin placed subcutaneously, and endogenous insulin secreted into the portal system has long been clear [1]. insulin placement causes higher peripheral insulin and lower portal insulin levels in patients with insulin dependent diabetes than in non-diabetic patients [2].

Insulin in high peripheral levels is associated with undesirable side effects upon the vascular system [3,4], contributes to ischemic heart disease [5], as well as having association with certain cancer risks [6].

When insulin is placed directly or indirectly into the portal system in laboratory animals or in the clinical setting, the extent of peripheral insulin increase is diminished and portal insulin levels are increased [7] Each of these changes more nearly brings subsequent insulin levels closer to the normal range.

In humans insulin has been placed in isolated bowel wall loops in catheters placed in the portal venous system [8]. With each approach, portal insulin levels are higher and peripheral insulin levels lower than in peripheral insulin injected animals.

As well, in humans intraperitoneal insulin has been given with similar results. In the latter setting, however hepatic steatosis and steatonecrosis have evolved in renal failure suggesting that this placement of insulin has unacceptable side effects.9 The appeal of oral insulin administration, both of simplicity and of delivery to the portal system is obvious. Gastric breakdown and failure of insulin absorption have thus far prevented effective oral administration [10-11].

So what shall we do? To begin and to end: evaluate insulin administration and delivery directly by injection into the portal system and indirectly thereto from the gut, by oral delivery, in a continuing effort to imitate non diabetic insulin levelsin the patient with diabetes.

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