

in humans, confirming data from Fich et al.⁴ in patients with right hemicolectomy. The ileocecal reservoir reconstruction did not affect the lag phase or gastric emptying rates or late gastric emptying.

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Discussion

DR. P. HAWLEY (London, United Kingdom): Thank you very much. Your department has two papers this afternoon on this subject, and so I have to be a little careful of what I say on each; otherwise, I shall run out of comments for the next one. Your results are perhaps not surprising, and thank you for explaining them so well. I was wondering what the geometric center was. We all see patients who have minimal resections at the ileocecal region, perhaps with tumors, where there is no resection of any major neurovascular supply, and most of them are fine. Every now and again you get a patient who has gross diarrhea with bowel actions going from one or two a day to perhaps six and eight, and this really is a big social problem. Now I don't know whether it is because your numbers are so small, but you have not shown this in any patient. What would have been nice to see, and I guess you cannot do it, is to do your transposition leaving the neurovascular bundle intact, but to divide the nerves in some patients to see if it makes any difference. It is perhaps surprising that there is no change in colonic transit. I would not have really expected any change in gastric emptying or small bowel transit, but presumably all these cases have had a high tie of the inferior mesenteric vessels, and so some of the descending and sigmoid colon autonomic nerve supply is changed. We are not always quite sure what difference that makes. I am not sure whether your message is that you can do this interposition, which seems a good operation, and we will come onto that later, or whether the interposition does not make any difference. What would have been very nice is a similar study on your colonic pouches to see if there was any difference in colonic transit in them. I would still like, and I guess it is impossible to do, to see you do an interposition and denervate it by skeletonizing the ileocolic vessels.

PROF. H. OBERTOP (Amsterdam, The Netherlands): I have a question, if I may. Since you are talking about ileal brake and neurohormonal control, did you estimate any hormones to check this, and what did you expect after this procedure?

PROF. R. SHIELDS (Edinburgh, United Kingdom): I was interested in this paper because a number of years ago we were interested in the use of ileal transposition in the treatment of postgastrectomy and postvagotomy diarrhea. We found that if an ileal transposition was put in between the stomach and the

small bowel, there really was no benefit nor effect of a braking action if it were just put in isoperistaltic; but if it were reversed, then there was a powerful braking action. Therefore, I wasn't really surprised, assuming you put in an isoperistaltic segment, that there was really no braking action, and therefore what you are looking upon this that ileal transposition is not braking but really a reservoir. I therefore want to know what is your assessment of the reservoir, and what is its capacity—you didn't tell us the dimensions of the pouch. Secondly, what is the emptying capacity? It should be possible from the data to measure that. But to expect that an isoperistaltic ileal transposition segment would affect gastric emptying and small bowel transit, I think, was something that one would not really expect at all from one's previous experience.

PROF. P. KINNAERT (Brussels, Belgium): I would like to ask a question from somebody who is not a GI surgeon. What is the rationale for the geometric mean? Why do you multiply the radioactivity by 1, 2, 3, 4 and not 11, 12, etc.?

DR. DEGEN (Closing Discussion): The operative technique was described in detail by von Flue et al.¹ in 1994. As mentioned in the description, the ileocolon is isolated with 7 cm of ileum and 17 cm of cecum. The ileal end of the transplant will finally be anastomosed with the transected sigmoid colon and the cecum with the anal canal, thus providing an interpositional reservoir that maintains continuity for defecation as natural. The details on defecation quality as well as physiologic parameters of the pouch have been published elsewhere² and were therefore not the subject of this study.

Nutrients in the intact ileum inhibit gastric emptying and small bowel transit; this phenomenon is known as the "ileal brake."³ The mechanism can be experimentally activated by intraluminal infusion of lipids,³ proteins,⁴ or carbohydrates.^{5,6} into the ileum. Transposing the ileocecal segment distal to the sigmoid colon could induce a delay in this activating mecha-

nism; it can be anticipated that the lack of intraluminal stimulation of the ileal brake would exert an alteration in gastrointestinal transit.

We analyzed colonic transit by using the geometric center method.⁷ This method provides the advantage that the bulk of luminal content in different segments can be assessed. In the present study population, colonic transit was not significantly different from the control group. We designed our analysis in such a way that a difference of one third in colonic transit between the two groups could have been detected with 80% certainty. This basic assumption, along with the fact that we did not see any statistical difference, means that a clinically relevant change in colonic transit can be excluded.

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