

DAILY AVERAGES OF URINARY CREATININE EXCRETION, TOTAL NITROGEN EXCRETION, AND URINARY 3-METHYLHISTIDINE			
	(A) (glucose)	(B) (leucine)	(C) (KIC)
24 h urinary Cr (mmol/kg)	0.167±0.025	0.165±0.014	0.165±0.014
24 h total urinary N (g/kg)	0.106±0.015	0.115±0.013	0.115±0.013
Total N/Cr ratio	0.662±0.068	0.724±0.091	0.696±0.057
24 h 3-MeH excretion (μmol/kg)	5.252±0.751	5.641±0.611	4.669±0.416*
3-MeH/Cr ratio	0.08±2.38	34.73±3.82	28.48±1.65†‡

3-MeH = 3-methylhistidine; Cr = creatinine; N = nitrogen.  
Results as mean± 95% confidence limits.  
\*Significantly different from B (p<0.05).  
† Significantly different from B (p<0.01).  
‡ Significantly different from A (p<0.05).

improve N balance in postoperative patients receiving energy substrate.

We studied thirty patients undergoing elective gynaecological surgery, randomly assigned to three groups of ten, each group receiving, for three postoperative days, one of the following mixtures infused at a constant rate over 24 h: group A (controls) glucose 3 g/kg/day, group B (leucine group) the same amount of glucose plus leucine 90 mg/kg/day, and group C (KIC group) the same amount of glucose plus sodium KIC 100 mg/kg/day. Groups A and B were given 70 mmol of sodium per day, as sodium chloride solution.

Daily 24 h urine collections were made with sodium EDTA as preservative. Urine samples were stored at -30°C. Total N was determined by micro-Kjeldahl technique, urinary creatinine by an adaptation of Jaffe's reaction, and 3-methylhistidine by automatic aminoacid analyser.

Results were expressed as the mean and confidence limits obtained for thirty values in each group (data were pooled for the three days). Statistical differences were tested by Kruskal-Wallis test, a non-parametric technique that utilised data from three or more independent samples. No differences were observed among the three groups in terms of age and ratio of real weight to ideal body weight. The types of operations were similar in all three groups.

The results, expressed per kg and per day, are shown in the table. Nitrogen excretion, creatinine excretion, and N/creatinine ratio were similar in the three groups. 3-methylhistidine excretion was lower in group C and this was significant for the difference between C and B (p<0.05). The 3-methylhistidine/creatinine ratio was significantly lower in group C than in group A (p<0.05) or group B (p<0.01). Thus, in postoperative patients receiving 12 kcal/kg in a form of glucose as energy substrate, KIC infusion, in comparison with leucine, reduced the excretion of 3-methylhistidine but not total N excretion. N excretion, which is the net result of protein synthesis and protein breakdown in the whole body, may not be sensitive enough to reflect a limited change in muscle protein breakdown. Alternatively net protein degradation could have been accelerated in other vital organs such as the liver. Whatever the explanation, our data support the view that the metabolic effects of KIC in postoperative patients are appreciably affected by glucose infusion. The usefulness of KIC infusion in postoperative patients needs further study.

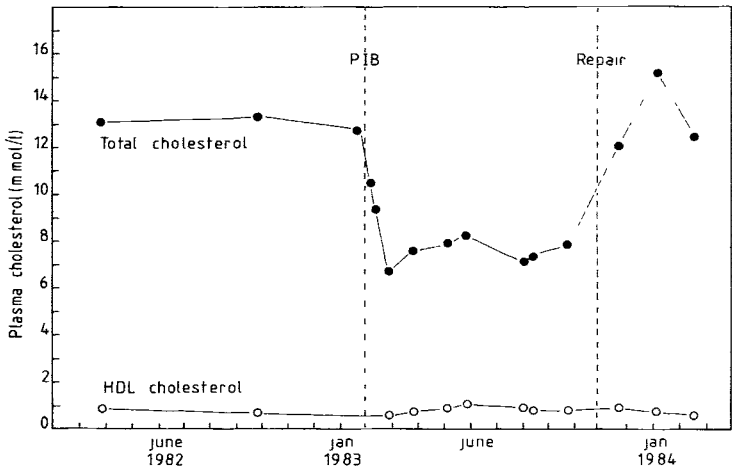
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PARTIAL ILEAL BYPASS UNDONE

SIR,—Partial ileal bypass (PIB) for the treatment of hypercholesterolaemia was introduced 20 years ago.<sup>1</sup> About 110 cases have been described.<sup>2</sup> We know of only 1 case of restoration of

1. Buckwald H. Lowering of cholesterol absorption and blood levels by ileal exclusion. *Circulation* 1964; **29**: 713-20.  
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Effect of PIB and subsequent restoration of intestinal continuity on plasma cholesterol levels in patient with familial hypercholesterolaemia.  
1 mmol/l cholesterol = 38.7 mg/dl.

intestinal continuity; no details were given.<sup>3</sup> We report here the second case of PIB in the Netherlands; the operation was reversed 9 months later.

Attempts to lower plasma cholesterol concentrations in a 36-year-old man with familial hypercholesterolaemia failed. Cholestyramine and nicotinic acid treatment had to be stopped because of side-effects such as obstipation and flushing, respectively. The patient could not with a cholesterol-lowering diet. We offered PIB<sup>4</sup> when the patient complained about severe, invalidating xanthomatosis of the Achilles tendons. Informed consent was obtained and the study was approved by the ethics committee of our hospital.

PIB reduced the plasma total cholesterol by about 40% (see figure), as expected.<sup>2</sup> High density lipoprotein (HDL) cholesterol was not affected. After operation the patient was clearly less troubled by the xanthomas. However, he had continuous, severe diarrhoea which could not be corrected by a fat-restricted diet or by loperamide at maximum dosage and which persisted after cholestyramine administration and treatment with tetracycline. The diarrhoea was so severe that the patient asked for restoration of intestinal continuity. 9 months after the PIB the operation was reversed. Microscopic examination did not reveal atrophy of the villi in the distal bypass part of the ileum, but bacterial overgrowth was seen in this ileal section. Postoperatively it took at least a week before appetite and food intake were normal again and before defaecation began. After repair, plasma total cholesterol rapidly rose to pre-PIB levels (figure). Diarrhoea had completely disappeared and the patient was very happy that intestinal continuity had been restored.

Like the case described here, our first patient, a 46-year-old woman who underwent PIB in the autumn of 1982, is still frequently troubled by diarrhoea. Although PIB can apparently be reversed, we are not as optimistic as others<sup>5</sup> about this surgical treatment.

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