of the debate in operation

The length of duodenal ulcers, when infection with the utmost order was done. The result is a fact already noted by Cole et al. This is probably not surprising, as the probability of monomer in the circulation of monomer and the blood and slower and blood levels thus proportionally lower. Continuous electrocardiographic tracings carried out on a large number of our patients have never shown any change and accordingly following the use of acrylic cement.

(5) There seems to be conclusive evidence4 that hypotension following the use of acrylic cement is in fact due to the absorption of free monomer into the circulation, and it is interesting to note in this connection that in our experience no fall in blood pressure follows the use of cement in any other operation. The blood pressure is lower during the operation and hypotension is brought on by the removal of the specimen. The peak of hypotension may be noted 2-3 mm Hg. The patient is usually in no distress.

Hypotension and Methylmethacrylate Cement

STR—We have had with great interest the various communications on this subject which have appeared during the past 12 months.1 It would seem that there is still continuing concern regarding the use of acrylic cement in the fixation of prostheses in major hip arthroplasty. Having been responsible during the past 10 years for either the personal administration or supervision of anaesthesia for more than 7,000 hip arthroplasies performed at this centre in which acrylic cement has been used, we feel it may be of some value to present certain of our findings based on this experience.

(1) A fall in blood pressure does not invariably follow the introduction of acrylic cement into the acetabulum or femoral shaft, although it is a common occurrence (80% of cases approximately).

(2) A fall in blood pressure occurs following insertion of cement into the reamed acetabulum it is small and transient, rarely exceeding 15 mm Hg.

(3) Following insertion of cement into the reamed femoral shaft the fall in blood pressure is usually greater, but rarely exceeds 30 mm Hg. The time taken for a maximum fall to occur is usually 30-60 seconds and then follows a rapid return to normal, which seldom takes more than a further 90 seconds. We have not noticed the late rise in pressure recorded by Cadle et al. In no instance has the patient undergone a cardiac arrest occurred following the use of acrylic cement, nor have falls in blood pressure given regular cause for concern. Neither are we aware of any patient who has been rendered unconscious as a result of the use of the cement. Many of our patients are elderly and frail, and hypertension and coronary artery disease are only too common. Such patients, we agree, compensate poorly following sudden and severe hypotensive episodes, but in our experience the use of acrylic cement does not produce the changes in pulse rate and hypotension which were shown to follow the intravenous injection of monomer into dogs by Peebles et al. This is probably not surprising, as the absorption of monomer into the circulation from a bone graft would be expected to be smaller and blood levels thus proportionally lower. Continuous electrocardiographic tracings carried out on a large number of our patients have never shown any change and accordingly following the use of acrylic cement.

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Duo-Endogastric Reflux and Pyloric Surgery

STR—One of the unfortunate aspects of this debate is that pyloric reflux and gastric retention have been proposed as opposing theories in the aetiology of gastric ulcer, whereas they are probably both factors of the same pathogenic process. As M. H. Burge points out (11 November, p. 360), duodenal and pyloric channel disease could give rise to both and, in the presence of a normal pylorus, the antrum-duodenal motility patterns that are associated with reflux1 would also tend to delay gastric emptying. The length of time that refluxed duodenal juice remains in the stomach may determine the source of mucosal damage. It must also be remembered that there are three types of gastric ulcer, possibly with different causes.2

If the gastric ulcer is clearly secondary to an obvious organic lesion (Type D) and the acid secretion is moderate or high, then vagotomy is theoretically a reasonable operation to heal the duodenal ulcer. But ulcers cause scarring when they heal and a scarred duodenum and pylorus may perpetuate a delay in gastric emptying and a pyloroplasty may be required in addition.

With the primary lesser curve ulcer (Type D), for those who suggest that the main problem is increased antral gastrin release following gastric stasis the two logical alternatives are a Billroth I antrectomy or an adequate simple drainage operation, but the latter has not proved effective. We would suggest that a proximal gastric vagotomy without drainage does not follow logically from the hypothesis that gastric ulcers in patients without associated duodenal or pyloric disease. For those who think that reflux is the primary problem the logical operation is a pyloroplasty or (b) a pyloroplasty that allows rapid emptying once reflux has occurred, which may be provided by a wide pyloroplasty, but this also gives rise to increased reflux.

If we look at the operations themselves, we find that the great success of the Billroth I operation would support both hypotheses, perhaps favouring the antral gastric release theory in particular. The moderate success of vagotomy and pyloroplasty3 also adds some support to both hypotheses, perhaps by overcoming stasis and allowing quick drainage of refluxed duodenal juice, whereas it is not the vagotomy helps if the night and stimulated gastric acid secretions are already very low. Proximal gastric vagotomy without drainage is logical only if it is thought that a small duodenal or proximal lesion is responsible for the delay in pyloric function and gastric emptying will return to normal.

It is too early in our understanding to be over-dogmatic about either aetiological theory or method of treatment, but we should try to make our surgical practice consistent with our theories of the pathophysiology of gastric ulcer and then critically examine the results of the treatment. We are, etc.,

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Radiography of Potentially Pregnant Females

Sir,—Without wishing to deny the general desirability of minimizing the exposure of the embryo and fetus to ionizing radiation, I fear Professor G. M. Ardran and Dr. F. H. Kemp (18 November, p. 422) might be basing their proposals on shaky foundations.

They say that "... it is now universally accepted that radiation to the fetus can cause leukaemia or other neoplastic disease." In an editorial comment on a paper by Bress and Natarajan1 MacMahon wrote: "Implicit in the interpretation of their findings ... is the view that low-level prenatal irradiation indeed causes leukaemia. Although accepted by many (at least provisionally), this interpretation is not the only explanation of the existing evidence." A very recently published report of the United Nations Scientific Committee,2 which Professor Ardran and Dr. Kemp have seen, contains the following: "Thus, although children born from mothers x-rayed while pregnant seem to have an increased risk of cancer after birth, a physiological test has not been found, at least at part of it, is caused by factors other than radiation ...

These quotations suffice to show that Professor Ardran and Dr. Kemp's claim of "universal acceptance" is unjustified. However, even if it should subsequently be established that irradiation of the fetus does not cause childhood neoplasia, other possible consequences must not be overlooked. If experiments on mice can be used as a guide (see reviews by Upton3 and Rugh4), developmental abnormalities can be expected to be a hazard of fetal irradiation in man. Some of the resulting offspring, as supported by follow-up studies at Hiroshima; thus all eight survivors who were exposed within 1,200m of the nuclear explosion between the 7th and 8th August of gestation developed microcephaly.5 It remains to be determined whether small doses (~1 rad) of fetal irradiation produce developmental abnormalities. They might do so and this could be used as a test to justify the proposals advanced by Professor Ardran and Dr. Kemp. —I am, etc.,

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