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IATROGENIC DISEASE IN SURGERY

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"Primum non nocere" was one of the most striking injunctions that one absorbed as a medical student. I suppose it is the Latin equivalent of the Hippocratic aphorism: As to diseases, make a habit of two things — to help, or at least to do no harm." Surely, to the definition of the doctor's role as being "to cure sometimes, to relieve often, to comfort always" one may hopefully and wistfully add "and to harm, never!"

The good doctor, enlightened by the inside knowledge which is denied to the layman, has always been his own severest critic. He has always been aware of his potentialities for ill as for good. Now that his therapeutic armamentarium in all fields of medical activity has been so heavily reinforced, his powers are immensely increased; and so, one would hope, is his sense of responsibility. I do not doubt that there is nowadays an enhanced awareness of and interest in iatrogenic Disease.

'Iatrogeny' as a subject heading makes its first appearance in the Index Medicus in Volume 49 for 1951 being included under "Physician's relation to patient." Iatrogenic disease begins to be listed as such in 1963, and every year now sees some one hundred articles appearing, of which roughly one-fourth deal with surgical aspects of the subject.

There are several reasons why surgeons should be not only prone to inflict iatrogenic harm but also privileged to learn of and from it, painfully sometimes, salutarily always. One reason is that, to learn of the errors of their ways, they have better opportunities than physicians have in as much as they can often observe the effects of their work

in the living patient when re-operating, well before he ends up on the autopsy dissecting table. Another reason is that surgery is of its very nature drastic and dramatic in its failures as in its successes. Of the things that can go wrong in surgery, there is no end. Large volumes have been, and will continue to be, written dealing with surgical errors, and safeguards. Certainly, no practising surgeon can be lacking in opportunities to learn from his own mishaps, mistakes and misdemeanours. It is only the man who keeps his arms folded who will not need to keep his fingers crossed against misadventure.

I do not propose, however, to continue to dwell on the obvious, which is the failure of the surgeon as an artisan, a craftsman. Rather do I wish to concentrate on those aspects where surgery fails as a scientific discipline. This it does when it transgresses against physiological principles. In this day and age it is, or should be, true to the point of triteness that the surgeon must be a master of physiology, even more perhaps than of anatomy. It is when the surgeon falls short in this important respect that he undergoes that tragic reversal of roles which changes him from a healer to a producer of new diseases.

Whenever surgery is ablative or destructive rather than conservative or restorative, it can hardly fail to incur penalties, in fairly strict proportion to the encroachment on the physiological reserves of the organs concerned. This price is more or less willingly paid when one is attempting to eradicate malignant disease, but it may well be too great a sacrifice for benign conditions. Total gastrectomy usually results in

prohibitive crippling of nutrition, with a patient looking as miserable as he feels; in spite of its theoretical advantages, few surgeons do it routinely for cancer (only in 38% of cases by Tanner, 1955), and so it certainly has no place in the routine treatment of benign ulcer (Wells, 1960). Even extended partial gastrectomy (Visick, 1948; Pulvertaft, 1952) has failed to hold its ground as an acceptable operation on this score, now that there is the better alternative of vagotomy. A gastric reservoir of appreciable size is necessary both for the patient's comfort and for his adequate nutrition. Loss of weight is directly proportional to the extent of resection (Welbourn, 1953; Everson *et al.* 1957) and in the majority of patients exceeds ten pounds (Johnson *et al.* 1958). Pulmonary tuberculosis develops in two to four per cent of gastrectomised patients, whether by activation of previous disease or by undoubted increased susceptibility after operation (Pearson, 1954; Anderson *et al.* 1955).

Other specific nutritional deficiencies and disturbances are common after partial gastrectomy, though not always serious or even overt. Steatorrhoea has been recorded in as many as 60% of patients (Butler *et al.* 1954). Protein losses in the faeces up to 5 grams per day are not rare. Osteoporosis and frank osteomalacia may not be very common but can sometimes assume serious forms (Tasmas Jones *et al.* 1963). Iron deficiency anaemia is a major problem, as it affects 20 to 30 per cent of patients; it is undoubtedly very much more frequent as a subclinical state causing minor ill-health; it has a specially high impact on women under 50 years (Duthie and Irvine, 1965). Megaloblastic anaemia is rather rare, occurring in only 1%, but subclinical deficiency of Vitamin B 12 is a good deal commoner and justifies specific therapy (Cox *et al.* 1953).

Now, in all these metabolic derangements, there is sufficient proof that their incidence and severity are worse after partial gastrectomy than after vagotomy (Williams *et al.* 1963). Vagotomy cannot be totally exonerated of undesirable side effects, but for metabolic reasons it is far preferable to

gastrectomy. In point of fact, I with many other surgeons, have come to prefer vagotomy for quite another reason, that is its vastly increased safety 'quoad vitam', but it has been added comfort to find out that it is also that much better 'quoad functionem'. With regard to the different types of gastrectomy, the balance of judgement probably comes down in favour of Billroth I rather than Polya, though not very strikingly: the former is certainly theoretically the more physiological (or the less unphysiological) operation, and may therefore be expected to produce less iatrogenic upset.

Operative insult to gastric function may also result in certain disturbances commonly known as the post-gastrectomy syndromes. These are varied in causation and in presentation, and range from the trivial to the incapacitating. What they have in common is a man-made unphysiological background. They include both early and late post-cibal upsets, 'dumping' effects, hypoglycaemic attacks, bilious vomiting, vomiting of food, colics, diarrhoea and constipation. When severe, they can be as disturbing to the patient as his original complaint and may even require further major operations. When subjective, they are undoubtedly elicited more frequently the more one pursues them, and the surgeon must guard against inducing in certain susceptible patients that frame of mind in which these complaints readily take root. There is such a thing as iatrogenic psychoneurosis. However, no one will deny the organic basis of many of these symptoms and signs, and the altered rate and rhythm of gastric emptying and intestinal filling seem to explain them in most cases (Stammers 1963). Once again, vagotomy has here a better record than gastrectomy, and the Billroth I reconstruction is better than any variant of Billroth II.

Gastric surgery is most frustratingly self-defeating when, in trying to cure an ulcer, it gives the patient a new one. Recurrent ulceration, usually of the stomal variety, is serious though not common nowadays. I have always found stomal ulcer to be much more persistently and severely painful than the original ones, and they are at least as serious as to complications;

gastro-jejuno-colic fistula is a surgical disaster of the first magnitude. The high incidence of stomal ulcer after simple gastrojejunostomy for duodenal ulcer, as high as 50% (Clark, 1951; Tanner, 1954) led to the abandonment of this deceptively attractive operation, and to its replacement by partial gastrectomy with a tendency to the more extended varieties of this. Nowadays, vagotomy with various drainage procedures supplies a satisfactory answer to the problem while avoiding the disadvantages of gastrectomy. Vagotomy not only leads to fewer stomal ulcers, but also happens to be one of the most effective and safest ways of treating them if they have arisen.

Iatrogenic diarrhoea has been cited as a major disadvantage of vagotomy. Views differ as to the frequency of the severer forms. I am among those who think that too much has been made of this complication, and I certainly do not regard it as a deterrent from what is otherwise an excellent operation. Selective vagotomy is gaining ground in place of total truncal vagotomy. Certainly it is more physiological; much less certainly does it reduce the incidence and severity of diarrhoea. I venture to predict that if selective vagotomy were to be universally adopted we would have more cases of incomplete vagotomies than at present.

To turn to another field of abdominal surgery, the gall-bladder is obviously a much more expendable organ than the stomach. Here too, however, post-cholecystectomy syndromes have been described at some length. To my mind, many of these accounts lack a sound basis: this applies to biliary dyskinesia, cystic duct stump syndromes and so forth. When one of my patients returns after cholecystectomy with severe symptoms, I look for such missed conditions as residual stones in the common bile duct and hiatus hernia (Griffiths 1968). In cases where a bilio-digestive anastomosis has been established, there is some risk of ascending biliary tract infection supervening. I believe the best answer to this is to provide as wide a stoma initially as one can, and to ensure that it remains widely patent. What is to be feared is not reflux but stasis.

Introduction of infection to sites where it was not before is another failing for which the surgeon can sometimes blame himself. Uretero-colic anastomosis can develop this complication, but that it need not invariably do so was long ago proved by Grey Turner (1948) and others. However, hyperchloraemic acidosis is a substantial risk of such transplants (Ferris & Odel, 1950), and awareness of this complication has encouraged interest in other forms of urinary diversion with many fruitful results. This is but one of many instances where study of iatrogenic disturbances has advanced surgical knowledge and techniques.

Sometimes we surgeons give our patients new diseases simply by getting them into hospital, where we expose them to germs other than those they already harbour. In consequence, the patient's condition may develop not unlike that of the biblical personage who had one devil exorcised only to be colonised by seven worse ones. The problem of hospital cross-infection, particularly with antibiotic resistant strains of microbes, is a very real one indeed, and we are still far from eradicating it. It may assume such proportions that one may think a hospital is about the most dangerous place for a sick man.

Surgical iatropathogeny may be inflicted unwittingly when there is incomplete knowledge of the normal physiological significance of certain organs. Splenectomy can usually be done with impunity, but it has led to fulminating infection (King & Shumacker, 1952). Who knows what we may have to accuse ourselves of, in respect of wholesale tonsillectomies and appendicectomies, when some day we shall realise the after-effects of sacrificing these organs?

Ignorance, again, is at the back of our present-day crude methods of treating cancer, and of the consequent undesirable or harmful effects of our treatment. The choice of cases of breast cancer for hormone therapy, or even the choice of which hormone to use, is often no better than empirical. Strong doubts are developing in the minds of many workers that heroic or even extensive surgery may be positively harmful by breaking down those immunological defences of which we know so little; the

same doubts apply in the case of radiotherapy and cytotoxic agents.

Finally, we have nowadays the surgeon creating new difficulties for himself and his patients when he transplants organs and thereby provokes rejection phenomena. We have long been learning what the human body will readily accept by way of such foreign bodies as suture materials and metallic appliances; we have also known for some time the essential problems involved in skin grafting. It is, of course, the advent of successful human homologous renal, hepatic and cardiac transplantation that has focussed everyone's attention on the supreme difficulties created by these new assaults on the body's defences against intrusion. Though knowledge in this field is still rudimentary, there is now little doubt that here too modern medicine will itself provide the prophylaxis or the cure for those ills that we doctors inadvertently or unwillingly cause.

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