The cutting edge of general surgery 50 years ago

For many years when I was Professor of Surgery at the old Westminster Medical School (now a block of luxury apartments), I wrote an annual review of surgical progress for *The British Encyclopaedia of Medical Practice*, whose editor in chief was Lord Cohen of Birkenhead (Professor of Medicine in Liverpool). Reading through my review for the year 1964 gives a flavour of the state of surgical progress and research at that time.

Fifty years ago, duodenal ulcer was a common clinical problem and many of the patients required hospital admission for chronicity or complications of the disease. The cause was firmly believed to be hypersecretion of hydrochloric acid and it would be decades before the work of Marshall and Warren on *Helicobacter pylori* and the antibiotic treatment of the disease.

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Inpatient medical treatment comprised bed rest, continuous milk drip via a nasogastric tube and a wide variety of antacid drugs. Surgery was commonly called for – either for cases resistant to, or relapsing after, medical care, or because of the complications of perforation, stenosis or haemorrhage.

In 1962, Owen Wangensteen, professor of surgery in Minneapolis USA, introduced a novel technique of dealing with gastric acid secretion – freezing the stomach mucosa by circulating an alcohol mixture at -20°C for 1 hour through an intragastric balloon. Preliminary animal studies demonstrated that this suppressed gastric acid production. By 1964, Wangensteen could report on over 1000 patients treated by gastric hypothermia (and on the sale of 300 gastric freezing machines!). Of 164 inpatients with duodenal ulcer followed up for over 1 year, half remained symptom free. However, 26 of these patients had required a second gastric freeze. Reports by other groups in America were less favourable; in one study, 25 out of 29 patients had recurred after 9 months and in another study only 11 out of 25 patients were symptom-free at 6 months.

In the UK, enthusiasm for hypothermia was transient. A study from Cardiff found that gastric hypothermia was followed by only temporary suppression of acid secretion and remission of symptoms was only short; the technique was soon abandoned. At St Mary's Hospital, London, disappointing results were recorded in 20 patients. At Westminster, I treated one patient with gastric freezing, a man with gross ankylosing spondylitis, which made him a high risk for surgery. The treatment entirely failed to help and he underwent a subsequent partial gastrectomy without turning a hair. Another bright idea in the treatment of peptic ulceration disappeared from clinical practice.

Fifty years ago, when renal transplantation was in its early years of clinical use, there was considerable interest, in the lay press as well as in the technical journals, in the possibility of reimplantation of severed limbs. This operation, of course, had the great advantage of not presenting any problems of rejection of foreign tissues but did carry with it technical and rehabilitation difficulties.

The first success was reported from the Massachusetts General Hospital in Boston in 1962 by Malt and McKhann. This was a boy aged 12 years old whose arm had been severed below the shoulder 30 minutes before admission to hospital. The limb was placed in an ice and salt mixture and intra-arterial perfusion carried out with Ringer's solution containing heparin and antibiotics. Vascular anastomosis was carried out and humeral re-attachment was performed using an intramedullary nail. Three months later, autogenous nerve grafting was performed and 20 months after this, sensation had returned to the fingers and the lad could write his name and lift a 10 lb weight with the re-attached arm. Now the same team reported a second success, in a 44-year-old man whose arm had been severed at mid-humerus by a train. Here extensive skin loss had required a pedicle graft.

In 1964 Dr Ch'en in Shanghai was able to report three successful replantations of detached forearms; apparently a relatively common industrial accident in those days in China.

Interestingly, that pioneer of tissue transplantation, the Nobel Prize winner, Alexis Carrell, had performed successful limb replantations in animals way back in 1906. However, no one in 1964 would have dreamed that today donor transplantation of arms would be possible.

In 1964, as today, gas gangrene was a relatively uncommon but serious complication of civilian trauma and surgery. Standard treatment was wide tissue excision combined with penicillin. Anti-gas gangrene serum (produced by giving horses small doses of gas gangrene exotoxin)was still used, even though we doubted its efficacy. There was much interest, therefore, in the publication in the *Lancet* from Amsterdam by Brummelkamp and Boerema of 26 cases of gas gangrene where surgery and penicillin (but no anti-gas serum) was supplemented by oxygen given at a pressure of three atmospheres in a hyperbaric chamber in seven sessions, each of 2 hours, given over 3 days. There were five deaths in the series but only one directly and one possibly as a result of the disease. A striking feature was the rapid detoxification of the patients after only two or three treatments.

We were subsequently given a hyperbaric oxygen chamber at Westminster and used this on a number of cases of gas gangrene following above-knee amputation. We were certainly impressed by the results.

Those were exciting days! BJHM

Conflict of interest: none.

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