REVIEW ARTICLES

Review of general surgery 1982

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Introduction

Once again I have had the enjoyable task of preparing an annual review of General Surgery. Once again, it represents a digest of papers and books that I have found of particular interest and value during the last 12 months and it must therefore have the rather personal flavour of the author's surgical hobbies.

This year's topics include the treatment of parotid tumours, pre-operative preparation of the toxic thyroid, malignant melanoma, necrotizing fasciitis, some aspects of the continuing controversy in the management of breast cancer, arterial trauma, arteriosclerosis, varicose ulceration, hyperhidrosis, the complications of gastric surgery, the aetiology and management of rectal bleeding, advanced cancer of the large bowel, liver trauma, gall stones and their management, acute abdominal emergencies, head injuries and the ever present problem of post-laparotomy incisional hernia.

Head and neck

Parotid tumours

In recent years, local excision or intra-capsular enucleation without display of the facial nerve, followed by routine postoperative radiotherapy, has been advocated as the optimum treatment for pleomorphic parotid adenomas ('mixed parotid tumours'). It has been claimed that the recurrence rate and the incidence of other complications compare favourably with the theoretically safer but more difficult operation of wide excision of the tumour with formal display and preservation of the facial nerve. However, 2 recent papers underline the excellent results obtained by the latter technique, provided, of course, that the surgeon is skilled in the performance of the operation. Hawe and Bell (1982) report from Belfast a series of 49 tumours treated

between 1969 and 1979. In 2 patients, there was a minor degree of facial palsy. Unfortunately, 10 of the patients were lost to follow-up within a year of surgery, but no recurrence was found in the remaining patients with a mean follow-up of 46 months. These authors give a useful summary of 8 other papers, mostly published within the last decade, and note that limited surgery and radiotherapy gave a reported recurrence rate of between 1.3 and 8.7% compared with a recurrence rate of 0-1.8% in the parotidectomy series. Stevens and Hobsley (1982) note that there was only one recurrence in 72 patients treated *per primam* by conservative parotidectomy with a follow up of 1-15 years (a median of 4 years). A further 28 patients had undergone re-operation for recurrences after local removal with or without radiotherapy. Among this group, there were 5 further recurrences following parotidectomy and 4 had undergone malignant change. Stevens and Hobsley point out that diagnosis of a localized parotid mass cannot be made pre-operatively and enucleation of what proves to be a malignant parotid tumour may be disastrous. These excellent reported results certainly support meticulous surgical excision as the treatment of choice.

It is true that Frey's syndrome (sweating on the side of the face during eating) may sometimes follow parotidectomy but not enucleation and radiotherapy. However, this does not detract seriously from the other advantages of surgical excision (Leading Article, 1982).

Thyroid

There is still considerable variation in the pre-operative treatment of patients awaiting thyroidectomy for hyperthyroidism. The use of the adrenergic beta-receptor antagonist propranolol was first reported in 1970. Lee and his colleagues (1982) note

that, in 1973, Lee had first reported the use of propranolol without any other drug, even iodine, as the pre-operative treatment in 20 patients. They now report a further 140 patients, bringing the total to 160 cases. The average dose of the drug was 160 mg per day with a range of 40 to 320 mg. There have been no examples of postoperative thyroid crisis or permanent hypoparathyroidism nor any instances of nerve injury. Only 2 patients failed to respond; both were put on other anti-thyroid drugs and were subsequently safely operated upon. The drug is not used in patients suffering from asthma, sinus bradycardia, congestive heart failure or hyperglycaemia. The propranolol is given every 6 hr (6 patients needed 4-hourly drug therapy) and is taken orally. The last dose is given 2 hr before surgery and is resumed 4–6 hr later. Patients can be ready for operation within 24 hr of starting treatment! Postoperatively, the propranolol is gradually reduced and is discontinued 5–7 days after surgery.

Coyle and Mitchell (1982) report an important study in which 44 patients with hyperthyroidism, being prepared for surgery, were randomized between those receiving Lugol's iodine and those receiving a coloured solution of liquorice for 2 weeks pre-operatively. No difference could be found in the measured blood loss or the ease of the operative procedure. These authors conclude that pre-operative iodine is of no value as an adjunct to other anti-thyroid agents.

The solitary thyroid nodule

It is sound clinical practice to advise surgical removal and histological examination of a solitary nodule in the thyroid. Hammer and his colleagues (1982) review 341 patients in whom a solitary thyroid nodule had been removed over a 5-year period. The main indication for surgery was the presence of a prominent nodule in the thyroid that was 'cold' on the iodine scan. In 48 patients, the diagnosis was malignant disease (14%); this lies within the reported 5–25% incidence of cancer of the thyroid in solitary nodules. The authors point out that although 94 of the cases had a cystic lesion in the thyroid, histological examination showed that neoplasms were found in 16 of these (17%) so the presence of a cystic lesion certainly does not rule out the diagnosis of cancer. Moreover, ultrasonography was not reliable in differentiating between cystic and solid lesions. Even the finding of a 'hot' nodule in a thyroid does not exclude malignant disease. Eyre-Brook and Talbot (1982), in a review of 101 such cases, found that one patient had a well-differentiated follicular carcinoma of the thyroid.

Skin and subcutaneous tissues

Malignant melanoma

In spite of extensive research, there is still controversy about the management of the regional lymph nodes in patients with a clinical Stage I cutaneous malignant melanoma, that is to say, when the regional nodes are clinically normal. Milton and his colleagues (1982) have now published the results of their very extensive experience in Sydney, Australia. They studied a total of 1319 patients with malignant melanoma, all of whom were clinically Stage I. Three hundred and eighty had a prophylactic block dissection performed and 5% of these were found to have positive nodes on histological examination. The remaining 939 patients had wide local excision only. A retrospective study of these patients stratified them according to sex, the thickness of the lesion and the site of the melanoma. In spite of the large numbers, a clear-cut answer was not established. A better prognosis occurred in men with lesions of depth 1.6–3 mm and in females of lesions 1.6 mm upwards who were submitted to prophylactic block dissection, although statistical significance was not reached compared with those in whom prophylactic dissection was not performed. Obviously, still further investigation is required in this important and controversial field. Indeed, Day and his colleagues (1982) estimate that approximately 1500 patients with clinical Stage I melanoma of intermediate thickness (1.5–3.9 mm) would be needed in each arm of a randomized clinical trial in order to determine whether or not elective block dissection is associated with increased survival!

Levene (1982) has reviewed the interesting topic of malignant melanoma and pregnancy. The association between the two is rare and hard data are still required on the natural history of this association and on such topics as the risks of subsequent pregnancies, the use of contraceptive pills and so on. Involvement of the placenta and secondary melanoma in the fetus have both been described. The clinical evidence suggesting that there is a hormonal influence on survival from malignant melanoma is based on:

- (1) prognosis for malignant melanoma markedly favours female survival;
- (2) the course of melanoma in pre-pubertal children may not be as good as in adults;
- (3) the survival rate in post-menopausal women climbs sharply;
- (4) the effects of oestrogen administration may be adverse;
- (5) there is a protective effect of the multiparous state, and
- (6) there are scattered reports of exacerbation of growth of the primary tumour or metastases during

pregnancy, to be succeeded by regression postpartum.

Levene points out that the WHO melanoma group is collecting comprehensive summaries of cases of melanoma in pregnancy, but it will be some years before enough material has been amassed for even a preliminary report to be available.

It is well known that cutaneous malignant melanoma may metastasize to any organ in the body. Bowdler and Leach (1982) give an interesting report of 2 patients with metastatic melanoma, one to the distal end of the common bile duct and the other to the fundus of the gall bladder. They point out that although secondary intra-biliary metastases are rare, malignant melanoma accounts for more than half of these cases.

Ano-rectal melanoma has a particularly sinister reputation. Bolivar and his colleagues (1982) present a useful review of this tumour which is fortunately rare—only about 500 cases have been reported to date. The 5-year survival rate is only in the region of 6%. The few long-term survivors have been treated radically by abdomino-perineal excision of the rectum and these authors report 2 such cases, both of whom survived for 5 years. However, the first eventually died from a second primary in the lung and the second died from bony metastases.

Necrotizing fasciitis

Necrotizing fasciitis is a rapidly progressive necrotizing process which affects subcutaneous tissue and is accompanied by severe systemic toxicity. Characteristically, it spares underlying muscle. The subject is a difficult and confusing one, although most surgeons will have experience of dealing with a number of such cases. Janevicius, Hann and Batt (1982) give an important review of this syndrome, which usually follows trauma, surgery, or drug injections. There may be no history at all of either surgical or accidental trauma but this is probably accounted for by some minor laceration, abrasion or even an insect bite. Percival and Hargreaves (1982) report one case after stretching of an anal fissure and another in a patient with groin intertrigo—both were obese diabetics.

The anterior abdominal wall and perineum are particularly common sites. No single microbe pathognomonic for necrotizing fasciitis has been found, although the commonest combination is the non-group A streptococcus with *Bacteroides fragilis*. The condition must be distinguished from clostridial gas gangrene with its characteristic rapid necrosis of muscle, and progressive postoperative bacterial synergistic gangrene, or Meleney's ulcer, which usually occurs at the edge of a previous wound and is a spreading cutaneous gangrene that does not involve

the deep fascia and is caused by an anaerobic or haemolytic streptococcus in combination with *Staphylococcus aureus*. Necrotizing fasciitis demands total debridement of all necrotic tissue with immediate institution of parenteral antibiotic therapy; metronidazole and a cephalosporin is a useful combination but this will be modified according to the bacteriological findings. Hyperbaric oxygen is of no proven benefit. Once the necrotizing process is arrested and systemic toxicity alleviated, the denuded areas will require split thickness skin grafting.

An important factor, surprisingly not mentioned by Janevicius and his colleagues, is the association with diabetes. Oh, Lee and Jacobson (1982) review 28 patients with necrotizing fasciitis of the perineum of whom no fewer than 11 were diabetic. Of the diabetic patients, 8 died (73%) whereas there were only 2 deaths in the 17 non-diabetic patients. These authors consider that the high mortality in this region is due to the difficulty of carrying out complete debridement in this anatomical situation.

Rouse, Malangoni and Schulte (1982) review 27 patients with necrotizing fasciitis among whom no fewer than 21 had associated chronic disease—13 were diabetic, 8 had arteriosclerosis, 5 were obese, 4 alcoholic, 3 had metastatic cancer and 2 were in chronic renal failure. From the point of view of aetiology, 9 followed abdominal operations, 9 had perineal disease, 7 resulted from chronic skin ulcers, one had a colonic perforation and 2 were of unknown aetiology. The severity of this condition is shown by the fact that no fewer than 20 of the 27 patients died (73%) and the death rate among the diabetics rose to 85%. The number of organisms cultured varied from a single isolate in 4 of the patients to as many as 11 bacterial types. The predominant organisms were bacteroides, *E. coli*, *Enterococcus* and clostridia.

Bowdler (1982) reports an unusual example in a patient who developed a late perforation of his ileostomy several years after a pan-proctocolectomy for ulcerative colitis. Recovery followed wide excision and subsequently delayed plastic reconstruction of the ileostomy was performed.

The dangers of streptococcal infection, even in the modern antibiotic era, are stressed by Aitken, Mackett and Smith (1982). They present 9 patients with life or limb threatening streptococcal infection, in 3 of whom no source of infection was found and in the others the precipitating injuries were only minor abrasions or contusions. All but 2 of the patients had serious pre-existing medical problems (diabetes 4, cachexia or recent weight loss in 3, arterial vascular disease in 3, obesity in 3, long-term steroid use in 2 and cirrhosis in 1). Death occurred in no fewer than 5 of the patients with multiple organ failure and serious coagulation disorders. Treatment comprises anti-

biotics (usually penicillin or a cephalosporin and an aminoglycoside), fluid replacement and surgical debridement. If the extremity cannot be salvaged, then guillotine amputation is advocated.

Breast

Patients complaining of pain or a lump in the breast form a large proportion of out-patients in general surgical clinics. Most studies published to date have come from specialized breast centres. We have now studied a consecutive series of patients attending our general surgical out-patients because of breast problems (Cox and Ellis, 1982; Cox, Li and Ellis, 1982). Of 753 new patients, 16 were male, one of whom had a carcinoma. The great majority of patients had either entirely normal breasts (31%) or bilateral nodularity of the breasts (fibroadenosis—21%). Many of the patients could be reassured simply on clinical examination but 332 required excision biopsies. Cancer was found in 88 patients (12%). Cysts accounted for 16% of cases and the great majority were treated by aspiration under local anaesthesia. Fibroadenomas accounted for another 8% of patients. Thomas and his colleagues (1982), from Bristol, found that mammary duct ectasia accounted for some 5% of all breast operations performed in their unit. This condition, of unknown aetiology (also called plasma cell mastitis), is associated with nipple retraction, nipple discharge, often a sub-areolar mass and recurrent para-areolar sepsis. Most cases responded satisfactorily to major duct excision carried out through a circumareolar incision which included any sinus if present. Through this incision, the major duct system could be excised and a purse-string was employed to evert the nipple if necessary. Most cases responded to such treatment but 2 of their 78 patients eventually needed simple mastectomy for recurrent sepsis.

Severe breast pain (mastalgia), usually preceding, and relieved by, the onset of each period, is a difficult therapeutic problem. Most surgeons rely on strong reassurance, analgesics and a supporting brassiere worn 24 hr a day during the painful part of the cycle. The anti-prolactin, bromocriptine certainly seems to affect this pain but the study by Durning and Sellwood (1982), from Manchester, demonstrates the snags of this therapy. Thirty-eight patients with severe mastalgia were entered into a cross-over trial between placebo and bromocriptine. However, 2 patients withdrew because of severe symptoms from the placebo, 9 obtained marked improvement on the placebo, one became pregnant, 2 developed amenorrhoea and 2 failed to attend the clinic. Of 24 patients who persisted with the trial over 6 menstrual cycles, two-thirds did obtain relief from the bromocriptine but a third experienced severe side effects. Most

surgeons would be very unhappy indeed at the idea of maintaining young women for long periods on drugs interfering with their normal hormonal state, hence the very conservative attitude to hormonal manipulation in the treatment of breast pain among surgeons in this country.

Another symptom which may bring women to the surgical clinic is inversion of the nipple. When an underlying mass is found, this is always highly suspicious of carcinoma. However, Neville, Freeman and Adiseshiah (1982) carried out an interesting study of 63 patients in which inversion of the nipple was the only clinical finding. Only 3 of these patients (5%) were found to have carcinoma and all 25 of the patients who were under the age of 50 had a benign condition. These authors advise a mammogram and if this is negative, follow-up should continue for a further 12 months to ensure that the disorder is entirely benign. Retraction of the skin to the underlying mass is another important physical sign of malignancy. Schurch and his colleagues (1982) have investigated the mechanism of this phenomenon and conclude that this is due to the presence of myofibroblasts in the tumour stroma. These cells, which are capable of undergoing contraction, were found to be abundant in scirrhous tumours but were absent or equivocally present in non-invasive ductal, medullary and colloid tumours. They were especially present in the peripheral invasive cellular part of the tumour but only poorly developed or absent in the central sclerotic area. The authors conclude that the contractile qualities of these cells probably contribute to the retraction in scirrhous carcinomas which result in dimpling or retraction of the skin, the nipple or both these structures.

Breast cancer

Although there is a tremendous demand for breast cancer screening, we still need more hard evidence that screening programmes are actually going to save lives in women with breast cancer. The extensive study in New York by Strax (Shapiro *et al.*, 1982) has shown a reduction in breast cancer mortality rate in screened compared with non-screened women, but this favourable result was apparently limited to women over the age of 50 years. There is need for further studies to determine whether early detection of breast cancer correlates with improved survival and such trials are now under way in a number of centres, including Sweden and the United Kingdom (Miller and Bulbrook, 1982). In days of decreasing funds, we must not forget economic aspects. Chamberlain (1982a) estimates that it costs between £2740 and £3570 per case detected and cannot find any economy made between the cost of treating a screening-detected cancer from one presenting be-

cause of symptoms—that is to say, there is no evidence that screening could actually pay for itself from savings achieved by treating cancers early rather than late.

Self-examination of the breasts has at least the advantage of being cheap and trials are being conducted between populations of women offered education in breast self-examination with others offered screening and with a third group offered no extra diagnostic service (Chamberlain, 1982b). Baum (1982) points out, at least, that 'apart from inducing occasional obsessional neurosis, breast examination is unlikely to do any harm'!

The past few years has seen increasing interest in the use of local irradiation coupled with conservative surgery as an alternative to the mutilation which any form of mastectomy must inevitably produce (Tobias, 1982). Veronesi and Costa (1982) have reported the latest results of their important trial in Milan, comparing classical radical mastectomy with local excision of the tumour, axillary node dissection and radiotherapy in patients with tumours up to 2 cm in diameter. The trial commenced in June 1973. Actuarial 5-year survival showed no difference between the 349 patients undergoing radical mastectomy and the 352 treated with local excision and radiotherapy. There were 4 local recurrences in the radical mastectomy group compared with 2 in the conservative group. A second primary tumour had developed in the ipsilateral breast tissue in 7 of the conservatively treated cases. Contralateral breast cancers had developed in 8 of the radical mastectomy and 12 of the local excision group while distant metastases had developed in 44 of the former and 33 of the latter group. The authors conclude that mastectomy may still be indicated in very large tumours, deeply situated or with massive axillary involvement, or in locally advanced cancer after aggressive chemotherapy or radiotherapy as a 'rescue' operation. The hope is, of course, that many women will be saved the serious physical and mental traumas of mastectomy and as this knowledge spreads through the community, the dread which breast cancer holds in the minds of the female population may to some extent be mitigated and may be accompanied by a greater readiness to present at an earlier stage of the disease.

It is, of course, routine practice to follow up patients after treatment of their breast cancer with great care in the out-patient clinics but how much value is there in this exercise? Brøyn and Froyen (1982) reviewed 81 women who developed recurrences out of 269 patients who had undergone mastectomy in Norway. Of these, 15 recurrences were detected at routine follow-up in the out-patient clinics, 52 were found by patients between their follow-up appointments and 10 were detected by women who failed altogether to attend the out-

patient clinics. The disease free interval and survival showed no difference between these 3 groups of patients. Pauwels, Heslinga and Zwaveling (1982), in an important study from Leyden, questioned the value of pre-treatment and follow-up skeletal scanning in patients with operable breast cancer. Of 81 patients with Stage I tumours scanned pre-operatively, there was not a single positive finding and 4 positive scans occurred among 55 patients with clinically Stage II and Stage III tumours—all of these had bone pain and raised alkaline phosphatase. Thus, of a total of 136 patients, 4 pre-operative positive scans were obtained (2.9%) all of whom had clinical and/or biochemical evidence of metastases. The patients were then followed up over the next 4 years. Of the Stage I group, 7 developed positive scans and in the more advanced group there were 8 positive scans, but again all these had bone pain and raised serum alkaline phosphatase. The authors conclude that it would have required 520 scans at 6-month intervals to detect these 15 cases and they recommend scanning only in the presence of bone pain and/or a raised alkaline phosphatase.

Peripheral vascular disease

The remarkable advances that are being made in the management of vascular trauma are demonstrated by the Hunterian Lecture of D'Sa (1982) who reviews a decade of missile-induced vascular trauma in Belfast. In an experience of 192 patients with 316 vessel injuries, the amputation rate was only 5.1%. A particular form of vascular injury results from the terrorist punishment of 'knee-capping' (shooting through the knee at close range) which accounted for 80 of the lower limb injuries. The treatment of choice is excision and vein grafting, and two-thirds of the popliteal artery injuries were repaired in this manner. Veins should be repaired if possible rather than ligated and it is important to carry out fasciotomy if there is sustained hypotension, a delay period exceeding 6 hr between injury and revascularization, obvious oedema, concomitant artery and vein injury, or marked soft-tissue trauma. Jagers and his colleagues (1982) present an important review from Houston of 61 patients with 85 popliteal vascular injuries. The majority were penetrating wounds, of which 45 were due to gunshots, three to stabs and one iatrogenic. Blunt trauma was responsible for only 20% of the injuries. Nine patients required amputation and this was associated with the following factors: delay of more than 36 hr before repair, associated bone and soft-tissue injuries leading to wound infection, early occlusion of the arterial repair or delay in performing fasciotomy. Unlike the Belfast surgeons who advise the routine use of vein grafts, the Houston team employed vein grafts in only 11 of

the arterial repairs and used synthetic (polytetrafluoroethylene) grafts as substitute vascular conduits in 21 cases. These authors stress the value of the passage of a Fogarty catheter to clear distal clot and use a completion arteriogram to ensure good flow. Again, fasciotomy is strongly advocated.

While on the subject of vascular prostheses, Graham and his colleagues (1982) report interesting experimental studies in which polytetrafluoroethylene (PTFE) grafts in dogs were seeded with endothelial cells grown in tissue culture in order to obtain an endothelial lining. In control animals, no more than 10% of the graft was covered with endothelium, whereas those that had been seeded with enzymatically derived and cultured endothelial cells showed 64% of the surface covered with endothelium at 2 weeks and 91% at one month. Greco and Harvey (1982) have succeeded in bonding an antibiotic, oxacillin, to PTFE grafts using a cationic surfactant. Such grafts, placed in the aorta of dogs and challenged with a local contamination of *Staphylococcus aureus*, showed a higher proportion of negative bacterial cultures, of patency rate and of survival at 6 weeks compared with controls. These authors point out that the use of prophylactic systemic antibiotics has not eliminated the risk of infection in vascular grafts—with its disastrous consequences—and postulate that this bonded antibiotic may prove of value as a supplement to systemic therapy.

There is good evidence that cigarette smoking is a primary risk factor in atherosclerosis affecting the lower limbs. Giving up smoking reduces the amputation rate and prolongs graft survival but to date there has been little hard evidence that giving up smoking actually improves intermittent claudication. Quick and Cotton (1982) have studied a group of 41 smokers with claudication who continued their smoking habits throughout a 10-month study period and a further 16 patients who gave up smoking at the beginning of the investigation. There was a significant improvement in ankle pressures after exercise and maximum treadmill walking distance in those who gave up smoking although this did not change in those who continued to smoke. This objective evidence that claudication can improve if smoking is stopped will reinforce both patients and clinicians in their resolve to succeed. Certainly, the task is a difficult one; Clyne and his colleagues (1982) advised a group of 40 patients with peripheral arterial disease to stop smoking; 3 months later only 7 had beaten the habit.

There is no doubt that one of the most exciting advances in the treatment of peripheral arterial disease is the use of a balloon catheter to carry out transluminal angioplasty for stenotic lesions. This is now being extended to the renal and coronary arteries as well as to the iliac and femoral vessels.

Waltman and his colleagues (1982) review their experience from 1977 to 1981 at the Massachusetts General Hospital in the treatment of atherosclerotic stenoses and short occlusions in the lower limb. Of 100 iliac artery lesions, angioplasty was technically successful in every case with a cumulative patency rate of 92% at 3 years. Of 98 femoro-popliteal lesions the procedure was technically successful in 84, with clinical improvement in 78 patients and a cumulative patency rate of 75% at 3 years. Complications directly related to the procedure and requiring surgical intervention occurred in 8 patients—4 arterial thromboses, 2 false aneurysms at the puncture site and 2 cases of distal embolism. There was one death in a patient who developed an unrecognised retro-peritoneal haemorrhage from the femoral puncture. When it is considered that these procedures are often carried out on elderly and poor risk patients who would otherwise have to face major surgical procedures, these results are most encouraging. Lebard and Lagneau (1982) estimate that there is a 6% complication rate for this technique in experienced hands, which certainly compares favourably with surgical morbidity.

An interesting application of this technique is described by Haynes and his colleagues (1982) where a localized stenosis of the lower end of the aorta in a young man with retro-peritoneal fibrosis was successfully treated by transluminal dilatation followed by steroid therapy.

Although lumbar sympathectomy has been employed for many years in the treatment of peripheral arterial disease, Lindenauer and Cronenwett (1982) in an important review, point out that there are no physiological or objective clinical data to support such treatment in the management of intermittent claudication. Although there are many reports of improved skin temperature following lumbar sympathectomy for skin ischaemia, this is not due to improved capillary blood flow but rather to increased non-nutritive flow through cutaneous arterio-venous anastomoses. The results of measurement of skin capillary blood flow following sympathectomy have been variable. Most unfortunately, although sympathectomy has been performed for skin ischaemia for over half a century, controlled objective clinical studies are non-existent. These authors point out that lumbar sympathectomy is not an innocuous procedure and that a postoperative mortality of 6.5% has been reported.

Although sympathectomy may not be of proven value in atherosclerotic disease, there is no doubt at all that it is curative in severe hyperhidrosis. Bouchet and his colleagues (1982) report excellent results in 21 thoracic and 16 lumbar sympathectomies in a group of 14 patients. In my own series at Westminster (Ellis, 1982a), we have now carried out sympathectomies on

95 patients with hyperhidrosis of the upper limbs and 4 of these patients also underwent lumbar sympathectomy. Three further patients had lumbar sympathectomy alone for hyperhidrosis of the feet and a further 8 patients had their lower limbs treated by phenol block to the lumbar sympathetic chain under image intensifier control. As far as we can tell, the results of this operation are permanent and certainly we have patients who have remained completely cured of their disability a decade after sympathectomy. While most authors advise carrying out trans-thoracic sympathectomies as staged procedures, with a gap of several weeks between the 2 operations, Campbell and his colleagues (1982) report 10 cases in which the bilateral operation was performed as a one-stage procedure with no untoward result. Chest drainage was considered to be mandatory for these bilateral cases, the drain being removed after 24 hr.

Varicose ulcer

The mechanism by which venous disorders of the leg produce ulceration around the ankle is unknown. The first changes are cutaneous pigmentation, mild ankle oedema and the appearance of dilated subdermal venules. Later, the skin and subcutaneous fat becomes thickened and hard. At this stage, minor trauma may cause an ulcer. The whole process has been termed 'lipodermatosclerosis' by Professor Browse and his co-workers at St Thomas' Hospital (Burnand *et al.*, 1982). In an interesting study of biopsy specimens taken from the ulcer-bearing skin of patients attending the varicose vein clinic, they noted layers of fibrin surrounding the dermal capillaries in all the legs with lipodermatosclerosis, but in no specimen from 15 clinically normal legs. There was also an increased number of dermal capillaries. The mean reduction in foot vein pressure during exercise was significantly less in the limbs with pericapillary fibrin than in those without. These authors conclude that lipodermatosclerosis is synonymous with pericapillary fibrin deposition and is associated with, and probably secondary to, both a persistently raised venous pressure and an increase in the size of the dermal capillary bed. This extra-vascular deposition of fibrin probably stimulates tissue fibrosis and blocks the diffusion of oxygen to the overlying epidermis, thus producing cellular death and venous ulceration. If fibrin deposition can be reduced at an early stage, venous ulceration may be prevented. This may be accomplished by surgical restoration of calf pump efficiency, by the use of elastic compression or by the use of drugs which enhance tissue fibrinolysis.

The majority of patients with venous ulceration can be managed on conservative out-patient lines

with compression bandaging, active exercise to stimulate the calf muscle pump and elevation of the leg to promote venous drainage (Ellis, 1982b).

More radical surgical attempts at cure are now being attempted and there is particular interest in techniques of surgical correction of venous incompetence. Jones, Elliott and Kerstein (1982) describe 5 patients with chronic leg oedema, venous insufficiency and ulceration in whom the vein wall was reefed at the level of each cusp of the damaged common femoral vein valve. Follow-up 6–12 months later showed considerable improvement in the legs and non-invasive studies confirmed valve competence. Taheri and his colleagues (1982a, b, c) have now operated on a total of 23 patients with stasis problems in the lower limbs following deep venous thrombosis in whom a valve graft from the brachial vein in the arm has been sutured into the superficial femoral vein, the graft operation being supplemented by skin grafting in 10 of the patients with stasis ulceration. Symptoms subsided in all the patients, although one patient developed a deep venous thrombosis 8 months after surgery. Heparin was used for 7 days postoperatively and this was followed by oral anti-coagulants for a further 3 months. In some cases, postoperative venograms were used to demonstrate a patent deep venous system with a competent grafted valve. These reports are interesting but it should be noted that the follow-up is relatively short and surprisingly good results can be obtained by a conscientious surgeon with dedicated nurses using more conservative techniques. Schanzer and Peirce (1982) use ambulatory venous pressure measurements together with both ascending and retrograde phlebography to try and elucidate the precise pathogenetic factors in their patients with venous stasis. They report their results in 52 lower extremities in 49 patients suffering from chronic venous stasis. The type of surgery depended on whether deep vein incompetence, saphenous vein incompetence, deep vein obstruction or incompetent perforators could be demonstrated. Surgery included ligation of perforators, superficial femoral valvuoplasty (performed in 3 patients), segmental venous transposition (performed in one patient), ligation of the superficial femoral vein, cross femoral venous bypass or high ligation and stripping of the long saphenous vein. These operations are certainly not free from problems since 3 patients had skin sloughing after perforator ligation and one patient developed a haematoma requiring evacuation following segmental venous transfer. Improvement was obtained in the majority of patients, although two ulcers had already recurred at time of report. Once again, the follow-up has only been relatively short, between one and 37 months, and these authors agree that extended follow-up is necessary to clarify the value of these

surgical procedures in the treatment of chronic venous stasis.

Stomach and duodenum

The evidence available in this country generally shows that peptic ulcer disease has become a less frequent problem. Overall mortality and admission rates for both gastric and duodenal ulcer have fallen in the last 20 years in England and Wales and the perforation rates for gastric and duodenal ulcer have also fallen in men, but not in women (Langman, 1982). Against this background of already declining rates, there has been a considerable fall in the operation rate for duodenal ulcer, both in this country and in the USA, since the introduction of H_2 -antagonists.

In spite of the fall in the need for surgical intervention, there is still a large pool of patients in this country who have been submitted to either gastrectomy or some form of vagotomy and who are now suffering either from recurrent ulceration or from one or other of the post-gastrectomy or post-vagotomy syndromes.

It is now accepted that recurrent ulceration following vagotomy which resists medical treatment is best treated by partial gastrectomy, usually with gastrojejunum anastomosis of the Polya type. Clark and Ward (1982) review 37 such patients, 10 of whom had recurrent ulceration following highly selective vagotomy. Nine of the patients had been given cimetidine but 4 did not respond and 5 had relapsed. There were two postoperative deaths (one following an emergency bleed and the other resulting from rupture of the duodenal stump). Two patients were lost from follow-up. Of the remaining 33 patients, 5 had bad results, with 2 recurrent ulcers, one persistent fistula, one malabsorption and one patient with dumping. Twenty-five had good results and the remaining 5 had controllable symptoms.

Until the introduction of the H_2 -antagonists, medical treatment had little to offer for recurrent ulceration. However, today the outlook is less gloomy. An interesting study from Hong Kong (Koo, Lam and Ong, 1982) compares 2 groups, each of 23 patients, who had recurrent ulceration following gastric surgery. The first group were treated with cimetidine, the second by further surgery. Both were equally effective in controlling symptoms but, of course, the side effects of the medical treatment were far less than in the surgical group. At the end of one year, the cimetidine was withdrawn and 6 months later 71% of the medically treated group had relapsed. The authors conclude that indefinitely prolonged therapy with H_2 -antagonists is indicated if medical treatment is to be employed in such cases.

Gall stones and duodenal ulcer co-exist in some

10% of ulcer patients who require surgery and there is a high incidence of post-vagotomy diarrhoea when these patients are treated by combined cholecystectomy with truncal vagotomy and pyloroplasty. Ward, Clark and Karamanolis (1982) have now shown that although no diarrhoea occurred in their patients following highly selective vagotomy without drainage, when this was combined with cholecystectomy diarrhoea occurred in 30% of their patients. They postulate that the diarrhoea in these instances might be due to some form of bile salt malabsorption.

Much evidence points to the drainage procedure rather than the vagotomy itself as being responsible for the dumping and diarrhoea which may follow the combined operation of vagotomy and gastric drainage. Ebied and his colleagues (1982) review 8 patients with severe dumping syndrome following vagotomy and pyloroplasty treated by the simple procedure of reversing the pyloroplasty. Pre-operatively, the symptomatology was confirmed by the dumping provocation test using a solution of 50% glucose. Two of the patients had recurrence of their symptoms within 6 months, but the remaining 6 were well at follow-up one year later. From Belfast, Kennedy reports success in 7 out of 13 such patients after pyloric reconstruction (Martin and Kennedy, 1982) but also notes that in 37 patients with dumping and diarrhoea following vagotomy and gastrojejunostomy, closure of the gastrojejunostomy was successful in 33 of the patients (Kennedy, 1982).

Post-gastrectomy problems may require more radical procedures; it may be necessary to introduce a jejunal loop to delay gastric emptying by its antiperistaltic effect or to shunt bile and pancreatic juice away from the anastomosis in patients with intractable bile vomiting (Ramus, Williamson and Johnston, 1982) and a jejunal conduit may also be used to enlarge the stomach remnant following gastrectomy in the management of patients with the small stomach syndrome. Cuschieri (1982) reviews 9 patients with these symptoms, 7 of whom were significantly improved using an ingenious isoperistaltic interposed segment between the gastric stump and the duodenum.

Levison and his colleagues (1982) report what must be one of the rarest complications of peptic ulcer—the development of silica stones in the urinary bladder. This occurred in an old man of 80 who had been admitted with retention of urine. At prostatectomy, 3 stones were found in the bladder which resembled calcium oxalate jack-stones, but which on analysis proved to be made up of silica. Enquiry revealed that the patient had taken a teaspoonful of magnesium trisilicate 3 times a day for 40 years. The authors estimate that he had consumed 175 kg of the powder during this time which contained 500 g of silica!

The large bowel

Rectal bleeding is, of course, one of the commonest manifestations of large bowel disease. Dehn and McGinn (1982) have reviewed 110 patients who presented with ano-rectal bleeding only. Of these, 72 had haemorrhoids, and 17 had fissure-in-ano. There were 10 patients with rectal tumours, of which 5 were benign and 5 malignant. Of the remainder, 4 had ulcerative colitis, 3 diverticular disease, one Crohn's disease and 3 were of unknown aetiology. No less than 92% of the patients had the diagnosis made simply by clinical examination and sigmoidoscopy. The barium enema examination added an additional 5% to the total correct diagnoses. In many centres, particularly in the USA, a barium enema is an essential part of the 'work up' of patients with haemorrhoids but Knudsen and his colleagues (1982) in Copenhagen query the value of this convention. Of 304 consecutive cases diagnosed as haemorrhoids, 302 had a sigmoidoscopy and 300 a routine barium enema. Of the sigmoidoscopies, 95% were normal apart from the haemorrhoids. A polyp was found in 4.7% of the cases and there was one carcinoma of the rectum diagnosed (0.3%). Of the barium enemas, 84% were normal. A polyp was found in 1% of cases, diverticulosis was revealed in 10%, there was one example of a suspected carcinoma and 4.6% of the X-rays revealed some other lesion. These authors conclude that a barium enema is only required if the symptoms of the patient are not entirely explained by the presence of the haemorrhoids; (to which we would add that sigmoidoscopy is an essential part of the examination).

It used to be taught that a massive rectal haemorrhage, in the absence of haemorrhoids, was probably due to colonic diverticula. The introduction of visceral angiography and colonoscopy have greatly extended our pre-operative diagnostic capability and have demonstrated that in many cases haemorrhage is derived from vascular malformation, usually situated in the right side of the large bowel (angiodysplasia). Small lesions may be treated by coagulation through the colonoscope although more extensive ones may require resection. Howard and his colleagues (1982) describe 26 patients with this condition, 23 of whom were treated by coagulation and 3 of whom required surgery; all the lesions were situated in the caecum and/or ascending colon. Of the 23 patients treated by coagulation, 3 required early surgery, 2 because of further haemorrhage and one because of perforation of the caecum. No fewer than 11 of the patients had further bleeding in a follow-up period of up to 36 months and 2 more of these patients required resection.

Up to now, there have been very few studies of the incidence and distribution of angiodysplasia in non-

bleeding patients. A most important paper by Sabanathan and Nag (1982) fills in this gap. These authors studied 52 colons at post-mortem in patients aged between 34 and 90 (average 75). The vessels were injected and the bowel carefully studied. No fewer than 26 of the specimens showed angiodysplasia; all had caecal lesions but there were also 10 with abnormal vessels in the ascending colon, 9 in the transverse and one in the descending colon. The vascular abnormalities comprised closely grouped large thin-walled blood vessels situated in the mucosa and sub-mucosa and in 17 of the specimens they exceeded 100 lesions in number. The youngest patient was aged 47 and 96% occurred in subjects older than 60 years. Another important finding was that diverticula were found in the caecum and ascending colon in 12 of the 26 patients with angiodysplasia, but only in 4 without this vascular lesion and the authors submit that there may be a common aetiological factor linking these 2 conditions. Another interesting association is reported by Hemingway and Allison (1982) from Hammersmith Hospital. They report 5 males between the ages of 13 and 21 who presented with recurrent gastrointestinal haemorrhage and who demonstrated angiodysplasia on angiography. At operation, 4 patients had a Meckel's diverticulum and the fifth had had a Meckel's diverticulum previously resected. The 4 patients who had the Meckel's diverticulum resected remain well but one patient continues to bleed and is awaiting a right hemicolectomy. These authors consider that this association suggests a congenital origin of the vascular lesion.

On occasions, it may be difficult to find the source of the haemorrhage even when the resected specimen is examined. Hagihara and his colleagues (1982) describe a useful technique of manually compressing the fresh opened excised specimen segment by segment in order to detect what is often a minute bleeding site, which can then be marked with a suture for subsequent histological examination. They describe a total of 14 patients who required colonic resection for massive bleeding after visceral angiography, colonoscopy or both. Seven of the patients had angiodysplasia (6 localized to the caecum and one in the transverse colon) and 4 had bleeding diverticula, of which 3 were in the sigmoid and one in the caecum. Bleeding sites were not identified in 3 of the colonic specimens but in 2 acute bleeding was detected in the ascending colon at colonoscopy. Histology in these 2 cases identified small discrete ulcers which were not vascular malformations and the nature of the disease remains unknown. In only one of the 14 patients was no pathology identified.

Large bowel cancer

It has long been known that implantation of the

ureters into the sigmoid colon produces a high risk of malignant change. Stewart, Macrae and Williams (1982) have studied 34 patients by colonoscopy following uretero-sigmoidostomy. Six had adenomas in the left colon or severe dysplasia and 4 others had had previous sigmoid adenomas or carcinomas removed. They estimate that patients who have undergone this procedure are at between 80 to 100 times greater risk of developing colonic cancer than the normal population, with an average delay of 22 years after the ureteric transplantation. The reason for this is not explained.

It is well recognized that invasion of adjacent structures by large bowel cancer by no means excludes the possibility of curative surgery. This is underlined by a number of recent studies. McGlone and his colleagues (1982) found that 24 of their 460 patients submitted to surgery for colonic cancer had en bloc excision of adjacent adherent structures. The operative mortality was 8% and there were 2 deaths from recurrences at one and 3 years. A further patient was alive at 7 years but had recurrent disease and the remaining 19 patients were alive and free from clinical disease 5-9 years later. From Milan, Bonfanti and his colleagues (1982) note that 61 out of 622 patients with carcinoma of the rectum and sigmoid required extended resections which included the parietes or other viscera (9.2% of the total). The mortality was 8.2%. The 5-year survival, if there was microscopic invasion of the surrounding structures, was 32% but this rose to 75% if histological examination showed that there was no invasion of the adjacent adherent organs. Extensive involvement of the abdominal wall certainly does not preclude 'curative' resection; Blom and his colleagues (1982) record a remarkable series of extensive resections of invaded abdominal wall, either from abdominal primary tumours or invasion from intra-abdominal cancers, in which the abdominal wall defect was repaired by means of marlex mesh. Skin cover was carried out wherever possible, but if this could not be achieved, the marlex was covered by pedicled omentum which in turn was covered by a skin graft. Boey, Wong and Ong (1982) report an interesting series of patients from Hong Kong. Of over 1000 cases of carcinoma of the rectum, 49 with tumours involving adjacent pelvic viscera were subjected to pelvic exenteration. The 26 males all had total pelvic clearance, with 7 hospital deaths. The 23 female patients underwent posterior pelvic clearance, preserving the bladder and in this group there were 2 hospital deaths. Of the 40 patients who left hospital, over one-third were alive 5 years later.

About 30% of patients undergoing apparently curative resection of colo-rectal carcinoma die within 2 years of operation, frequently with hepatic metastases. In an important study from Glasgow, Finlay

and his colleagues (1982) carried out a prospective investigation using isotope liver scan, ultrasonography and computed tomography in patients undergoing resection for large bowel tumours. Of 36 patients, whose livers were apparently clear at the time of resection, 11 developed hepatic metastases during a 2-year follow-up period and 9 of these died. Of these 11 patients, isotopic liver scan was positive in one, ultrasonography in 3 and computed tomography in 9 patients respectively. A combination of ultrasonography and computed tomography detected hepatic metastases in 10 of the 11 patients. Of the remaining patients, 2 died during this period but of non-hepatic disease. Finlay and McCauley (1982a, b) point out that using conventional Dukes classification, their Dukes B cases had a 66% 2-year survival and their group C patients a 52%. If the 11 patients with positive scans were re-allocated to Dukes D then the regressed B group showed an 86% 2-year survival and the C group a 93% survival. They consider that the presence of occult hepatic metastases on scanning is superior to the pathological Dukes staging as a prognostic factor.

Liver metastases

For the vast majority of patients, the diagnosis of liver metastases is a death sentence and indeed the mean survival from time of diagnosis of liver secondaries in patients with colorectal cancer in different series ranges from 5 to 9 months. Admittedly, every now and then a brilliant cure is obtained by surgical resection; for example Jurewicz and Everett (1982) report a 10-year survival after a right hemihepatectomy for multiple metastases, which is the longest survival from multiple deposits yet reported in a patient with colorectal cancer.

Morrow and his colleagues (1982) report the results of an aggressive surgical policy in the treatment of secondary hepatic neoplasms in Minneapolis over a 17-year period. Sixty-four patients were subjected to hepatic resection, including 29 with colorectal primary cancers. There was a high operative mortality of 20%. Thirty-seven patients underwent wedge resection, 36 had partial hepatectomies and 2 underwent total hepatectomy with liver transplantation. For the colorectal cases, there was a 27% five-year survival. The authors consider that better diagnostic procedures by scanning and tumour markers should provide more careful clinical follow-up of patients and might significantly increase the numbers of patients potentially available for hepatic resection when the primary tumour is controlled.

Taylor (1982) presents an important critical review of the treatment of colorectal liver metastases. His main conclusions are that there is no evidence to date that systemic cytotoxic chemotherapy, hepatic arte-

rial ligation alone or hepatic dearterialization improve overall survival. An easily accessible solitary lesion seen at the time of initial surgery should be removed by a wide wedge excision, but true solitary deposits, justifying 'second look surgery', are unusual. Marginal benefits may be obtained by hepatic artery ligation and portal vein cytotoxic infusion for the treatment of synchronous liver metastases and hepatic arterial embolization seems a promising technique for the treatment of metachronous deposits. Blumgart and Allison (1982), in reporting tumour regression following hepatic artery embolization, now consider that the time has come for controlled clinical studies to allow comparison of the results of this treatment with other forms of palliative therapy for secondary hepatic tumours.

'Second-look' operations for metastases. Quite apart from hepatic metastases, there is always the possibility of further 'curative' surgery for recurrent or metastatic disease. Hughes and his colleagues (1982) report those occasional patients who develop lung secondaries which are amenable to resection. Of a personal series of 2190 cancers of the large bowel operated on by Hughes between 1950 and 1976, 14 had thoracotomy performed for resection of a secondary deposit (0.07%). The resection was carried out 2-5 years after the resection of the original primary tumour. Seven of the patients died of metastases within 17 months of the lung resection. Four further patients died at between 3 and 7 years, another is clear of disease after bilateral lobectomy 2 years previously, one patient is alive and well after 9 years and another after 12 years. Interestingly, of the 14 patients, 12 had rectal and only 2 colonic cancers. The frequency of lung deposits from the rectal carcinoma is explained by early involvement of tributaries of the middle rectal vessels which serve as a channel into the systemic circulation. Early pelvic recurrence following excision of the rectum is difficult to detect clinically. Gualdi and his colleagues (1982) have used computerized tomography (CT) in routine follow-up after resections of the rectum. In 16 cases submitted to routine CT scan, follow-up showed recurrent extra-luminal malignancies, 3 of which were between 2 and 3 cm in diameter. Radical excision of these deposits was possible in all 4 patients.

Liver and biliary tree

Trauma

Fortunately, the great majority of closed injuries of the liver comprise minor lacerations which either stop bleeding spontaneously or can be dealt with quite simply by one or two sutures. It is not at all uncommon, in performing a laparotomy for rupture

of the spleen, to find a concomitant small tear of the liver edge which has already stopped bleeding and which can be left alone. Major closed liver trauma is comparatively rare and is, of course, a life threatening situation. Most surgeons have a limited experience of this serious injury and there is controversy among the experts regarding the best course to pursue.

Calne, Wells and Forty (1982), from Cambridge, review 26 such cases dealt with over a 10-year period. Nine merely required careful suturing of parenchymal damage and all survived. In 11 cases, there was major haemorrhage from a lacerated intra-hepatic artery and/or veins, with one death from uncontrolled bleeding in spite of ligation of the hepatic artery. In the remaining 6 patients, there was an extensive tear involving major hepatic vessels or the inferior vena cava with 3 deaths.

Calne and his colleagues advise an attempt at deep catgut suturing for deep lacerations. If this fails, hepatic artery ligation should be performed after first clamping the vessel. They point out that in 17% of cases the right hepatic artery arises from the superior mesenteric artery and in 23% of cases the left hepatic finds origin from the left gastric artery. If this fails, they advise packing the wound and consider that lobectomy should only be performed if this does not control the haemorrhage. The pack is removed after 2 days and continued haemorrhage then indicates that lobectomy is required. Of their 6 major lacerations, 2 recovered after pack removal. They consider that lacerations of the inferior vena cava or major injury to the hepatic vein are usually lethal. Smadja, Traynor and Blumgart (1982), at Hammersmith Hospital, in contrast, advise immediate resection if bleeding is not controlled by suture ligation, especially if combined with temporary occlusion of the hepatic inflow at the porta hepatis and are not in favour of hepatic artery selective ligation. Even if this is carried out and is successful, it may give rise to late complications from devitalized tissue so that if the right hepatic artery is ligated this should be combined with cholecystectomy. Of 7 patients referred to their unit with major liver injury, 6 had been operated on previously, 4 on 2 occasions. All had hepatic resection for control of bleeding, debridement of dead tissue or control of infection and 4 recovered.

A very considerable experience of liver trauma is reported from the San Francisco General Hospital (Carmona, Lim and Clark, 1982). Over a 5-year-period, 443 patients were admitted; 188 were blunt injuries and 255 were penetrating wounds (141 stab injuries and 114 gunshot wounds). No less than 84% had other associated injuries. The overall mortality was 9%; 2.8% in the stab wound group, 8% in the gunshot wound and no less than 14% in the blunt

injuries—note that these may be more dangerous than an open injury. These authors agree that superficial lacerations require simple suture; deeper lacerations are inspected, extended if necessary along anatomical lines, any haematoma evacuated and precise ligation of damaged vessels and biliary radicals performed. Major resections are reserved for removal of dead or devitalized tissue, for severe intra-hepatic bile duct injury and for inaccessible bleeding but was used in only 8% of the cases. Of the 37 patients submitted to major resection, there were 20 deaths (57%). In support of the Cambridge group, packing was used in 18 of the patients who were re-operated upon 12–24 hr later with, as the authors put it, 'good success'.

A few years ago, civilian surgeons in these islands would rarely see a penetrating wound of the abdomen due to violence; perhaps a very occasional stab wound but probably never a gunshot injury. Unfortunately, times have changed. We are now living in a more violent society and the surgical staffs in many of our major cities are finding that man-inflicted penetrating wounds are increasing. At present, this particularly applies to stab wounds but we are also now encountering gunshot wounds and the occasional carnage of the terrorist bomb (Ellis, 1982). The civilian disturbances in Northern Ireland since 1968 have given its civilian surgeons an extensive experience in the treatment of injuries due to gunshot wounds and bomb blasts. Roy (1982) has given an admirable review of experience in Belfast. He and his colleagues believe that if there is any possibility that the abdominal cavity has been penetrated a laparotomy should be performed. Diagnostic abdominal lavage is seldom necessary, although it may be used in closed injuries due to bomb blast. A particular problem is the through-and-through penetrating wound of the liver due to a low velocity missile. Roy advises that this should not be widely opened up unless it is bleeding copiously but should be probed with a gauze soaked in saline to remove foreign bodies and detached pieces of tissue. If, however, the wound has been inflicted with a high velocity weapon, it is likely that a major portion of the liver has been shattered and that resection of necrotic tissue will be required. There have been no survivors of major injury to hepatic veins or to the retro-hepatic cava.

Cutting through liver tissue in performing resection is always a problem. Surgeons have used the blunt end of the knife, their fingers, crushing forceps, diathermy and the laser beam. Papachristou and Barters (1982) have experimented with a water jet from an electric knapsack agricultural sprayer. They find this washes away the liver parenchyma, leaving behind the blood vessels and biliary structures for ligation and division. It would be interesting to hear

of other surgeons experience of this useful cross-fertilization between agriculture and surgery.

Liver abscess

Amoebic liver abscess is now usually successfully treated medically by metronidazole with or without aspiration. Thus, Abuabara and his colleagues (1982) report 35 cases in Chicago (32 in immigrants) where metronidazole alone was used in 25 and emetine in one case. Five required in addition percutaneous aspiration, and surgical drainage was performed in 4 cases. There were 2 deaths in the series, both in the medically treated group. One had an unrecognized colonic perforation, the other a liver abscess that ruptured into the pericardium. The conventional treatment for pyogenic liver abscess has, until recently, remained open drainage. However, the development of percutaneous aspiration guided either by ultrasound, computerized tomography or scintigraphy has yielded excellent results. Berger and Osborn (1982) report 15 cases of pyogenic liver abscess, 5 of which were multiple, treated by ultrasound localization and percutaneous drainage. In 4 patients, there was no source of infection to be found, but the remainder followed diseases of, or surgery on, the gastrointestinal tract. There were no deaths and no recurrences 1–4 years later. These authors therefore strongly advocate conservative treatment by ultrasound localization, aspiration and appropriate antibiotic therapy. Herbert and colleagues (1982) report similar good results with 9 successes out of 10 patients, the one death resulting from the complications of liver biopsy.

In passing, it should be noted that modern imaging techniques with percutaneous drainage are now being successfully applied to other deeply-placed collections of pus. Martin and his colleagues (1982) describe the treatment of 22 extensive intra-abdominal postoperative abscesses in 19 patients treated by this technique, and Finn and his colleagues (1982) describe the management of six patients with perinephric and intrarenal abscesses drained percutaneously under ultrasound control. In four, a small catheter was left in place and removed when drainage was minimal. All six patients recovered and were well for a minimum of six months follow up after drainage.

Karlson and his colleagues (1982) describe their treatment of 42 abscesses in the abdomen, pelvis and mediastinum which they treated in 40 patients. These cases followed major intra-thoracic or intra-abdominal surgery or were secondary to previous pancreatitis. The abscess was first localized by computerized tomography or ultrasound, aspirated, filled with contrast material, and then drained by means of a catheter. The catheter was replaced by a larger sum-

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drain after a track had formed. Eight of the abscesses were intra-hepatic and others included subphrenic, pelvic, lesser sac and retroperitoneal collections. Thirty-two of the 42 abscesses were dealt with entirely by this technique and required no surgical drainage.

The gall bladder and bile ducts

Acute cholecystitis in the absence of gall stones (acalculous cholecystitis) is a very real clinical entity. Herlin and his colleagues (1982) present 11 cases which followed 9–40 days after trauma or surgery; 3 patients had sustained severe multiple injuries, 6 had had abdominal surgery, one a hysterectomy and one a hip arthroplasty. There were 8 males and 3 females. The authors point out that this unusual condition was first described in 1844 following an operation for femoral hernia. The aetiology of this complication is not known but might be a combination of ischaemia of the gall bladder wall combined with bile stasis. Certainly it is an entity that is worth bearing in mind.

Of course, the great majority of patients presenting with biliary pain have gall stones and the incidence is on the increase. Mitchell and Morris (1982) have compared hospital admissions for acute cholecystitis in the Oxford region in 1974–1978 compared with 1953–1962. The admissions in males have almost doubled and there has been a significant increase in females under the age of 40, which the authors correlate with the growth in the use of oral contraceptives in the 1960's. It is well known that there is considerable geographic differences in the incidence of gall stones, the highest incidence being among the Indian population of New Mexico. An interesting study from Zimbabwe (Jena, 1982) reviews the autopsy findings in over 8000 black patients over the age of 20. Gall stones were found in 29 instances, giving an incidence of 0.35%. The female/male ratio was 4:1. This study confirms the very low incidence of gall stones already reported among the black population of Kenya, Congo, West Africa and South Africa.

It is commonly taught that silent gall stones are very likely eventually to produce symptoms. This concept is challenged by Gracie and Ransohoff (1982) who report the outcome of silent gall stone disease detected by cholecystographic screening of a healthy population. The subjects of this study were faculty members at the University of Michigan whose comprehensive medical evaluation routinely included a standard oral cholecystogram from 1956 to 1969. Of nearly 3000 people screened, 123 were detected to have silent gall stones. All were white and the mean age was 54 years (range 29–87). There were 110 men and 13 women in the series. Biliary pain developed subsequently in 16, but a further 35

subjects underwent prophylactic cholecystectomy on the advice of their doctor. The authors calculate that the 15-year cumulative probability of the development of biliary pain or complications of gall stones was only 18% and concluded that, at least in white American men, routine prophylactic operation for silent gall stone disease is neither necessary nor advisable.

Since cholecystectomy is now the commonest elective abdominal operation performed by the general surgeon, there is continued interest in medical dissolution of gall stones by means of chenodeoxycholic acid or, preferably, the more recently introduced ursodeoxycholic acid, which only infrequently causes diarrhoea and does not change serum transaminase values (Watts, Toouli and Whiting, 1982). The recent USA National Cooperative Study of some 900 cases showed that total dissolution could be achieved in about 13% of patients. The chance of success was greater in thin compared with fat patients, women in preference to men, and small stones in preference to large calculi. However, despite the thousands of patients who have been treated in research studies, in Europe, North America and Japan, no definite verdict has yet been reached on the value of medical treatment (Bateson, 1982). Rupp and Dowling (1982) have studied the problem of whether recurrence is inevitable after gall stone dissolution by bile-acid treatment. After 60 episodes of dissolution, studied by regular cholecystograms, recurrence occurred in 30 instances and 84% of these took place within 2 years. These authors suggest that some form of long-term therapy will obviously be necessary if recurrence is not to take place in the great majority of cases.

Of course, when patients present with acute symptoms resulting from stones in the common bile duct, urgent intervention is necessary, and it is among this group of patients that morbidity tends to be high. Cotton and Vallon (1982) report an important study of 71 elderly patients with their gall bladders *in situ* with acute symptoms from stones in the common duct who underwent attempted removal of the stones by duodenoscopic sphincterotomy. In 70 of the patients, the sphincter could be divided and 61 (86%) had successful clearance of stones from the common duct. Two of the patients required transfusion for bleeding resulting from the sphincterotomy and 2 patients required cholecystectomy for acute cholecystitis within 2 days of treatment. Another 11 patients were submitted to elective cholecystectomy. Forty-eight patients were discharged without having undergone cholecystectomy and 44 of these were followed up for an average of 18 months. There were no instances of acute cholecystitis or jaundice, but 5 of the patients have so far required cholecystectomy for biliary pain. The authors therefore consider that this

practicing surgeon, the epidemiologist and the research worker.

One worrying group of patients are those with acute non-specific abdominal pain, that settle down rapidly either at home or in hospital under observation. Jess and his colleagues (1982) have carried out an important review of the fate of these patients, whose incidence varies from 8 to 58% (with an average of 43%) of all acute abdominal emergencies in various reported studies from different countries. In this particular series, this group amounted to 230 out of 730 total patients admitted to hospitals in Copenhagen with acute abdominal pain (32%). A follow-up of these 230 patients 5 years later revealed that 21 had been lost and 11 had died (only one disease related, an 87-year-old with acute leukaemia). Of the 198 remaining patients, 77% remained clear. Fourteen patients (7%) had had further admissions with acute abdominal pain, of which 5 had acute appendicitis and the rest were again labelled non-specific. Sixteen percent had continued or intermittent symptoms attributed to minor gynaecological or colonic causes and 1% of the patients (4% of those over the age of 50) had developed malignant disease. These authors conclude that continued follow-up of these patients is not necessary. If symptoms persist or recur, it is worthwhile investigating the colon or, in the female, the pelvic organs. If the patient is over the age of 50, malignant disease should be considered.

A fascinating syndrome which appears to be on the increase is biliary-type pain as a manifestation of genital tract infection in women—the Curtis-Fitz-Hugh syndrome. Wood and his colleagues (1982) describe 10 such cases of women with right upper quadrant pain, 9 of whom were admitted as emergencies. In all cases, the biliary tree investigations were negative but all had evidence of *Chlamydia trachomatis* infection. All had increased antibodies in the serum, 2 out of 3 had antibodies in the peritoneal fluid, one out of 5 had organisms recovered from the genital tract and 2 out of 4 had antibodies demonstrated in the cervical discharge. Six of the patients gave a past history of genital tract infection and 8 had symptoms or signs of active pelvic infection. Five patients underwent laparoscopy and all showed adhesions between the anterior surface of the liver and the parietal peritoneum. Five of the patients were treated with tetracycline and in all 5 this resulted in relief of pain. The earlier reports of the Curtis-Fitz-Hugh syndrome implicated *N. gonorrhoeae* as the causative organism, but the present study supports other reports linking the syndrome with *C. trachomatis*. An interesting report by Davidson and Hawkins (1982) records a male patient with upper right quadrant acute pain whose throat cultures had been positive for *N. gonorrhoeae*

and who appears to be the third reported case of the Curtis-Fitz-Hugh syndrome in a man.

Acute appendicitis remains, of course, a common and potentially lethal disease. Peltokallio and Tykka (1981) showed that the mortality in Finland, in a study of nearly 10000 patients, was 0.27%. If non-perforated, the mortality was only 0.12% and in these cases, death was usually from some concomitant disease. If the appendix was perforated at the time of surgery, the mortality rose to 1.18% and in these cases, death was usually due to the disease process itself.

It is a well known anatomical aphorism that the appendix is the only organ with no true anatomy and it may be found almost anywhere within the peritoneal cavity. Indeed Thomas and his colleagues (1982) remind us that the acutely inflamed appendix may be found within an external hernia. They report 7 such cases and, not surprisingly, in no instance was a correct pre-operative diagnosis made.

Although there have been suggestions that the incidence of appendicitis has fallen in recent years, a careful study from Stockholm by Pieper and Kager (1982) over the period 1973 to 1976 shows an incidence of 1.33 per 1000 per year in males and 0.99 per 1000 per year in females, a rate about the same as reported in earlier series of about one incident of appendicitis per thousand of the population per year. A detailed study by Pieper, Kager and Nasman (1982) of 1018 cases of emergency appendicectomy reinforces the current safety of the operation; there were only 2 deaths, both in patients over the age of 70. However, diagnostic accuracy was only 67%, 330 of the appendices being normal. Diagnostic accuracy was lowest in females between the ages of 10 and 39, where 47% of the patients did not have acute appendicitis. Pieper and his co-workers have also carried out some interesting experimental and bacteriological studies on acute appendicitis. It had been shown in the 1930's that ligation of the appendix in experimental animals produces inflammatory changes but such experiments were accompanied by considerable trauma. Pieper, Kager and Tidefeldt (1982) obstructed the appendices of rabbits by means of a balloon catheter introduced via a caecostomy. Obstruction of the appendix lumen for 12 hr was indeed followed by inflammatory changes in the wall of the appendix which histologically were identical to appendicitis in man. In a bacteriological study of 50 inflamed human appendices, Pieper and his colleagues (1982) show that the *Bacteroides fragilis* group predominated and significant antibody responses were only observed against these organisms, suggesting that *B. fragilis* plays an important role in the pathogenesis of the disease, presumably in association with deterioration of the blood circulation in the appendix wall. The clinical implication of this

finding is that antibiotic prophylaxis and treatment of complicated acute appendicitis cases must include a therapeutic agent against this organism.

The standard treatment for an appendix abscess is conservative, allowing the mass to settle, drainage only if it fails to do so, and then elective appendectomy. In recent years, a more active surgical approach has been advised. Skoubo-Kristensen and Hvid (1982) from Aarhus, Denmark, come forward to support the conservative school. They review 193 patients thus treated over a 10-year period. The majority (64%) received antibiotics, which recently comprised ampicillin and metronidazole. A total of 170 patients (88%) settled down. Of the 23 who required early surgery, 6 had small bowel obstruction, 14 had an unresolved abscess and 3 were thought to have ruptured the abscess—which in one case had indeed occurred. There was a single death—a woman of 86 whose abscess required drainage.

Of the 170 patients who settled, 12 were readmitted within 3 months with further abscess or acute appendicitis, so the authors advise elective appendectomy at about this time to obviate early recurrence. They quote published relapse rates of between 7 and 46% in different series.

An extremely rare surgical emergency is torsion of the appendix, but Petersen, Brooks and Pedersen (1982) describe such a case in a female of 54 who presented with a painful abdominal mass of 2 weeks duration. The necrotic appendix had undergone torsion through 540° and recovery followed appendectomy. This condition was first described by Payne in 1918.

Intestinal obstruction

Intestinal obstruction remains a common and serious cause of acute abdominal pain. In this country over the last quarter of a century, there has been only a slight overall fall in the total number of deaths from this cause, from 2603 in 1955 to 1794 in 1978. The major factors influencing survival rate in an adverse manner are strangulation of the bowel with gangrene, or worse still, perforation, delay in treatment with severe distension and gross electrolyte and fluid imbalance and extremes of age—mortality is especially high in childhood and in the elderly (Ellis, 1982a). Analyses of large series of cases demonstrate that approximately one-third of all intestinal obstructions in the Western world are likely to be due to adhesions, and these are responsible for about 60% of all small bowel obstructions. In a consecutive series of 253 intestinal obstructions in adult patients at Westminster, 26% were due to adhesions and 21% to strangulated hernia (Ellis, 1982b).

Infants and children are not exempt from this

complication. Festen (1982) reports 33 examples of postoperative obstruction in 1476 laparotomies in neonates and children. One was due to an intussusception, one to an internal hernia, but the remaining 31 were due to adhesions; 80% occurred within months of the initial surgery.

Adhesions usually result from the presence of ischaemic tissue within the peritoneal cavity but other, less common, causes are recognised. Sclerosing peritonitis is well recognised to be associated with the use of the beta-blocking drug practolol. Marigold and his colleagues (1982) note that only 2 patients with this condition have been described who are possibly associated with the use of propranolol, a further 2 where oxprenolol has been implicated and timolol in one, although there is considerable doubt about all these associations. They studied a group of 25 patients on propranolol and a further 7 patients of oxprenolol, together with a series of 20 control patients, all of whom could justifiably have been given a beta-blocking drug, and found no abnormalities in these patients on barium meal and follow-through studies.

Granulomatous peritonitis and fibrous intra-abdominal adhesions may result from peritoneal contamination by starch used as glove dusting powder (Ellis, 1982c). Grant and his colleagues (1982) have given further evidence that such patients may well have starch sensitivity. They tested patients who had developed starch peritonitis one month–8 years previously; all cases developed a reaction to intra-dermal starch 3–8 days after testing, although no reaction was seen in normal controls. Fraser (1982) has shown that washing the gloves with povidone iodine surgical scrub (Betadine) for one min and then rinsing under running sterile water for 30 sec is a simple and effective method of removing the starch powder from surgical gloves.

Each year since the beginning of this century see experimental studies on prophylaxis of adhesions and 1982 is no exception. Janik and his colleagues (1982) advocate povidone, which is a hydrophilic polymer (used as a carrier molecule for iodine) which they consider acts as a peritoneal 'lubricant'. Leape and Kaplun (1982) found that the formaldehyde carriers noxythiolin and taurolin inhibited peritoneal adhesions after thermal injury of the caecum in mice. Unfortunately, to date there has been no convincing clinical evidence that any of the hundreds of substances which have been tested in the laboratory are of true value in the clinical situation.

Each year, it seems, there also appears some previously undescribed cause of intestinal obstruction. The 1982 contribution is 2 cases of patients on continuous peritoneal dialysis who developed strangulated hernias through Tenckhoff cannula sites. Both patients had had their cannulas implanted using

the standard introducer for penetrating the peritoneum. In both cases, the hernial orifices were small and in both, the contained strangulated small intestine had undergone gangrene and required resection; one of the patients died. The authors, Griffin and Coles (1982) advise that a non-absorbable purse-string suture should be placed around the cannula on insertion and that an attempt should be made to suture the peritoneum when a cannula is removed.

One should always bear in mind, in any obscure case of intestinal obstruction, the possibility of a pseudo-obstruction due to drugs. Beatson (1982) records a patient who developed paralytic ileus as a result of atropine sulphate taken orally for Parkinson's disease. Leguit, Slot and Roos (1982) record a group of 15 heroin addicts in Amsterdam who presented with features of intestinal obstruction; 7 had pseudo-obstruction (the diagnosis being aided by abdominal X-rays which showed gas throughout the small and large bowel), two had faecal impaction, 4 had withdrawal symptoms and only 2 had organic obstruction due to adhesions which required surgical division. In many instances, colonic pseudo-obstruction will respond to colonoscopic decompression. Nivatvongs, Vermeulen and Fang (1982) had 19 successes in 22 such cases, although in some colonoscopy had to be repeated. Of the remainder, one resolved spontaneously, one required caecostomy and one resection of a gangrenous segment of colon.

Miscellaneous

More than a million patients are seen in Accident and Emergency Departments every year in this country with head injuries and about one hundred thousand of them are admitted to hospital, mostly under the care of general surgeons.

Only 5% of patients admitted to hospital after a head injury in England and Wales reach a regional neurosurgical unit. An important paper by Mendelow and his colleagues (1982) provides a mass of useful data on the benefits and costs of the management of mild head injuries. This investigation reports the experience in Edinburgh, where patients with mild head injuries are admitted directly to a ward which is under the care of neurosurgeons. Of 1442 consecutive admissions, there were 56 with intracranial haematomas. Of 865 patients who were alert and orientated in the Accident and Emergency Department, having been briefly knocked out but who had no skull fracture, no focal central nervous system signs and no history of headache or vomiting, only one developed an intracranial haematoma.

It was found that, in deciding which patient should be admitted to hospital, a skull fracture on X-ray is a much more important risk factor than is a history of brief unconsciousness. Evidence from more than one

source indicates that the presence of a fracture increases the risk of intracranial haematoma by 300- to 400-fold. The authors are at present analysing data on a large number of patients with recent head injuries to try and estimate those factors which should indicate which patients with head injuries admitted to primary surgical wards should be transferred to neurosurgical units for scanning.

The present study indicates that there was minimal risk in sending home patients from Accident and Emergency Departments who were fully alert and orientated after their head injury, even if they had a history of brief unconsciousness associated with post-traumatic amnesia for less than 5 min, provided that they did not have a skull fracture.

Regular readers of this review will be well familiar with the author's continued interest in problems of wound healing. Indeed, these should be forefront in the mind of every surgeon. We have recently reviewed the incidence of burst abdomen and incisional hernia in 1129 consecutive major laparotomies on the Surgical Unit at Westminster (Bucknall, Cox and Ellis, 1982). Initially, there was an incidence of 3.8% of burst abdomen but this fell to 0.8% when the mass closure technique was introduced. However, incisional hernia remains an important problem with a 7.4% incidence. This was found to be associated with old age, male sex, bowel surgery, chest infection and distension. The incidence rose to an unacceptable rate of 11.5% in a trial of absorbable polyglycolic acid sutures. Above all, incisional hernia was associated with wound infection and this had been present in 48% of our patients who subsequently developed an incisional hernia. Donaldson and his colleagues (1982a), from St James' Hospital, Leeds, now claim that the problem of incisional hernia has all but been solved by the introduction of a very laterally placed paramedian incision. They report a series of 850 cases with a one-year follow-up in which only three hernias (0.37%) had developed. Patients that were excluded were those with life-threatening haemorrhage or who had had a previous laparotomy incision. The same authors (Donaldson *et al.*, 1982b) found no difference in their results whether Dexon, catgut or prolene was used. These results are obviously most encouraging and we are now carrying out a trial, in collaboration with Mr Alan Pollock of Scarborough, randomizing patients between the lateral paramedian and midline incision to see if these excellent results can be achieved on other surgical units.

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