female anatomy has been so designed that our instrument makers have not succeeded in devising any apparatus that can cope with incontinence. Faecal incontinence is often due to impacted faeces, when just a thin trickle gets past the mass. Enemas solve this problem and give much encouragement to both patients and relatives. Try to avoid colostomies in the aged. With the intelligent patient all goes well, but with the uneducated infection of the surrounding skin causes much discomfort and misery.

Severe rheumatoid or osteoarthritic cases are not common in the real old-age group. Death brings relief from their misery at an earlier age.

Cancer is not a common cause of death in the aged. Many of them die with cancer but not of cancer. The neoplasm seems to grow very slowly in the aged, and its virulence is much reduced.

Congestive heart failure is very common in ambulant elderly patients. They respond very well to bed rest and treatment with digitalis, mersalyl, and aminophylline. Many of them develop coronary disease, but this manifests itself often only by a little breathlessness, and seldom causes acute pain. An E.C.G. is diagnostic. Within three to four weeks the lesion seems to heal satisfactorily and they can be allowed up very much more quickly than the patient in his fifties.

In the respiratory diseases, pneumonia has long since lost the title of "captain of the men of death." The antibiotics have controlled the ravages of that disease, and it is seldom now that one sees a case of textbook pneumonia, but influenza and virus pneumonias still take their toll.

Foot defects cause much distress to the elderly, and it is estimated that almost 10% of those who are housebound are crippled by corns, callouses, bunions, and flat-feet. The provision of an adequate chiropody service would bring much comfort to the sufferers and would enable them to lead once again a useful and independent life.

Ferguson, a general practitioner in Paisley, observed, over 25 years, the incidence and cause of death of 280 patients in his own practice who were over the age of 70. He chose that age because they had escaped the pitfalls which engulf the middle-aged and because it was the classical conception of the allotted span. He found that 33 men and 57 women—32% of the whole—died from what he called normal senescence without any obvious active disease, "God's finger touched them and they slept." No post-mortem examinations were done, but it would have been of real interest to know what particular part in the most intricate machine ever designed—the human body—had worn out, and whether with more specialized knowledge life could have been usefully sustained for a further period.

Conclusion

What I have said may perhaps focus attention on the fact that the study of the ageing and the aged is not a hopeless and rather useless sphere of medicine. The primary function of the practitioner should not be to add to longevity but to prevent and curtail incapacity—not to add years to life but to add life to years. Research work could be undertaken by close association between general practitioners, geriatricians, and laboratory workers into such subjects as the onset of mental confusions, incontinence, and hemiplegia; are they solely due to arterial degeneration or do other factors play a part? Obesity in old women—what is the predisposing factor?

To a large extent we have conquered microbic diseases. Virus infections are gradually coming under control. We must now mobilize our resources and energies to combat the degenerative diseases, and much may be learned in that field by a close study of our ageing population.

THE ACUTE ABDOMEN IN THE AGED

BY

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This paper reviews 120 personal cases of acute abdominal emergency, excluding acute retention of urine, in patients over the age of 70. The choice of 70 years as the lower age limit is an arbitrary one, for, as is well known, some patients "wear" better than others, and the age in years is no accurate guide to the state of the tissues. Nevertheless, at this age most people have given up active work, and it is considered worth while to review the results of surgery to prolong happily a well-earned retirement threatened by sudden disaster. Several papers devoted to the surgery of old age have appeared in recent years, but none makes more than passing mention of emergencies. Childs and Mason (1949), for example, include 15 emergencies in their series of 99 cases over the age of 70 years, but do not discuss them separately.

Analysis of Results

This series is a consecutive one, and no case, however unpromising it appeared on admission, has been excluded. The mortality rate includes all patients who died in hospital, and all survivors were ambulant on discharge. The total number of cases and the mortality rates for the various conditions are arranged in five-year age groups in Table I,

TABLE I.—Mortality According to Age and Condition

	Age:	70-74	75-79	80-84	85-89	90+	Total
Intestinal obstn. ..	{ Cases	5	13	9	2	1	30
	{ Deaths	4	4	4	1	0	13
Strang. hernia ..	{ Cases	16	21	11	5	1	54
	{ Deaths	2	5	0	1	0	8
Perf. peptic ulcer ..	{ Cases	3	3	1	—	—	7
	{ Deaths	1	0	0	—	—	1
Acute appendicitis ..	{ Cases	7	5	3	—	—	15
	{ Deaths	1	0	2	—	—	3
Perf. colon ..	{ Cases	1	3	3	—	—	7
	{ Deaths	1	2	2	—	—	5
Miscellaneous ..	{ Cases	1	1	5	—	—	7
	{ Deaths	0	0	2	—	—	2
Total ..	{ Cases	33	46	32	7	2	120
	{ Deaths	9	11	10	2	0	32

which shows clearly that intestinal obstruction is by far the commonest acute surgical condition in old age and also bears a heavy mortality. There emerges also, rather surprisingly, the fact that age *per se* does not influence the mortality in operations for acute abdominal emergencies in the elderly. The total mortality of 26.7% is of the same order as the 33.5% of Owen and Murphy (1952), which included some cases of acute retention of urine, and the 32.1% recorded by Carp (1950).

Strangulated Hernia

The results in these cases are further analysed in Table II. Interesting clinical features here were the relatively high incidence of femoral hernia in old men, and the finding of the vermiform appendix, strangulated and gangrenous, in one femoral and two inguinal sacs. One

TABLE II.—Strangulated Herniae

	Males	Females	Total	Resection of Intestine	Bowel Invaginated	Deaths
Inguinal ..	19	3	22	3	0	1
Femoral ..	6	23	29	4	8	5
Umbilical ..	1	1	2	0	0	2
Incisional ..	0	1	1	0	0	0

femoral hernia was diagnosed only at laparotomy for small intestinal obstruction, when a loop of bowel was found just entering the femoral canal on the left side as a Richter's hernia. Even knowing it to be present, and under full anaesthesia, it was still not possible to feel this hernia through the fat of the groin. Richter's hernia was, in fact, very common in the femoral cases.

Approximately half of these hernia cases were admitted to hospital 24 hours or less after the onset of strangulation, a measure of the patient's alarm (contrast with other obstructions) and the ease of diagnosis. Nevertheless, and particularly in cases of Richter's hernia, the delay in admission was sometimes considerable, being seven days in one case, six days in three, five days in three, and four days in two cases. The fatal cases are shown in Table III.

TABLE III.—Analysis of Deaths in Strangulated Hernia

Sex and Age	Type	Length of History	Condition—of Bowel	Time of Death	Cause of Death
F 76	Femoral	30 hours	Gangrenous—resected	2nd day	Pulmonary oedema
F 79	"	24 "	"	2nd "	Bronchopneumonia
M 72	Inguinal	48 "	Considered viable	5th "	Perforation of ileum
F 79	Femoral	4 days	Viable	24 hours	Massive collapse lung
M 75	"	3 "	Gangrenous—resected	4th day	Paralytic ileus
F 89	"	6 "	Gangrenous—oversewn	12 hours	Obstruction
F 75	Umbilical	6 "	Gangrenous—8 feet	4 "	Unfit for resection
M 73	"	24 hours	Viable	7th day	Pulmonary embolus

Other Causes of Obstruction

These cases are summarized in Table IV, and, as expected, the largest single cause in this group was carcinoma of the colon. Surprisingly, adhesions were responsible in an equal

TABLE IV.—Other Causes of Obstruction

Cause	Cases	Deaths
Carcinoma colon	13	5
Adhesions	11	5
Gallstone, ileus	1	1
Volvulus small intestine	2	2
" sigmoid colon	2	0
Spastic ileus	1	0

number, for the two cases of small-gut volvulus were due primarily to adhesions. The cause of the adhesions was post-operative in eight cases and a calcified tuberculous mesenteric gland in one; no cause could be traced in the remainder.

The average length of history was 3½ days in small-gut obstructions (range, 12 hours to 6 days) and 4½ days in the large-gut cases (range, 1 to 12 days), suggesting both the complacency of the patient before seeking medical aid and the difficulty in diagnosing the presence of mechanical obstruction.

An analysis of the 13 deaths shows that the abdominal condition was directly responsible for the fatal issue in seven cases and indirectly so in one (pulmonary embolism). Two patients died from congestive heart failure, present on admission, on the 7th and 28th post-operative day respectively; two more died of cerebral thrombosis (7th and 10th days); and the thirteenth case, a female, of haemorrhagic cystitis due to a self-retaining catheter employed for incontinence of urine. One patient with perforation of the colon above a carcinoma survived after laparotomy, colostomy, and drainage of the area.

Perforated Peptic Ulcer

There were seven cases of perforated peptic ulcer (six duodenal and one gastric), with one death on the fourth post-operative day. In this case the liver was found to be replaced almost completely by deposits of carcinoma, though no primary growth was discovered in the abdomen. Post-

mortem examination showed it to be in the bronchus with no gross pulmonary collapse. The other six patients made uneventful recoveries and were all well when seen later in the out-patient department.

One old gentleman, operated on in 1952 at the age of 80, had been operated upon in 1945 and 1948 for perforated duodenal ulcers and had survived a haematemesis in 1949. At operation most of the anterior wall of the proximal duodenum was found to have sloughed, leaving a hole 3 by 7 cm. This was closed by suture, and a posterior gastrojejunostomy performed. He was readmitted in 1954 with an attack of severe abdominal pain, but otherwise was still hale and hearty. His symptoms quickly subsided, and a barium meal showed the gastrojejunostomy to be functioning, with no evidence of anastomotic ulcer. The stomach was also emptying in part through the pylorus.

Three of these patients were seriously ill on admission, with grunting inadequate respiration, cyanosis, and rapid low-pressure pulse. Nevertheless it was decided that the only chance of survival lay in operation, and it was remarkable how the respiration and the heart, with its burden thus lightened, improved at once when the abdomen was opened and the irritant fluid sucked out. None gave rise to any further anxiety.

Acute Appendicitis

Acute appendicitis is said to be rare in the elderly, but in this series there were 15 cases, all treated by operation, with 3 deaths. In 10 cases the appendix was gangrenous and in 6 diffuse peritonitis was present. It is interesting to note that no fewer than 10 of these 14 cases were diagnosed correctly and sent to hospital within 48 hours of the onset of symptoms. In only one case was diagnosis unduly delayed. A woman of 83 was admitted on the seventh day of symptoms with an obvious diffuse peritonitis and peripheral circulatory failure. She had complained of epigastric pain for seven days and had vomited once daily for six days. At operation the peritoneal cavity was full of pus, and she died four days later. The second death was due to bronchopneumonia on the 13th day, and the remaining one from peritonitis on the 3rd day. In this last case the appendix had sloughed and the pelvis was full of fluid faeces from the caecum.

Perforations of the Colon

These cases are summarized in Table V. In all the sigmoid perforations solid faeces had to be removed from the pelvis, and the cause of the perforation was not identified with certainty. There was no evidence of carcinoma, and presumably a diverticulitis or stercoral ulcer was the initial lesion.

TABLE V.—Perforations of Colon

Sex and Age	Site	Time of Death	Cause of Death
M 83	Sigmoid	6 hours	Peritonitis
F 84	Caecum	Survived	
M 82	Carcinoma caecum	4th day	Peritonitis
M 71	Sigmoid	5th "	"
F 76	"	4th "	"
M 75	"	6th "	Bronchopneumonia
F 79	"	Survived	

Problems of Diagnosis

General

In the accurate diagnosis of the acute abdomen, particularly in the later stages when widespread pathological changes obscure the earlier localizing signs, a clear and chronological account of the symptoms is of the utmost value, and it is just this information which is most difficult to obtain from old people. Not infrequently on admission they are becoming worn out from an illness of several days' duration; cerebration and memory, particularly for recent events, are failing from age and toxæmia; the will to live is fast fading; and deafness may be an additional handicap. The patient's halting story is at variance with the information in the doctor's letter, especially with regard to times of

events. It has proved well worth while to take a history from a relative also, preferably a daughter or daughter-in-law who has been nursing the patient, and in the latter half of the series this has been done whenever possible. A second difficulty is that these patients appear much less sensitive to pain than the average adult, though naturally there is marked individual variation, and frequently they are unable to distinguish between the various types of pain. Thirdly, there is a marked tendency among the elderly to attribute any abdominal pain to "indigestion" or to constipation, which leads to delay in seeking advice and initiates some of the difficulties mentioned above. Abdominal signs, on the contrary, are nearly always present, and, if interpreted with due regard for the condition of the individual patient, usually will lead one to the correct diagnosis. In peritonitis, for example, one cannot expect the same degree of rigidity in an old lady as in a muscular young man.

Intestinal Obstruction

Little need be said on the diagnosis of strangulated hernia, for with the exception of the case already mentioned it was quite straightforward. Vomiting, however, is not an invariable accompaniment of trapped bowel. Particularly is this so in hernia of the Richter type (in this series it was absent in 12 of the 49 cases of strangulated intestine), and if a known hernia has become enlarged and painful, or if an irreducible hernia has appeared, the only safe course is to regard it as a strangulation.

The diagnosis of mechanical obstruction, on the other hand, can be extremely difficult, particularly in cases of carcinoma of the colon, where acute is superimposed on chronic obstruction. Little or no importance should be attached to the patient's statement of the last bowel action, for not only is memory unreliable, but many of these old people cease to open their bowels at all regularly, even to the point of faecal impaction, and, conversely, complete obstruction can be followed by one or more acts of defaecation. Fortunately, however, not only is the passage of flatus, or the absence thereof, of more value in diagnosis, but it is the one observation which does impress itself on the mind of the elderly. "Look to the wind and the water" was the advice of a wise old man to a newly qualified doctor.

Vomiting tends to be less marked in the elderly, is not infrequently absent in large-gut obstructions (nearly always if the ileo-caecal valve holds), and may be absent in small-gut obstruction, as in two cases in this series—a volvulus of three days' duration with 6 feet (1.8 m.) of gangrenous ileum, and a band adhesion of 12 hours' duration. Thus, with the gross distension often present when the patient is admitted, diagnosis of the site of obstruction may be impossible on clinical grounds. If any doubt existed, x-ray films of the abdomen were taken in supine, erect, and lateral positions. These proved most helpful, but were not infallible. For example, a grossly distended caecum in one case was mistaken for a volvulus of the sigmoid loop by both surgeon and radiologist independently.

Perforations and Appendicitis

Of the seven perforated peptic ulcer cases four presented the typical clinical features of this condition, but the remaining three patients complained only of sudden severe pain in the right iliac fossa. This atypical presentation can be most confusing; for, in the elderly, acute appendicitis sometimes presents in exactly the same way, and in both of these conditions signs are limited to the right side of the abdomen. Usually in such a case of appendicitis the appendix is found to be perforated, and one must presume that the patient has attributed the preliminary less severe pain to indigestion or constipation, and has forgotten it in his subsequent agony. Despite the most careful consideration of the evidence two cases of perforation were diagnosed pre-operatively as appendicitis with peritonitis, and one case of appendicitis as a perforated peptic ulcer. The remaining 18 cases were all diagnosed correctly.

Of the seven large-bowel perforations four were diagnosed correctly, one as a perforated peptic ulcer, and two as perforated appendices. In the latter two cases the summit of the sigmoid loop was found in the R.I.F. and the perforation was in this region. In this condition a short history, and signs of peritonitis which are diffuse but maximal in the lower abdomen, suggest the diagnosis.

Miscellaneous

Two of these cases—a retrocaecal haematoma and an acute inflammation of a solitary diverticulum of the caecum—were misdiagnosed as acute appendicitis. Post-operative review of the history and signs produced no further information which might have made the diagnosis doubtful—understandably so in the latter case.

TABLE VI.—*Miscellaneous Cases*

Sex and Age	Diagnosis	Remarks
F 82	Retroperitoneal haematoma	Cause unknown. Died 9th week
F 83	Abscess L.I.F.	Diverticulitis. Drained. Recovery
F 84	Acute cholecystitis	Cholecystostomy. Stones removed. Recovery
M 81	Perforated gall-bladder	Suture and drainage. Died 9th day. Pulm. emb.
F 75	Acute pancreatitis	Diagnosed at laparotomy. Abdomen closed. Recovery
M 80	Acute diverticulitis caecum	Invaginated. Recovery
F 73	Internal haemorrhage	Diagnosed at laparotomy. Recovery

The case of intraperitoneal haemorrhage was diagnosed as acute appendicitis with diffuse peritonitis. This patient gave a history of intermittent abdominal pain for 15 days, described as indigestion, and of severe pain in the R.I.F. for 24 hours following a large dose of cascara the previous day. She had vomited twice on the day of admission, was pyrexial, and showed all the signs of peritonitis. Laparotomy revealed two pints (1.1 litres) of fluid heavily stained with old dark blood. No cause for this was found. The patient made an uneventful recovery and had had no further symptoms six months later.

Treatment

The general treatment of these old people presents many problems, for not only is the will to live often reduced but other bodily systems may be failing in addition to the stricken abdomen. Nutrition is often poor and a high-protein diet desirable, but it is far easier for the surgeon to order this than for the nursing staff to ensure that the patient complies. Similarly, thirst loses its insistence, and drinking is regarded as an unmitigated nuisance. Nevertheless, the renal function is often below par, concentrating power reduced, and the *volume obligatoire* correspondingly increased in patients suffering to a greater or less extent from dehydration. For these reasons no hesitation was felt in maintaining, for days if necessary, the intravenous infusion of 5% dextrose in water or of 4.3% dextrose in 0.18% saline, according to circumstances. In general, water is not retained without salt, and only occasionally was there any concern for the chest. Unless thought to be grossly abnormal, the serum chemistry was left to correct itself in due course by adding salt to the diet; pre-operatively, the urinary chlorides were estimated by the Fantus test and the serum chlorides determined if thought necessary, and intravenous normal saline was given when indicated. If nutrition was poor blood or "casydrol" was also given intravenously after correcting the fluid balance. Once the emergency was over it fell to the nursing staff to bully the patients into eating and drinking the necessary quantities. Extra protein can be supplied in the form of "casilan," but the patients readily detected its presence in any food or drink and found it unpalatable.

These patients were not forced from their beds in the first few post-operative days, but the subject was broached to them, and any desire to get up was enthusiastically encouraged. Routine breathing exercises and limb move-

ments under the supervision of a physiotherapist were, however, started on the first day, and the patients got out of their beds, irrespective of their feelings, when considered fit to do so. Other geriatric problems are beyond the scope of this paper.

Operation in these old people should not be delayed for more than an hour or two for resuscitation and correction of fluid balance. Ageing tissues lose their powers of compensation and their resistance to infection (peritonitis is much more common than abscess formation in acute appendicitis), the pathological process has usually been active for many hours before admission, and further delay may tip the scales against recovery. In cases of doubt it is safer to operate than to observe, for these patients are "tougher" than they look and withstand operation well provided it is performed quickly, and, as a corollary, only the minimum necessary is done. Not one of these patients was considered unfit for operation, and local analgesia was used only for three of those with strangulated herniae. All other patients were anaesthetized with cyclopropane, with or without a relaxant drug.

In the strangulated herniae, areas of bowel, gangrenous or of doubtful viability, were invaginated where possible in preference to resection. As Owen and Murphy also found, this procedure is quicker and safer and is not followed by obstruction due to stricture. Undoubtedly it saved several lives, for the mortality of resection at this age is high.

For intestinal obstruction a laparotomy was performed rather than a blind decompression operation, for the following reasons. First, the clinical diagnosis of site and of cause of obstruction is not infrequently impossible, and x-ray investigation is not infallible. Even a confident diagnosis of obstruction due to carcinoma of the colon has been proved wrong at laparotomy. Secondly, in cases of carcinoma one can form an opinion on the possibility of a second operation to remove the growth (as opposed to attempted cure), for it is my belief that in some cases, even if secondary deposits are present, removal is worth while to get rid of the colostomy. If so, it is better to place the colostomy where it will be removed with the growth and thus save a third operation for its closure: if not, the decompression colostomy can be sited at the best possible place for its secondary role as an artificial anus. Finally a caecostomy causes so much distress to old people that it can rarely be justified as a blind or as a planned procedure. Ileo-transverse colostomy is usually a much more desirable operation except when the ileo-caecal valve is competent and one is therefore dealing with a closed-loop obstruction. The future is short for these cases, and we should make it as comfortable as possible as quickly as possible rather than perform lengthier procedures of academic accuracy.

In general, old people are intolerant of intragastric tubes, and in such cases there is less upset to the patient in the post-operative period if the tube is passed twice a day and removed as soon as the aspiration is completed. Theoretically, this is not so efficient as continuous suction, but in practice the results are better owing to the greater mental and therefore physical rest of the patient.

The perforated peptic ulcers were treated by early operation, closure of the perforation, and removal by suction of all fluid from the peritoneal cavity. It is surprising how much can be thus removed from the pelvis and from above the liver—2 pints (1.1 litres) is not unusual—and literally amazing to see the improvement in the patient when this is done. Drainage of the operative area or pelvis was not employed in any of these cases and there were no complications.

The acute appendices were treated on similar lines, care being taken to remove all exudate, but in most of these cases a drain was put down to the appendix bed. Of the survivors, one developed a pelvic abscess, which was subsequently drained.

Of the miscellaneous group, the retroperitoneal haematoma was evacuated and drained. This may have been a

mistake, for in the only other example of this condition which I have seen death also occurred following drainage. Martin (1949) also quotes the high mortality of such interference, and probably it is better to remove the blood and to close the wound, for these cases usually come to operation misdiagnosed as acute appendicitis.

Perforations of the sigmoid were treated by cleansing of the peritoneum, closure of the perforation, left iliac colostomy, and a course of antibiotics. The condition proved to have a much higher mortality in old than in middle age.

Summary and Conclusions

A review has been made of 120 personal cases of the acute abdomen, excluding acute retention of urine, in patients over the age of 70 years.

The conclusion reached is that elderly people with acute abdominal emergency conditions withstand operation remarkably well, despite the presence of chronic lesions elsewhere, provided there is no undue delay in reaching the theatre and that the minimal intervention necessary is quickly carried out.

In the elderly, age itself has no effect on the mortality rate, and in cases of doubt it is usually safer to operate than to observe.

Every effort should be made to reach an accurate diagnosis on clinical grounds and no more than an hour or two spent on investigation and resuscitation. Procrastination is the thief not only of time but of the patient's remaining days.

I am greatly indebted to the consultant surgeons of the Brighton and Lewes Hospital Group for permission to treat these patients.

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THE AETIOLOGY OF POST-PARTUM HAEMORRHAGE

BY

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Post-partum haemorrhage as a cause of maternal mortality has assumed more prominence of recent years owing to the reduction in deaths from other causes. In an attempt to evaluate the aetiological factors concerned, the details of patients delivered in the Obstetric Unit of the London Hospital were analysed. This report is concerned with the 2,444 successive vaginal deliveries in the years 1950-2.

Brews (1953) deals with the causation of post-partum haemorrhage under three headings: (1) failure of contraction and retraction of the uterine muscle owing to inertia or exhaustion; (2) the presence in the uterus of some mechanical obstruction to retraction such as partial abnormal adherence of the placenta, or the retention of a cotyledon; and (3) deficiencies of blood coagulability. Under the first heading are included overdistension (twins and hydramnios), prolonged labour, prolonged anaesthesia and analgesia, ante-partum haemorrhage, precipitate labour, retention of