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

urine, and nervous shock. To these Theobald (1950) adds anaemia, blood dyscrasias, and insomnia towards the end of pregnancy. Multiparity, especially if the pregnancies have followed each other in rapid succession, and the presence of fibromyomata and concurrent debilitating diseases have also been suggested. Possibly the commonest cause of an excess loss is one to which no unit would admit—namely, mismanagement of the third stage of labour.

Present Investigation

At the London Hospital most of the normal deliveries are conducted by medical students under the supervision of the midwives and residents. Particular care is taken to collect as much as possible of the post-partum blood loss, and a generous estimate is made of the amount that escapes collection. A loss of 20 fl. oz. (570 ml.) or more is regarded as a post-partum haemorrhage. In the years under review it was not the practice to administer ergometrine before delivery of the placenta.

In this series of 2,444 patients there were 405 with a post-partum haemorrhage—an overall incidence of 16.5% (Table I). Prolonged labour and operative delivery under anaesthesia were not infrequently associated, but for the patients delivered by forceps, the majority under general anaesthesia, there was a post-partum haemorrhage rate of 19.6%. Labours prolonged more than 30 hours were associated with a rate of 21.7%, which must be compared with the figure of 16.2%, the rate for labours of less than 30 hours' duration. After a forceps delivery the collection of blood lost is often incomplete, and in all probability these figures are underestimates and therefore the importance of the three aetiological factors—prolonged labour, operative delivery, and anaesthesia—is even greater than the figures would suggest.

TABLE I

	No. of Patients	No. with P.P.H.	% Incidence
Whole series	2,444	405	16.5
Prolonged labour	147	32	21.7
Operative delivery with anaesthesia	289	57	19.6
Multiple pregnancies	60	9	15.0
Ante-partum haemorrhage	81	8	8.7
Hydramnios	19	1	5.2

Overdistension of the uterus was not associated in this series with any increased incidence of haemorrhage. There were 60 patients with twin pregnancies, and the incidence of haemorrhage was 15%. The majority were admitted for rest during the antenatal period and began labour often more rested than those patients with single pregnancies, and this may have offset the effect of the distension. Patients with a clinical diagnosis of hydramnios did not receive this period of rest; 19 pregnancies were so complicated; only one suffered from a post-partum haemorrhage.

Patients with ante-partum haemorrhage were managed conservatively and, excepting cases of marginal or more centrally placed placenta praevia, a vaginal delivery was allowed. Eighty-one patients came into this group, eight having a subsequent post-partum haemorrhage.

Of the 405 patients who bled excessively, 243 were primigravidae and 162 were multigravidae, a ratio of 3:2. This is the normal ratio of admission to the unit; for instance, in 1953 there were 543 primigravidae and 370 multigravidae.

The accurate diagnosis of fibroids in association with pregnancy is difficult. Fibroids were diagnosed on a number of occasions, but in only one pregnancy were they thought to be responsible for the haemorrhage; this was in a patient who had a submucous fibroid which caused a loss persistent enough to necessitate a hysterectomy.

No case of afibrinogenaemia was diagnosed, but two patients, each of whom was delivered of a stillborn macerated foetus, had severe haemorrhage.

Manual removal of the placenta was performed for delay of more than one hour in the third stage, for haemorrhage not controlled by simpler methods, and occasionally as a prophylactic measure following a forceps delivery. There were 13 occasions when haemorrhage was not the indication; in half the remainder the blood loss was severe. The total number was 61.

If 40 fl. oz. (1,140 ml.) is taken as a severe loss, then 83 patients suffered a severe post-partum haemorrhage (Table II); of these, 49 were primigravidae and 34 multigravidae—the same 3:2 ratio as for the larger groups.

TABLE II.—Volume of Loss

Over 40 oz. (1,140 ml.), but exact loss not recorded ..	3
40–oz. (1,140–ml.)	39
50–" (1,420–")	15
60–" (1,700–")	14
70–" (1,990–")	4
80–" (2,270–")	7
90 oz. (2,570 ml.) or over	1
	83

Of the 34 multigravidae, 14 gave a history of third-stage complications in a previous labour (Table III). These complications were either an excess loss, sufficient for the patient to know that it was excessive, or a manual removal of the placenta. An attempt was made to discover the subsequent

TABLE III

	No.	Previous History of Complicated Third Stage	Followed Up	Subsequent Pregnancy	Subsequent Difficulty
Primigravidae ..	49	—	29	11	6
Multigravidae ..	34	14	20	4	3

history of these and the other patients in the group. Information was obtained from some 60%. Twenty of the multiparae were followed; 4 had had further pregnancies, and 3 again experienced a complication. Twenty-nine primiparae were followed; 11 had had subsequent pregnancies and 6 had had further difficulty.

Among those patients who lost over 40 oz. (1,140 ml.) there were 54 for whom details of two or more pregnancies were available. In 21, difficulty in the third stage was a recurrent complication—a rate of 38.9%. In this group the incidence of manual removal of the placenta was particularly high; 14 required a manual removal in one of their pregnancies, and 3 required the procedure on two occasions.

TABLE IV.—Incidence of Manual Removal of the Placenta (3-Year Period)

	No.	Manual Removal	%
Vaginal deliveries	2,444	61	2.5
Patients with P.P.H.	405	48	11.5
" " severe P.P.H.	83	23	27.7
" " recurrent difficulty	21	7	33.8

The figures shown in Table IV support the view that abnormal adherence of the placenta and consequent difficulty in the third stage may be a recurrent condition.

Conclusions

Prolonged labour, forceps delivery, and anaesthesia are important aetiological features in the production of post-partum haemorrhage.

Overdistension of the uterus as a factor has been over-emphasized.

Neither accidental nor unavoidable ante-partum haemorrhage predisposes to P.P.H.

Fibroids rarely cause haemorrhage, but when responsible the haemorrhage is severe.

Severe post-partum haemorrhage is apt to recur in subsequent pregnancies, and is possibly due to abnormal

adherence of the placenta. Previous post-partum haemorrhage should be an indication for hospital confinement.

I would like to record my thanks to Mr. Victor Lack, Mr. Alan Brews, and Mr. Robert Percival for their help in the preparation of this report, and also to Miss E. Green for her efforts in contacting the patients.

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ECOLID: A NEW HYPOTENSIVE AGENT

BY

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During the past five years ganglion-blocking agents have been used extensively in the treatment of arterial hypertension. The discovery of the activity of hexamethonium by Paton and Zaimis (1949) placed at our disposal an active therapeutic agent capable of producing a substantial reduction in the blood pressure. Subsequent research has been directed to the synthesis of new drugs offering advantages over hexamethonium.

In the treatment of hypertension, it is desirable to obtain a sustained fall in the blood pressure by the oral administration of a drug producing a minimum of side-effects. Hexamethonium is inconstant in action by mouth, its duration of action is short, and it produces side-effects characteristic of generalized ganglionic blockade. Maxwell and Campbell (1953) examined a number of methonium homologues and indicated the suitability of one of them, pentolinium, for therapeutic application. At present pentolinium is the most active hypotensive drug available and it has been widely employed. Trapold *et al.* (1955) have described the pharmacological actions of a new synthetic compound, "ecolid" (SU-3088), and Grimson *et al.* (1955) have demonstrated its activity in lowering the blood pressure in man.

Trapold *et al.* (1955) have described a series of halogenated isoindolines with potent ganglion-blocking activity of long duration. Ecolid was the most active compound investigated. It is 4,5,6,7-tetrachloro-2-(2-dimethyl-aminoethyl)-isoindoline dimethochloride, the structural formula being as follows:

The chloride salt contains 83.45% active cation. In animal experiments it was found that this new compound is several times as active in parenteral dosage as hexamethonium, and twice as active as pentolinium. In oral dosage its activity is the same as pentolinium, but the duration of action is appreciably longer. Vagal activity is affected less than sympathetic. The relative shortness of the methylene chain is of interest. This suggests that the overall molecular length is of greater importance in obtaining a specific synaptic fit than the spacing between the quaternary nitrogen atoms.

Clinical Investigation

Twelve patients were selected who had severe hypertension and whose blood pressures remained high, despite admission to hospital and treatment by bed rest, sedation, and dietary and salt restriction. Five of these patients (Cases 1-5) had been treated previously with various ganglion-blocking agents for several years, and their readmission to hospital was considered necessary owing to the recurrence of hypertension during out-patient treatment. All the patients were investigated fully as described by Graham and Maxwell (1954). This series of patients formed a good test for a new ganglion-blocking agent, as the hypertension was severe in every case.

Ecolid was administered by mouth before breakfast, to facilitate absorption. During 85 observations it was found that the effective dose varied from 25 to 200 mg. In common with other ganglion-blocking agents, the response to the first dose was greater than that obtained subsequently, and higher dosage was required in those cases previously treated with sympathicolitics. In some cases a response was not obtained until the second or third day of treatment, suggesting a cumulative effect. A marked fall in blood pressure sometimes followed the initial dose of 25 mg. In every case adequate dosage produced a fall in blood pressure to the basal level, with increased peripheral blood flow as shown by a rise in temperature of the extremities, and postural hypotension. Evidence of vagal inhibition was present in the form of mydriasis, paralysis of accommodation, and dryness of the skin and mouth. Five barium examinations showed a variable depression of gastro-intestinal motility, this being marked after doses of over 150 mg. Postural syncope resembled that produced by pentolinium, loss of consciousness being slow and accompanied by nausea. The dose required to produce a marked fall in blood pressure was rather less than that of pentolinium, and the duration of action was approximately double. These results are compared with those from hexamethonium in the Chart.

Effect upon the blood pressure of single oral doses: mean of 50 observations upon each drug. C6=hexamethonium 250 mg.; 2050=pentolinium 100 mg.; SU-3088=ecolid 64 mg. Dosage in cation.

During the last four months ecolid has been used in the treatment of this series of 12 patients. It was found possible to lower the blood pressure to a satisfactory level in every case. The severity of the side-effects depended to some extent upon the dosage used. Mydriasis was a constant finding, and blurring of vision commonly occurred during initial treatment, but was less severe with maintenance dosage. Precautions were necessary to overcome development of constipation, and in three cases treatment had to be stopped owing to nausea and vomiting and obdurate constipation. A preference for pentolinium was expressed by two patients (Cases 2 and 5) who have had extensive experience of ganglion-blocking agents.

Bain *et al.* (1955) have shown that combination of reserpine with pentolinium enabled reduction in dosage of the latter and thereby a decrease in side-actions. Combined dosage of reserpine and ecolid was used in the maintenance treatment of Cases 7-12, reserpine, 2 mg. by mouth, being