PARTIAL GASTRECTOMY FOR PEPTIC ULCER
A REVIEW OF 181 CASES AMONG BRITISH MILITARY PERSONNEL

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Royal Army Medical Corps

INTRODUCTION
During the five years 1950 to 1954 no fewer than 2,222 serving personnel were invalidated from the army with a diagnosis of peptic ulcer. This figure includes all medical and surgical cases.

Not long ago a soldier who developed a chronic peptic ulcer was invalidated and his army career thus came to an end. This was a serious matter both for him and the army. The army today, however, requires a soldier to be a highly skilled individual, often with a long and expensive technical training behind him, and it becomes all the more urgent to keep him fit and retain his services.

This review has been carried out in an effort to discover whether the results of partial gastrectomy in the army justify the retention of the soldier as a practical and economic proposition as regards both the time taken and the standard of health regained. It is also important to show that the standard of surgical skill in the army is high and compares favourably with that found in civil life.

While this individual review reveals the absence of a fully organised follow-up system in Army Records, there is sufficient material from which definite conclusions can be drawn. Owing to necessary postings no individual remains in the same station for sufficient time to allow a long-term follow-up of the results of such a major branch of surgery. It would seem right, therefore, to suggest that the material gathered for this review should be kept and added to and reviewed again after a period of time by some interested successor.

METHOD
This review covers a five-year period from the beginning of 1950 to the end of 1954. All military hospitals were asked to submit a nominal roll of patients who had undergone a partial gastrectomy for peptic ulcer during this period together with a résumé of their case histories. While this information was being gathered, the “present location” or “the last known address” of each patient was found by reference to the Unit Record Offices so that a follow-up questionnaire might be sent to the patients concerned.

Several difficulties at once became clear. Some hospitals which were known to have had such cases nevertheless submitted a “nil” return. In some instances case notes could not be obtained. Some Record Offices were unable to give the “present location” for security reasons, but were willing to forward any communication. Thus direct contact was lost, with all the added waste of time and loss of personal interest. “The last known address” sometimes proved unreliable, for, having left the army, a patient often changed his address upon getting a new post.

It must therefore be admitted that the exact number of operations is not
accurately known. Nevertheless a total of 227 cases were notified. Of these, 46 cannot be included, being incomplete for one or other of the reasons given above. Thus 20 per cent of the material known to exist is wasted from a research point of view, leaving 181 cases for study.

The follow-up questionnaire. The questions were so worded and arranged that the patient gave his own assessment of the clinical result. In addition, a space was left in which the patient's own doctor recorded his independent opinion, placing the patient into one of the four grades described below. Thus a very fair general assessment is made without the bias of any individual or panel. The four grades were:

1. Excellent.
2. Improved.
3. No change.
4. Worse.

To be "Excellent" the patient had to be completely symptom-free without any restrictions in diet and working capacity. To be "Improved" he had to be able to do a full day's work, but suffered from minor symptoms readily amenable to simple treatment. Those in the "No change" group still had symptoms similar to those before operation or post-gastrectomy symptoms bad enough to keep their working capacity unchanged. Those in the "Worse" group had symptoms so severe that their working capacity was definitely reduced and they remained under treatment.

RESULTS

Ogilvie (1953) states: "What should we ask of gastrectomy for the simple ulcer? The mortality should be negligible, well under 1 per cent, with a cure rate of at least 90 per cent. The remainder are not symptom-free, but they find the symptoms they are left with a small price to pay."

<table>
<thead>
<tr>
<th>Authority</th>
<th>No. of cases</th>
<th>Excellent</th>
<th>Improved</th>
<th>Good*</th>
<th>No change</th>
<th>Worse</th>
<th>Poor†</th>
<th>Died</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finney et al. (1930)</td>
<td>34</td>
<td>Not stated</td>
<td>Not stated</td>
<td>88.2</td>
<td>Not stated</td>
<td>Not stated</td>
<td>11.8</td>
<td></td>
</tr>
<tr>
<td>Pulvertaft (1952)</td>
<td>632</td>
<td>59.0</td>
<td>23.0</td>
<td>82.0</td>
<td>15.0</td>
<td>3.0</td>
<td>18.0</td>
<td></td>
</tr>
<tr>
<td>Rauch (1952)</td>
<td>893</td>
<td>26.4</td>
<td>63.6</td>
<td>90.0</td>
<td>Not stated</td>
<td>4.0</td>
<td>-8.0</td>
<td></td>
</tr>
<tr>
<td>McDonald et al. (1953)</td>
<td>Not stated</td>
<td>Not stated</td>
<td>Not stated</td>
<td>82.0</td>
<td>4.0</td>
<td>Not stated</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Ogilvie (1952)</td>
<td>Not stated</td>
<td>93</td>
<td>5.6</td>
<td>98.6</td>
<td>Not stated</td>
<td>Not stated</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>Tanner (1954)</td>
<td>91</td>
<td>59.6</td>
<td>32.2</td>
<td>91.8</td>
<td>3.3</td>
<td>4.9</td>
<td>8.2</td>
<td></td>
</tr>
<tr>
<td>Goligher et al. (1956)</td>
<td>312</td>
<td>48.5</td>
<td>37.0</td>
<td>85.5</td>
<td>7.0</td>
<td>3.4</td>
<td>10.4</td>
<td></td>
</tr>
<tr>
<td>British Army (Present Series) (1954)</td>
<td>181</td>
<td>64.2</td>
<td>26.9</td>
<td>91.1</td>
<td>7.4</td>
<td>1.5</td>
<td>8.9</td>
<td>2.7</td>
</tr>
</tbody>
</table>

* "Good" includes "Excellent" and "Improved."
† "Poor" includes "No change" and "Worse."
Partial Gastrectomy for Peptic Ulcer

To gauge the success or failure of the work done in the army, it is necessary to compare the results with this statement and with similar series done by other institutions or individuals. This has not proved easy, for although there are abundant statistics available, the standards used to gauge the results vary greatly. Indeed, in some cases it has been necessary to deduce figures from published results and to present them in two different ways in order to make comparisons fair and clear. The most readily comparable figures are presented as percentages in Table 1.

It will be seen that the British Army figures compare very favourably with the best in civil life both in this country and in America.

Mortality. The mortality of 2.7 per cent was made up as follows:

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burst duodenal stump</td>
<td>2</td>
</tr>
<tr>
<td>Leaking anastomosis</td>
<td>1</td>
</tr>
<tr>
<td>Massive collapse of lungs</td>
<td>1</td>
</tr>
<tr>
<td>Pulmonary embolus</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5</strong></td>
</tr>
</tbody>
</table>

Three of these deaths must be attributed to the operation. The case notes concerning the man who died of massive collapse of the lungs suggest that death may have been due to anaesthetic difficulties. Pulmonary embolus is, of course, incidental to many different operations.

The civilian figures in Table 1 are the results produced by teams or individuals working in units accustomed to doing large numbers of gastric operations. The British Army figures are all the more interesting in that they reflect the work of no fewer than 33 different surgeons working in places as far apart as Japan and Northern Ireland. In fairness it must be stated, however, that the majority of the series were operated on in The Queen Alexandra Military Hospital, Millbank.

As the British Army figures compare well with the best in civil practice, it is important to co-relate them with the final "Pulheems" classification of the patients. Lengthy pamphlets explain the details of this method of grading, so that only a brief description is included here.

This method of grading is used by all three Services and indicates the degree of functional ability of the individual. "P" indicates the overall physical standard, "U" the degree of function of the upper limbs, "L" that of the lower limbs, "E" "E" the acuity of vision, and "M" and "S" the mental state. Each entity is graded from 2, indicating full, normal functional capacity to 8, which indicates a degree of disability requiring invaliding.

A lowered degree of function in any of the entities will invariably reflect on the "P" standard. Certain minimum standards are laid down for the various arms of the Service.

The final "Pulheems" classifications of the 181 cases are set out in Table 2.
One hundred and fifty-eight patients (87.3 per cent) remained in a serving category and 109 (60.2 per cent) were fit for front line service in any part of the world within a year.

It is of some interest to note how the different ranks responded to treatment. The results are recorded in Tables 3 and 4, classified both according to the civilian and Pulheems methods.

### Table 3

**Results (per cent)—Civilian classification**

<table>
<thead>
<tr>
<th></th>
<th>No. of cases</th>
<th>Excellent</th>
<th>Improved</th>
<th>No change</th>
<th>Worse</th>
<th>Died</th>
</tr>
</thead>
<tbody>
<tr>
<td>Officers</td>
<td>...</td>
<td>56</td>
<td>73.0</td>
<td>14.4</td>
<td>3.6</td>
<td>1.8</td>
</tr>
<tr>
<td>N.C.Os.</td>
<td>...</td>
<td>101</td>
<td>58.4</td>
<td>32.7</td>
<td>6.9</td>
<td>1.0</td>
</tr>
<tr>
<td>Other ranks</td>
<td>...</td>
<td>17</td>
<td>41.2</td>
<td>35.3</td>
<td>23.5</td>
<td>0</td>
</tr>
<tr>
<td>Females</td>
<td>...</td>
<td>7</td>
<td>85.7</td>
<td>0</td>
<td>14.3</td>
<td>0</td>
</tr>
</tbody>
</table>

### Table 4

**Results (per cent)—Pulheems classification**

<table>
<thead>
<tr>
<th></th>
<th>No. of cases</th>
<th>P2</th>
<th>P3</th>
<th>P6</th>
<th>P7</th>
<th>P8</th>
<th>Died</th>
</tr>
</thead>
<tbody>
<tr>
<td>Officers</td>
<td>...</td>
<td>56</td>
<td>65.8</td>
<td>10.8</td>
<td>1.8</td>
<td>7.2</td>
<td>7.2</td>
</tr>
<tr>
<td>N.C.Os.</td>
<td>...</td>
<td>101</td>
<td>58.4</td>
<td>12.9</td>
<td>3.0</td>
<td>15.8</td>
<td>8.9</td>
</tr>
<tr>
<td>Other ranks</td>
<td>...</td>
<td>17</td>
<td>47.0</td>
<td>17.7</td>
<td>0</td>
<td>11.8</td>
<td>23.5</td>
</tr>
<tr>
<td>Females</td>
<td>...</td>
<td>7</td>
<td>71.4</td>
<td>0</td>
<td>14.3</td>
<td>0</td>
<td>14.3</td>
</tr>
</tbody>
</table>

It is unwise to draw definite conclusions from such a small series, but it would appear from both sets of figures that the officer group had the best prognosis, the other ranks the worst, while the N.C.Os. were intermediate.

**Type of operation.** The types of gastrectomy recorded for the patients under review were as follows:

- Antecolic Polya ... ... ... ... ... 103
- Retro-colic Polya ... ... ... ... ... 44
- Unspecified ... ... ... ... ... 25
- Billroth ... ... ... ... ... 9

'Total ... 181
Partial Gastrectomy for Peptic Ulcer

Many sets of figures have been produced in favour of the different methods of doing this operation. The fact that they show that one operation benefits some patients but not others also indicates that no one operation benefits them all. In other words, each has its place. Unfortunately there is not as yet any certain way of knowing which is most suitable for any particular patient. It would be unwise, therefore, to limit the army surgeon to any particular type of partial gastrectomy. The above figures show the Polya type to be the most popular. It is important that further reviews should check the subsequent Pulheems classification of the cases included in this survey. Only thus is it possible to confirm that a soldier or officer can properly be classified P2 (fit for full active service in any part of the world) after he has undergone an apparently successful partial gastrectomy for peptic ulcer. With this object in view a register of all the patients having this operation has been compiled.

Complications requiring further surgery. The complications recorded in the 181 cases under review were as follows:

<table>
<thead>
<tr>
<th>Complication</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactionary haemorrhage (due to slipped ligature)</td>
<td>1</td>
</tr>
<tr>
<td>Internal hernia</td>
<td>1</td>
</tr>
<tr>
<td>Stomal ulcer</td>
<td>3</td>
</tr>
<tr>
<td>Incisional hernia</td>
<td>4</td>
</tr>
<tr>
<td>Burst duodenal stump</td>
<td>1</td>
</tr>
<tr>
<td>Bilious vomiting</td>
<td>1</td>
</tr>
</tbody>
</table>

CONCLUSIONS

The surgical results in the army compare well with those in civil practice. This survey does not cover a long enough period to determine whether an officer or soldier still in a serving category should ever be properly graded P2. The fact that well over three-quarters of the cases are still in a serving category and over half are fit for full active service duties in any part of the world at the end of a year suggests that partial gastrectomy for chronic peptic ulcer is an economic proposition in the army.

The operation should be reserved for the Regular soldier and only done on the National Service man in cases of emergency. At present the operation should only be done in the United Kingdom. The Pulheems Joint Service System of Medical Classification, para 94 (b) (i), 1951, rules that following partial gastrectomy a patient will remain in P7 for one year. This is not a foreign service grading. If such an operation were done abroad the patient would have to be returned to the United Kingdom in any case. Furthermore it is in the interests of the patient as well as those of the Service that such a major operation should be done by a few really experienced surgeons rather than by many "occasional gastrectomists."

All cases who have undergone this operation should be reported to a central authority for follow-up purposes. Further follow-up studies may indicate that the present Pulheems ruling as regards patients who have had this operation requires revision.
I am grateful to Major-General J. Huston, Q.H.S., F.R.C.S., Director of Surgery, for his advice and encouragement and to Captain G. Tate, R.A.M.C., and Mr. A. E. Pridham, for their help.

REFERENCES


COLD AGGLUTININS IN THE WEST AFRICAN SOLDIER

BY

Major E. E. VELLA
Royal Army Medical Corps

From The Pathology Laboratory, Military Hospital, Accra

NORMAL sera may contain not only iso-agglutinins but also agglutinins which have a strong reaction at low temperatures and hence are known as cold agglutinins (Whitby & Britton, 1953). Cold agglutinins usually disappear on dilution of the serum beyond 1:16 or 1:20 (Turner & Jackson, 1943). They may, on occasion, be of high titre and also active at room temperature. This is a cause of mistakes in blood transfusion procedures. The titration of cold agglutinins has been found to be a useful laboratory procedure in the diagnosis of virus pneumonia, haemolytic anaemias, Raynaud's disease and other conditions.

During a medical survey in a Gold Coast village, Colbourne, Edington & Hughes (1950) noted the frequent occurrence of cold agglutinins. This investigation has been undertaken following a suggestion by Dr. G. M. Edington, of the Medical Research Institute, Accra, that it would be useful to have a base line of cold agglutinins in normal West Africans. One hundred sera from normal West African soldiers were therefore examined.

METHODS

The sera were separated from blood specimens which had been kept in an incubator at 37°C. overnight. Doubling dilutions of the sera were prepared in 75 mm. x 12 mm. Kahn tubes, using 0.2 ml. quantities. Pasteur pipettes, calibrated to deliver 0.2 ml., were used. A 1 per cent suspension of washed red cells from normal group O subjects was made from oxalated blood, which had been kept at 37°C. for four hours, and 0.2 ml. was added to each tube.
Partial Gastrectomy for Peptic Ulcer: A Review of 181 Cases Among British Military Personnel
R. S. Hunt

J R Army Med Corps 1957 103: 198-203
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