

Splenectomy—A Surgical Panorama

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ABSTRACT

A five-year material of splenectomies (1970–74) is presented. The material was divided according to the indications for splenectomy as follows: radicality (Group I), iatrogenic hemorrhage (Group II), traumatic ruptures (Group III), hematological cases (Group IV) and miscellaneous cases (Group V). There was a large increase in the hematological group over the period due to the addition of splenectomy in the staging procedure for Hodgkin's disease. The mortality was highest in group I and lowest in group IV, as also was the incidence of complications. No patient with Hodgkin's disease died of the operation and the staging laparotomy for this disease, which gives valuable information, thus seems sufficiently safe to warrant routine use.

INTRODUCTION

The indications for splenectomy have been fairly settled over the years. Recently, however, the reasons for surgery in some hematological diseases have changed. The number of splenectomies with iatrogenic indications may also have increased somewhat as a result of the more frequent operations in the vicinity of the spleen (e.g. vagotomy, repair of hiatus hernia). It was therefore considered of interest to analyse the indications for splenectomy today.

MATERIAL

All case journals of patients undergoing a splenectomy at the surgical clinic of the University Hospital, Uppsala during the five-year period 1970–74 were reviewed. The series was divided into five groups according to the indications for splenectomy:

Group I: splenectomy as an elective step in the operative procedure

Most of these were patients with a malignant tumour, where it was thought that removal of the spleen would add to the radicality of the surgery. In some patients without malignant disease, the spleen was found to be involved in an infectious or inflammatory condition, warranting its removal. In a few patients the spleen was electively removed for technical reasons.

Group II: surgical accidents

In most of these patients the spleen was found to be bleeding following surgery in the vicinity of the gastric fundus. In a few cases it was injured after more distant surgery. Even simple palpation was occasionally responsible for splenic hemorrhage.

Group III: traumatic rupture

Group IV: hematological indications

Group V: miscellaneous

RESULTS

During the five-year period, 167 patients underwent splenectomy (Figs. 1 and 2). Thirty-two of them were in group I, 39 in group II, 18 in group III, 70 in group IV and 8 in group V.

Group I was distributed fairly evenly over the years. The majority of this group had a gastric malignant tumour. It has not been the policy of this clinic to remove the spleen in an attempt at supra-radical surgery in every case of gastric carcinoma, but only to remove it when indicated by the findings at operation. Thus, this was a selected group of patients with advanced disease.

Group II showed a tendency to increase over the years, although this finding is not conclusive. In the greater number of this group the spleen was injured inadvertently during vagotomy. Operations for malignant disease and for hiatus hernia also led to iatrogenic hemorrhage from the spleen. The incidence of splenectomy in connection with a vagotomy showed a slight increase over the years, probably reflecting a change of policy in the treatment of duodenal ulcer.

Group III. There was a steady incidence of traumatic rupture of the spleen—four cases per year.

Group IV was the largest group (70 patients). There was a slight increase over the years, mainly

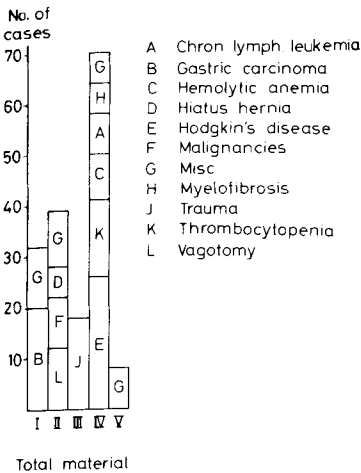


Fig. 1. Total material of splenectomies during 1970-74, divided into indication and diagnosis

- I=Group I=Elective splenectomy
- II=Group II=Surgical accidents
- III=Group III=Traumatic rupture
- IV=Group IV=Hematological indications
- V=Group V=Miscellaneous.

due to the addition of the staging procedure for Hodgkin's disease during the last 3 years. There was also a slight increase in the number of splenectomies for other hematological diagnoses, probably due to somewhat wider indications during the later years.

Group V. This group included four splenic cysts and one splenic arterial aneurysm, and in 3 patients splenectomy was performed in connection with operations for portal hypertension.

Mortality and complications

The mortality and postoperative complication rates are presented in Table I. Mortality was defined as hospital or one month mortality.

Table I. Mortality and postoperative complications given in per cent for groups I to IV and for total material

		Mortality (%)	Complications (%)
Group I	(n=32)	42	38
Group II	(n=39)	10	36
Group III	(n=18)	6	30
Group IV	(n=70)	3	10
Total material	(n=167)	13	24

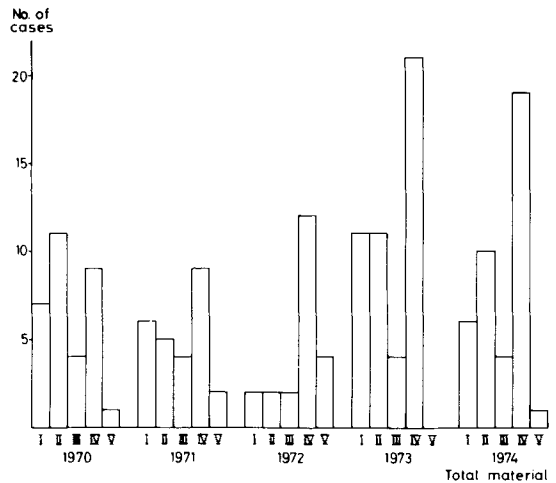


Fig. 2. The distribution of splenectomy during 1970-74. For indications for splenectomy, see text.

Group I, not unexpectedly, had a high mortality (42%) and many complications (38%): thus, the combined rate was 80%. Mortality was lowest (3%) in the hematological group (IV), as also was the complication rate (10%), the combined rate being 13%. The 2 patients in this group who died were both in a very advanced stage of disease, one being a 77-year-old woman with myelofibrosis, the other a 42-year-old man with chronic lymphatic leukemia. In this latter patient, postoperative bleeding contributed to death.

Type of complications

The postoperative complications are listed in Table II. Atelectasis of the left lower lobe and/or left pleural effusion—the classical complication after a splenectomy—occurred in 28 patients (deaths excluded). This was usually easily treated with

Table II. Postoperative complications (dead patients excluded)

	No. of cases
Atelectasis and/or pleural effusion	28
left base	9
Other pulmonary complications	8
Subphrenic abscess	4
Bleeding - reoperation	11
Other intra-abd. complications	3
Wound infections	3
Total no. of complications	53
(No. of patients with complications =40)	

breathing exercises, antibiotics and pleural puncture and increased the length of hospitalization only slightly.

Subphrenic abscess occurred in 8 patients, and were treated with surgical drainage and antibiotics. In a few patients this prolonged the stay in hospital considerably. Bleeding requiring reoperation occurred in 4 patients. Other pulmonary and intra-abdominal complications were common, especially in groups I, II and III. The complications could generally be traced to other factors than the splenectomy *per se*: for instance, there were a number of anastomotic leakages in the gastric carcinoma group.

DISCUSSION

A simple, elective splenectomy, even in the case of a large spleen, carries a low mortality and morbidity. McKinnon et al. (4) reported splenectomy in 161 patients with "primary or secondary splenic disease" (corresponding to our group IV), of whom 7 died (4.3%). The mortality in the group of elective splenectomies in the present series was 3%, with a complication rate of another 10%.

Contrasting with this picture is the rather gloomy one for the group in which splenectomy was performed together with other, sometimes major procedures. The mortality rate of 42% and the morbidity of 38% in patients in whom the spleen was removed to reach radicality is very sobering. However, the patient material and diseases dealt with in this group are very complicated, and it seems likely that the splenectomy itself plays only a minor role in the mortality and morbidity, and that the major causative factors are the general condition and the primary disease.

The mortality in group II, i.e. surgical accidents, was lower (10%) than in the elective group, but its complication rate (36%) was similarly high. Here again, the source of the mortality and complications can often be traced to factors other than the splenectomy. However, it is reasonable to assume that the added trauma to the patient posed by an unnecessary splenectomy may in the marginal case play a determining role in the development of complications and even in a fatal outcome.

It may be of importance when comparing different operative procedures for duodenal ulcer, to bear in mind that vagotomy entails a larger incidence of iatrogenic splenectomies than other methods.

Group III, comprising the traumatic cases, is surprisingly small—only 4 patients per year.

The number of splenectomies for hematological disease (group IV) increased markedly during the period investigated (18 cases in the first 2 years, and 40 in the last 2). This was largely due to the addition of the staging procedure for Hodgkin's disease (2, 3). This diagnostic procedure has added to the understanding of the disease and the planning of appropriate therapy in the individual patient. Whether it adds to the survival of this group of patients as a whole is at present unknown. No patient with Hodgkin's disease died as a result of the operation, and the complication rate was 16% with only one major complication (subphrenic abscess). Thus, the risk of the staging procedure is small, approaching that of an exploratory laparotomy.

Many patients with hematological diseases benefit from splenectomy. However, the indications for splenectomy vary and it is sometimes regarded as a last resort. From a surgical point of view it is evident that removal of large spleens entails more intra- and postoperative complications and longer periods of hospitalization than removal of small ones (1). Thus, we may well be shifting the indications for splenectomy toward interventions earlier in the disease. Whether this change of policy will give better hematological results is not clear at the present time.

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Received June 23, 1973

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