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Clinicopathological spectrum of splenectomies in a tertiary care centre

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Abstract

Background: The purpose of this study was to evaluate briefly the spectrum of diseases affecting the spleen warranting its removal.

Methods: This was a retrospective study performed in JSS hospital of 34 patients who had undergone splenectomy between 2016 to 2018.

Results: Out of the patients operated, 5 (14.7%) were for blood dyscrasias with hypersplenism, 1 (2.9%) for splenic abscess and the rest was splenic injury. Ten patients had a platelet count less than $40 \times 10^9/l$ during bleeding complications during or after surgery were rare (3%). Accessory spleens were removed in 2 patients. Convalescence was rapid and the mean hospital stay was 2.3 days (range 1–7 days). The patients were followed for a mean of 16 months (range 1–36 months) and resulting mortality was 3 out of 34 (8.9%).

Conclusion: Splenectomy should be undertaken only after careful balancing of the short and long term risks and potential benefits to the patient.

Keywords: eTEP, ventral abdominal hernia repair, inguinal hernias, umbilical hernia

Introduction

The spleen and its major blood vessels have attained increasing surgical significance over the years. For many years the many surgical indications for the removal of the spleen were related to its traumatic injury or tremendous size. The problem of traumatic rupture of the spleen associated with automobile injuries continues to be an important one. The diagnosis of splenic rupture has been greatly improved and the morbidity and mortality has been decreased as a result of earlier recognition of splenic injuries and the administration of adequate amounts of whole blood transfusion.

A common indication for splenectomy has been in the management of haematological disease such as thrombocytopenic purpura and congenital haemolytic anaemia. As recorded by Dr Zollinger removal of the spleen was suggested when haematological studies proved that there was destruction of one or more elements of the blood and bone marrow.

Another common indication for splenectomy was in the staging of Hodgkin's disease. In addition to establishing the diagnosis of abdominal involvement, splenectomy permits increased radiation to areas of possible involvement with less injury to adjacent structures and probably increases the patient's tolerance to chemotherapy.

The role of spleen in immunology has been extended into the field of renal transplantation. Splenectomy is commonly done at the time of bilateral nephrectomy with the thought that there will be an improved survival. The removal of the spleen once again may improve the patient's tolerance to immunosuppressive drugs and since approximately one fourth of the patients develop evidence of hypersplenism, this complication is avoided.

The major splenic vessels also have considerable surgical significance. The splenic artery may be involved with an aneurysm or show changes by arteriography in the presence of cancer of the pancreas.

The splenic vein has long been utilised in a variety of procedures to relieve portal hypertension responsible for haemorrhage from oesophageal varices.

Since the first deliberate removal of a diseased spleen by Quin-tenbaum in 1826 splenectomy has become a well-established surgical procedure.

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Objective

The purpose of this study was to evaluate briefly the spectrum of diseases affecting the spleen warranting its removal in our hospital over a period of two years.

Materials and Methods

A retrospective study was conducted in JSS Hospital, Mysore from August 2016 to October 2018. A total of 35 patients who underwent splenectomy were studied.

After obtaining the permission for the study, the record of the

cases which underwent splenectomy was obtained from the medical records department and evaluated.

Results

In this study there were 27 males (79.4%) and 7 females (20.6%).

In our study the majority of the study subjects were between the ages of 10 to 50 years. 7 (20.6%) of the study subjects were less than 20, 10 (29.4%) of the study subjects were between 21 to 30 and 31 to 50 and 7 (20.6%) above 50 years.

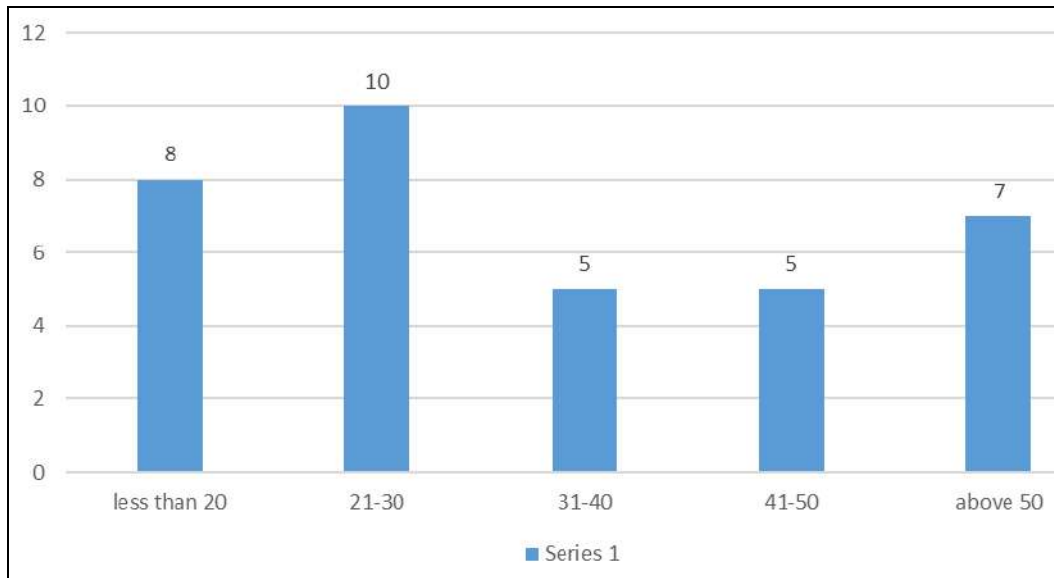


Fig: Age Distribution

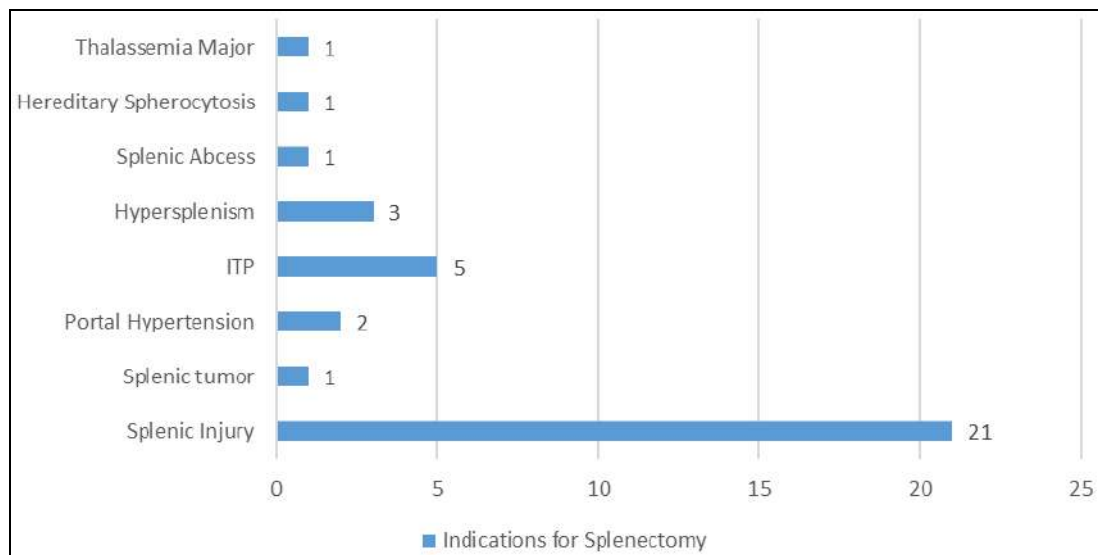


Fig: Indications for Splenectomy

When the Indications of splenectomy were studied, 21(61.8%) of the cases were splenic injury (grade 4 and 5), 5 (14.7%) were Idiopathic thrombocytopenia purpura, 3(8.8%) cases were due to hypersplenism, 2 (5.9%) cases were operated secondary to portal hypertension. There was 1 (2.9%) case each of splenic abscess (size 8x6 cm), splenic tumour (haemangioma) and hereditary

spherocytosis.

Complications such as intraoperative haemorrhage occurred in 1(3%) case, pneumonia occurs in 2 (5.7%) cases which were treated optimally and at the end of 36 months follow up, there were 3(8.6%) mortalities.

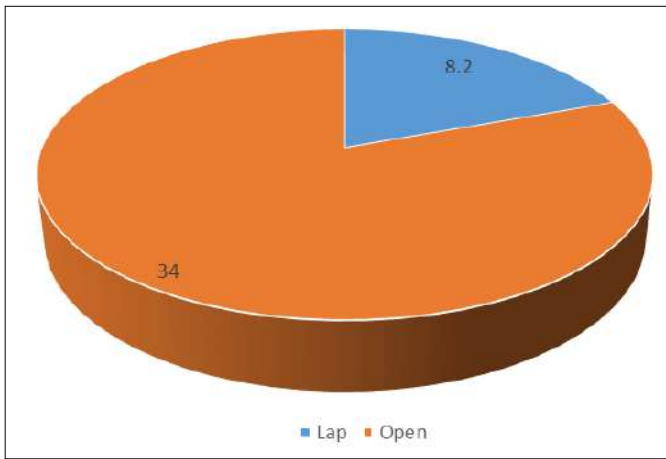


Fig: Lap VS Open

Among the 35 cases, 3 (8.3%) cases were operated laparoscopically and 32 (91.4%) cases underwent open splenectomy. Accessory spleens were removed in 2 patients. Convalescence was rapid and the mean hospital stay was 2.3 days (range 1–7 days). The patients were followed for a mean of 16 months (range 1–36 months) and resulting mortality was 3 out of 34 (8.9%)

Discussion

It can be very difficult to decide whether a patient needs an emergency splenectomy after trauma, particularly when the patient is haemodynamically stable and has minimal signs of abdominal injury. Special investigations do not provide absolute answers and the risk of delayed and unnecessary laparotomies will remain. Focused assessment with sonography for trauma (FAST) is an excellent investigation for haemoperitoneum in blunt trauma with a sensitivity of 88%. An emergency laparotomy is indicated for a positive FAST in patients with shock. A CT scan with intravenous contrast is the single most useful investigation in the haemodynamically stable patient as it can assess for intraperitoneal fluid, solid organ injury and retroperitoneal haematoma. Repeated scanning (ultrasound or CT) have been found particularly helpful in assessing splenic bleeding or haematoma especially if patient has decreasing haemoglobin levels. Laparoscopy has no role in trauma.

Because the risks of uncontrolled haemorrhage and major transfusion are greater than OPSI, splenectomy should be performed without delay if splenic bleeding is not controlled during laparotomy. However, if a splenic tear is found which is not actively bleeding with adherent clot it should be left undisturbed. The growing awareness of possible long term complications and the increasing reports of the failure of prophylactic measures have led increasingly to the use of partial splenectomy with retention of some splenic tissue wherever possible, especially in children following splenic trauma. Splenic salvage techniques are more feasible in children because of the greater ratio of splenic capsular tissue to pulp tissue. They include partial splenectomy, splenorrhaphy, ligation of segmental vessels and capsular repair. Partial splenectomy may be considered with deep tears to the hilum but should only be performed if there are no other life-threatening injuries as it is a complicated surgery.

Thus, the conservative thing to do in splenic trauma is splenectomy and it is prudent to err on the side of splenectomy in all major multiple trauma and military cases. Superficial splenic tears may be sutured using absorbable mattress sutures buttressed with Surgicel, teflon or omentum. Ligation of

segmental vessels at the splenic hilum may be useful in obtaining haemostasis from a splenic tear. Topical haemostatic agents e.g. microfibrillar collagen (fibrin glue) and absorbable envelopes have also been used successfully to preserve the spleen. Splenosis and auto transplantation may have some minor immunological function but have not been shown to be effective in preventing overwhelming post splenectomy infection. It seems likely that the normal splenic vasculature is crucial for maximum protection. Indeed there has been some uncertainty of the level of splenic function achieved by partial splenectomy especially if more than half the spleen is removed or the splenic artery has to be tied as the patient probably loses most immunological benefit. It would be prudent to institute similar prophylactic measures in these patients to prevent infection as for asplenic individuals.

The relative indications for splenectomy include hyper-splenism, symptomatic splenomegaly and destruction of abnormal blood cells in the spleen. Splenectomy is performed in patients having haemolytic anaemia (e.g., hereditary spherocytosis [HS], and autoimmune haemolytic anaemia) because the intrinsically abnormal or antibody-coated red blood cells are prematurely destroyed by splenic macrophages. Because splenectomy can ameliorate the underlying anaemia, it is often considered the treatment of choice although none of these conditions can be cured by splenectomy. Two facts must be established before splenectomy in haematological patients. Firstly, the spleen must be shown to be the site of excessive destruction of red cells, by examination of the bone marrow and of peripheral blood and isotope studies to illustrate excessive uptake in the spleen. Secondly, the bone marrow must be shown capable of producing sufficient new cells to correct the cytopenia in the absence of the spleen. Otherwise, no reversal of cytopenia is possible and the patient's condition will continue to deteriorate [1]. Where splenectomy is being carried out for haematological disorders a careful search should be also be made for accessory spleens [2].

The long-term thromboembolic risk which is higher in haematological disorders associated with ongoing haemolysis, particularly thalassaemia intermedia, has led to a more non-operative approach [3]. In comparison, patients with ITP appear to be at lower risk of adverse effects of splenectomy, which maintains its place as the potentially most curative and safe second-line treatment. However, a splenectomy-sparing approach is also emerging for ITP, and recent guidelines recommend that this procedure is deferred until 12 months following ITP diagnosis, to allow sufficient time for possible remission [4].

Previous response to corticosteroids or other treatments are not very good predictors of splenectomy success. Age under 40 years is the only positive predictive factor for the long term response to splenectomy in ITP [5]. Researchers suggest that a raised serum biomarker protein haptoglobin (Hp) that binds to free haemoglobin released by red blood cells predicts long-term response to splenectomy for ITP in about 80% of cases [6]. In a small proportion of the splenectomized ITP population a second surgery is occasionally required to remove an (extra) accessory spleen if the patient has relapsed following a successful first surgery. The first meta-analysis of randomized clinical trials and observational studies on rituximab has shown its effectiveness as a splenectomy-avoiding option in adult chronic ITP. Age was also the most relevant effect and rituximab should be used earlier in non-splenectomised patients [7]. Laparoscopic splenectomy (LS) is preferred when possible in ITP as these patients are on steroids with risk of infection and poor wound healing [8]. A recent retrospective study demonstrated a 6.4%

conversion rate to open surgery which was mostly due to larger spleens^[9]. A previous comparative study on operations on massive splenomegaly had demonstrated a 6.6% conversion rate to open and despite a significant longer operating time, the post operative recovery following laparoscopic splenectomy was smoother with lower morbidity and shorter post operative hospital stay^[10].

Conclusion

The spleen, whether anatomically and physiologically normal or diseased, may significantly worsen the clinical picture in a variety of medical disorders. Majority of the cases undertaken were for splenic injury followed by haematological disorders. However, splenectomy should be undertaken only after careful balancing of the short and long term risks and potential benefits to the patient.

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