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Original Research Article

Diagnostic vs therapeutic splenectomy: the trend in tertiary center

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ABSTRACT

Background: The recent trend being towards spleen preservation, it is necessary to critically analyse the indications for splenectomy and assess if the desired preoperative outcomes are achieved by splenectomy.
Methods: This was a retrospective study and patients who underwent elective or emergency splenectomy for various indications in the surgical unit from September 2011 to July 2016 were included. The data was collected from patients records and hospital electronic database.
Results: From September 2011 to July 2016, totally 68 patients underwent splenectomy. The indications for therapeutic intervention were splenic abscess (2), splenic cyst (4), trauma (8), ITP (20) and anemia (12). The indications for diagnostic splenectomy were pyrexia of unknown origin in 7 patients and splenomegaly with anemia or pancytopenia in 15 patients. The objective of the operation was achieved in 43 patients (63%). The success rate for each indication: diagnosis (12 of 22 patients, 55%), thrombocytopenia (12 of 20 patients, 60%), anemia (5 of 12 patients, 42%) and as a primary treatment (12 of 14 patients, 86%). Postoperative morbidity within 30days of surgery was seen in 9 patients (13%) and 2 patients (3%) died within 30days of surgery.
Conclusions: The indication for splenectomy should be individualized after exploring all other treatment options and based on outcome.

Keywords: Diagnostic, ITP, Splenectomy, Therapeutic

INTRODUCTION

Spleen is a reticulo-endothelial organ that serves as a major site of destruction of abnormal cellular elements of blood and is important in the defense against bacterial infections.[1-3] Splenectomy is performed as a diagnostic and therapeutic procedure for a wide spectrum of indications. The most common one is the emergency splenectomy performed for trauma. Elective splenectomy is a surgical treatment for a wide range of diseases including unexplained splenomegaly, autoimmune, malignant, hereditary and congenital disorders.[4-6] The two most common indications for elective splenectomy are malignancy and haematological disorders, such as Idiopathic Thrombocytopenic Purpura (ITP) and Autoimmune Haemolytic Anaemia.[4] Splenectomy carries a high risk of perioperative complications and predisposes to overwhelming post-splenectomy infections (OPSI).[7] Splenectomy, independent of its indications, induces an early and late increase in the incidence of venous thromboembolism and infections.

The underlying pathology influences the incidence of both complications.[8] Improvement in surgical techniques and laparoscopic splenectomy have reduced the perioperative complications. The risk of overwhelming post-splenectomy infection (OPSI) has significantly reduced due to the availability of perioperative vaccinations but not eliminated.[9] Recent trends show a paradigm shift towards spleen preserving procedure to

retain its immunological function and to avoid life threatening complications.[10]

METHODS

The objective of this study was to elucidate the evolving indications of splenectomy and to analyse the outcomes of splenectomy performed for various indications in a surgical unit at a tertiary care center. This was a retrospective observational study. The study period was from September 2011 to July 2016. Patients above 18years of age who underwent elective or emergency splenectomy for various indications in this surgical unit in the study period were included. Children who underwent splenectomy, patients who had splenectomy as a part of multivisceral resection and patients who had partial splenectomy were excluded. Patients follow up details were obtained from the outpatient charts and the minimum follow up duration was 2years. The data was collected from hospitals electronic database.

The data collected were patient's demographic details, indications for splenectomy (elective vs emergency splenectomy and diagnostic vs therapeutic splenectomy), surgical approach, post-operative complications and outcome for various indications which include haemoglobin, platelet count and histopathological report. These data were tabulated and analysed. The change in the indications of splenectomy in the given study period were analysed.

RESULTS

68 patients underwent emergency and elective splenectomy from September 2011 to July 2016. There were 38 males (56%) and 30 females (44%). The age distribution showed predominantly younger population (<40years of age), accounting for 57% (Figure 1).

Table 1: Indications of splenectomy in the study group.

Indications	
Elective-55 (81%)	Emergency -13 (19%)
Diagnostic-22 • Splenomegaly-13 • Pyrexia of unknown origin (PUO)-7 • Pancytopenia-2	Trauma -8
	ITP with intracranial bleed-3
	Ruptured splenic abscess- 2
Anemia-12 • Thalassemia-8 • Hereditary spherocytosis	
ITP-17	
Splenic cyst-4	

55 patients underwent elective splenectomy and 13 patients had emergency splenectomy. In this group of 68, 22 patients underwent splenectomy with a diagnostic intent. The indications for emergency splenectomy were trauma, ruptured splenic abscess and ITP with acute intracranial bleed. Of the 55 patients who underwent elective splenectomy, 22 were for diagnostic purpose, 17 for ITP, 12 for hemolytic anemia and 4 for splenic cyst. The evolution of indications for splenectomy since 2011 is shown in Figure 2.

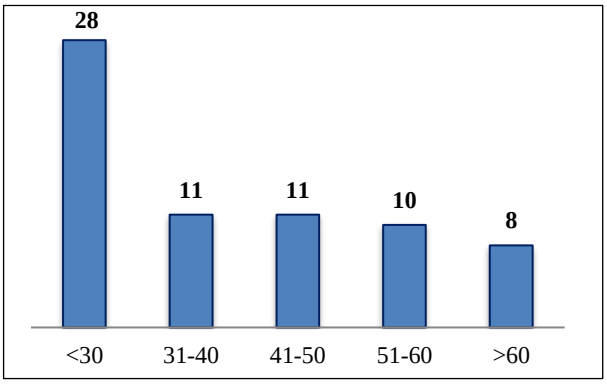

Figure 1: Age distribution in the study group.

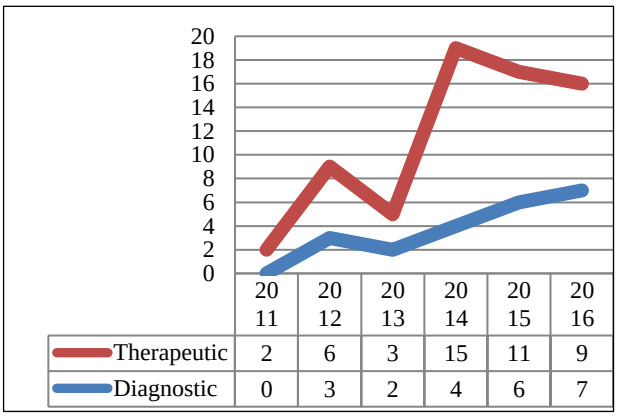

Figure 2: Evolution of indications of splenectomy since 2011.

Fifty-three patients underwent open splenectomy, of which four were laparoscopic converted to open due to technical challenges due to splenomegaly and intraoperative bleeding. Laparoscopic splenectomy was performed in 15 patients (22%). The increasing trend for Laparoscopic procedure were partly due to advancement in skills and technology (Figure 3). In the follow up period, the outcomes of splenectomy were analysed (Figure 4). The outcomes were measured as increase in platelets for ITP, increase in haemoglobin for anemia and to obtain a histopathological diagnosis in diagnostic splenectomy cohort. Out of 22 patients who underwent diagnostic splenectomy, only in 55% of the patients a diagnosis was obtained from the histopathology. The various histo-pathologies are shown in Table 2. The desired outcome for different indications of splenectomy were 55% for diagnostic splenectomy, 60% for ITP and 42% for anemia.

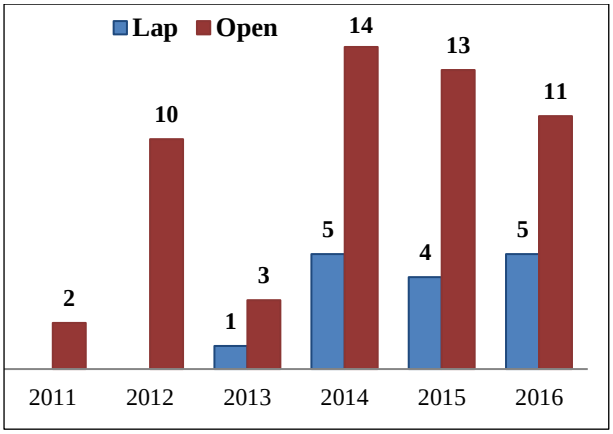

Figure 3: Approach for splenectomy in the study group.

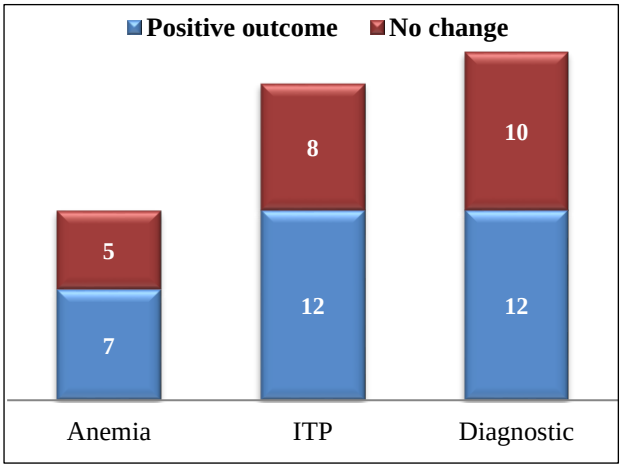

Figure 4: The outcomes analysed for various indications.

The overall complication rate was 22% (15/68 patients). The different postoperative complications are shown in Figure 5. Bacterial infections post splenectomy were seen in 4 patients (5.8%). There were two mortalities, one patient with ITP and intracranial bleed following splenectomy died due to ventilator associated pneumonia and another patient with lymphoma on chemotherapy died of OPSI (mortality 3%).

Table 2: Various histopathological spectrum of diagnostic splenectomy.

Histopathology	Numbers
Splenic marginal B cell lymphoma	5
Tuberculosis	2
Mantle cell lymphoma	1
T cell Non Hodgkin lymphoma	1
Diffuse large B cell lymphoma	1
Hodgkin lymphoma	1
Systemic mastocytosis	1
Not conclusive (splenic congestion, lymphoid infiltrate, hemangioma)	10

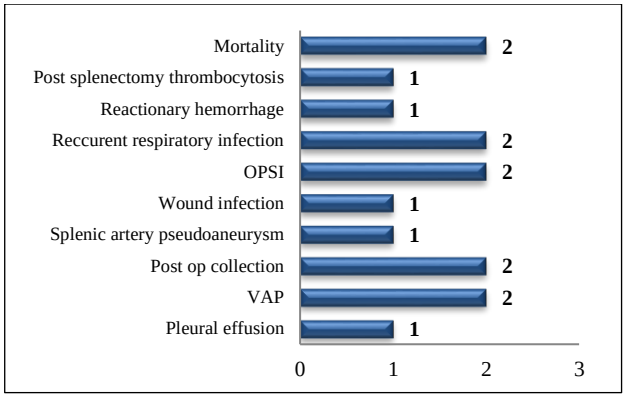

Figure 5: Complications noted in the study group.

DISCUSSION

Spleen plays an important role in hematological and immunological functions.[1] The absolute indications of splenectomy as described in literature are ruptured spleen, splenic cysts, splenic abscesses and tumor resection involving adjacent organs.[1,4,10] The long term complications following splenectomy are infections, thromboembolism and rarely malignancy.[3,8,11] Laparoscopic splenectomy is increasingly being used due to less complication rate when compared to open splenectomy.[12,13] In recent years indications of splenectomy are changing worldwide and spleen preservation procedures The international data shows decreasing trend of splenectomy for various indications due to new interventional and diagnostic modalities.[2] The most common indication for splenectomy in most institution was trauma, but it has significantly reduced due to the non-operative management of splenic injury.

In this study group, the rate of diagnostic splenectomy was high when compared to international data. this therapeutic splenectomy indications have also shown an increasing trend towards haematological disorders, predominantly ITP and hemolytic anemia. The trend could probably be attributed to the fact that this was a tertiary care center with patients presenting to us after exhausting nearly all diagnostic modalities given the financial constraints in a resource challenged developing country. As the splenectomy rate is more in this center when compared to the international data, as an end point of this study the outcomes were analysed. The preoperative objective for various indication was achieved only in 40 to 60% of the total patients.

Splenectomy is the therapeutic option for a spectrum of medical disorders, but it should be undertaken only after careful balancing of the short and long term risks and potential benefits to the patient. Most of this risk seems to be due to the underlying splenectomy indication and not to splenectomy alone. It should be the last resort for ITP after exhausting all medical treatment options as the efficacy rate of splenectomy was reported to be approximately 60%.[14] Surgeons need to be aware of long-

term complications after splenectomy, though laparoscopic splenectomy was increasingly being used and complication rates are less when compared to open splenectomy. Spleen preservation has become a well-reported and accepted principle. Partial splenectomy may be performed as a diagnostic procedure in suspected hematological disorders with inconclusive hematologic findings.[15] Partial splenectomy is also safe for patients with localized benign or malignant disease of the spleen.[16]

CONCLUSION

The decision for splenectomy should be individualized considering the risk vs benefits. All possible medical options should be explored before opting for splenectomy. Reduced complication rate owing to minimally invasive approach and vaccination for OPSI should not justify performing a splenectomy. The diagnostic yield of partial splenectomy should be studied further in hematological and non-hematological disorders.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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