

# A Prospective Study Based on Postoperative Infection Risk After Splenectomy

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## ABSTRACT

**Background:** Splenectomy is a therapeutic measure which is commonly used as treatment for many medical conditions. Risk and benefits of the treatment should be evaluated before proceeding. Splenectomy is often associated with risk of infection.

**Aim:** The aim of this study is to evaluate postoperative infection risk after splenectomy.

**Materials and Methods:** 150 patients admitted to the surgical intensive care unit were selected for the study. Patients selected were investigated for the risk of infectious complications undergoing a splenectomy.

**Results:** Most of the patients i.e. 50% reported cancer in past medical history. Urinary tract infection was observed in 39 patients i.e. 26% cases, 25 patients were affected by bacteremia i.e. 16.6%, 11 patients were suffering from wound infection i.e. 7.3%, abscess was observed in 15 patients i.e. 10% and VAP was observed in 10 patients i.e. 6.6% cases.

**Conclusion:** Splenectomy increases risk of complications

postoperatively. A thorough knowledge on its complications can help to minimize the condition.

**Keywords:** Splenectomy, Infection, Sepsis, Postoperative Complications.


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## INTRODUCTION

The spleen is important part of reticuloendothelial system of body. In the 1990, vital role of spleen in immune system was recognized<sup>1</sup> whereas in the year 1826 Quittenbaum first deliberately removed a diseased spleen and thereafter splenectomy has become a well-established surgical procedure.<sup>2</sup> Studies have shown that spleen is responsible for making antibodies and removing bacteria, aged, antibody-coated and damaged blood cells. People without spleen have compromised immunity.<sup>3</sup> Splenectomy is usually performed for patients with severe splenic trauma, portal hypertension, splenomegaly due to hematologic diseases, or splenic tumors. Intraoperative hemorrhage is a fatal complication following splenectomy.<sup>4,5</sup> Splenectomy along with its benefits is also known for its complications. The risk of 0.04 per 100 person year's exposure following routine splenectomy and 0.03 per 100 person years following splenectomy for trauma has been reported in the literature.<sup>6</sup> In patients suffering from thalassaemia and sickle cell disease complications like vascular complication, pulmonary hypertension (PH), is described following splenectomy, studies have reported prevalence as high as 75%.<sup>7</sup> So we aimed to investigate the postoperative infection risk after splenectomy.

## MATERIALS AND METHODS

A total of 150 patients were included in the study. Out of the 150 patients 69 were males and 81 were females. Patients aged more than 40 years were included in the study. A detailed examination was carried out for each patient. Ethical committee clearance was obtained before initiating the study. A written informed consent was obtained from patients. A thorough description regarding the study was given to patients. Clinical history like demographics details, including age, gender, body mass index and past medical history were recorded. The primary outcome like infections complications, including wound infection, ventilatory associated pneumonia, urinary tract infection, bacteremia, and intra-abdominal abscess etc were noted.

## Inclusion Criteria

1. Patients undergone splenectomy
2. Patients aged above >40 years of age

## Exclusion Criteria

1. Patients not willing to participate
2. Patients with mental disorders
3. Patients with chronic illness

**Data Analysis**

Data was collected safely. Data so collected was subjected to analysis using Statistical Package for Social Sciences (SPSS) Version 15.0. Non parametric data has been represented as frequencies and percentages. All variables that were significantly different were recorded at a  $p < 0.005$  level.

**RESULTS**

Of the 150 patients selected for the study, 69 were male's i.e. 46% and 81 were females i.e. 54%. Detailed case history was obtained. Of the 150 patients 75 patients reported cancer in past medical history i.e. 50%, 39/150 patients reported diabetes mellitus i.e. 26%, 27/150 suffered from renal failure i.e.18%, 12/150 suffered from liver disease i.e. 8% and 63/150 patients reported cardiac disease i.e. 42%. Maximum numbers of patients

were found to be suffering from cardiac disease and cancer (Table 1). In present study indications of splenectomy included were trauma, pancreatic tumor, hematological disease and iatrogenic. Complications observed in present study were wound infection, urinary tract infection; bacteremia, abscess and ventilatory associated pneumonia were observed. Urinary tract infection was observed in 39 patients i.e. 26% cases, 25 patients were affected by bacteremia i.e. 16.6%, 11 patients were suffering from wound infection i.e. 7.3%, abscess was observed in 15 patients i.e. 10% and VAP was observed in 10 patients i.e. 6.6% cases (Table 2). Most common complication observed in present study was urinary tract infection. When complications were compared based on indications it was found that UTI was most common complication in all the patients followed by bacteremia (Graph 1).

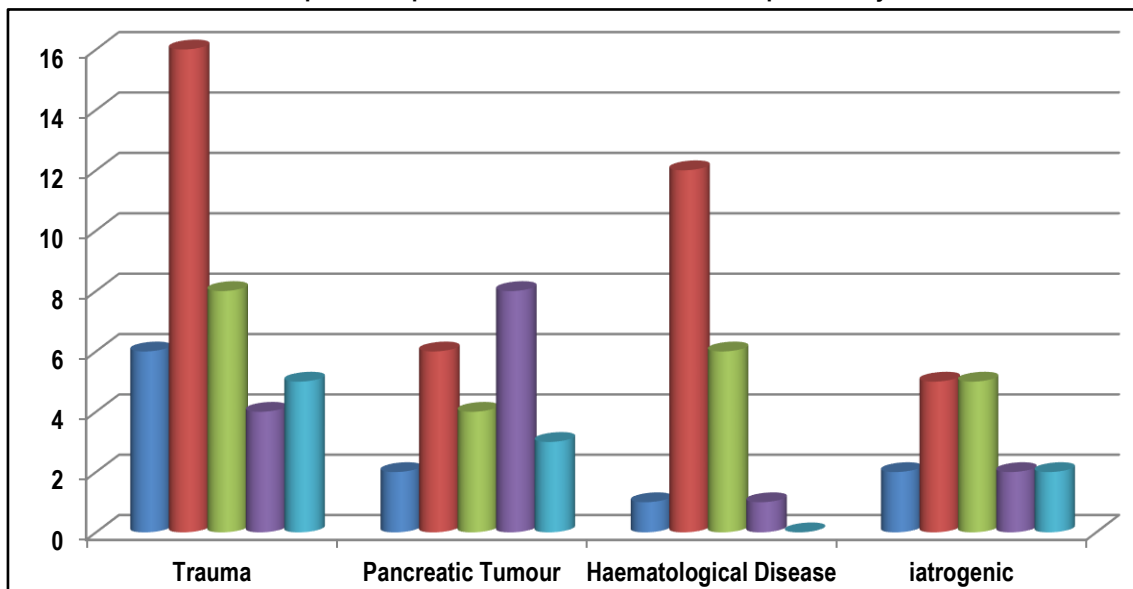
**Table 1: Demographic characteristics of patients**

VARIABLES	PATIENTS	PERCENTAGE
<b>Gender</b>		
Male	69	46%
Female	81	54%
<b>Past medical history</b>		
Cancer	75	50%
Diabetes mellitus	39	26%
Renal failure	27	18%
Liver failure	12	8%
Cardiac disease	63	42%

**Table 2: Complications Observed In Patients**

INFECTIONS	PATIENTS	PERCENTAGE
Wound infection	11	7.3%
Urinary tract infection	39	26%
Bacteremia	25	16.6%
Abscess	15	10%
VAP	10	6.6%

**Graph 1: Complication Based On Indication of Splenectomy**



## DISCUSSION

Disease affecting spleen can sometimes lead to removal of spleen. According to the literature studies have shown that splenectomy improves outcomes in traumatic brain injury patients, as well as it might increase the risk for development of diabetes mellitus.<sup>8,9</sup> Authors have suggested that the risk of infection is more than 50-times higher in post splenectomy patients when compared to other patients. Many complications like urinary tract infection, wound infection, ventilatory associated pneumonia, bacteremia, and intra-abdominal abscess were observed in our study. In present study most common complication evident was urinary tract infection in 26% cases followed by bacteremia in 16.6% cases, 15 cases of intra-abdominal abscess i.e. 10% cases, 7.3% cases of wound infection and 6.6% cases of ventilatory associated pneumonia. The exact reason behind the complications is yet not clear; it could be due to the underlying pathology or splenectomy itself. Some studies have suggested that the risk for any postoperative infections is 36% to 45% after splenectomy.<sup>11,12</sup>

Some of the common indications of splenectomy reported in literature are haematological diseases like thalassaemia major, thrombocytopenic purpura, idiopathic thrombocytopenic purpura etc. In present study majority of the cases belonged to trauma group and haematological disease. Among all the indications included in present study, most common complication in each group was urinary tract infection. Most of the post-operative complications can be prevented with proper care and management. Authors have recommended that early removal of indwelling catheters and invasive intravenous lines, and appropriate use of peri-operative antimicrobial therapy.<sup>13</sup> The significant high risk of complications raises a concern however proper antibiotic therapy and judicious management can minimize the complications.

## CONCLUSION

Within the limit of our study we conclude that splenectomy is found to be associated with many complications, which calls for an alternative preventive approach. Prompt diagnosis can help to minimize the complications. Very limited data is present in this regard; further studies are warranted for the same.

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