



VACCINATION TIMING IN EMERGENT VS. ELECTIVE SPLENECTOMY: DOES IT INFLUENCE THE INFECTION RISK? A RETROSPECTIVE STUDY IN THE ROYAL MEDICAL SERVICE IN JORDAN

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ABSTRACT

Introduction: The spleen is an immunologically important organ; it plays a vital role in the defense mechanism against certain organisms. All patients who are planned for elective splenectomy should receive vaccines before the procedure; those who undergo emergent splenectomy should receive the vaccine after the procedure. This study aims to compare the infection risk between the preoperative and postoperative vaccination. **Methodology:** It's a retrospective comparative study of 230 patients who underwent splenectomies at the Royal Medical Service Hospitals in Jordan over a 2-year duration, from July 2022 to June 2024. Data collected from patients' files and from the National Electronic Medical Records System (HAKEEM) from all military hospitals in Jordan. Patient demographics, time of surgery, time of vaccination, and history of fever or infection after the procedure were recorded. Then all the data was statistically collected and analyzed. The inclusion criteria were all cases that underwent splenectomies as emergent or elective causes and received the Hemophilus, meningococcal, and pneumococcal vaccines before and after the procedure. The study sample is divided into two groups for comparison: Group A (n=110), those who underwent the elective procedures, and Group B (n=120), who underwent emergent splenectomy. Then we followed the patients' data revisions in the emergency department and clinics for 2 years to compare the infection risk after procedures and vaccinations. **Results:** A total of 230 patients underwent splenectomy, Group A (n=110), who underwent elective splenectomies and received vaccination 14 days before surgery. Group B (n=120), who underwent emergent splenectomies. Male patients were more common in Group B, 85%, whereas the percentage in Group A was completely different. The female percentage accounts for about 60%. The middle-aged (26-50 years) group was the most common and accounted for 76% in both groups. The infection risk in the postoperative group was slightly higher than in the preoperative group, at 5.5% and 4.2%, respectively, with no significant difference (P=0.6). **Conclusion:** the risk of infection is almost the same in both groups, either giving the vaccination before or after the splenectomy,

KEYWORDS: Splenectomy, Post-Splenectomy Vaccination.

INTRODUCTION

The spleen is an immunologically important organ; it plays a vital role in the defense mechanism against certain organisms. All patients who are planned for elective splenectomy should receive vaccines before the procedure; those who undergo emergent splenectomy should receive the vaccine after the procedure.

Vaccination against certain bacteria is mandatory to keep patients away from colonization and infection; lastly, it may lead to generalized sepsis and what we call overwhelming post-splenectomy sepsis, which carries more than 50% risk of death. This catastrophic complication may be avoided easily by receiving the vaccine.^[1]

Bacteria like Meningococcus, Pneumococcus, and H. Influenzas are capsulated bacteria; they are resistant to the usual antibodies. Spleen secret Opsonin, a specialized antibody that attaches to the capsule and facilitates phagocytosis.

In addition to vaccination and its booster doses, all splenectomised patients need to receive prophylactic broad-spectrum antibiotics for at least 3 years, and some authors prefer using the antibiotic for life. Splenectomy is a surgical procedure that might be performed electively, like (leishmaniasis, hematological disorder, hypersplenism) or urgently (trauma). This study aims to compare the infection risk between the preoperative and postoperative vaccination.^[2,3]

METHODOLOGY

Study design and study population: It's a retrospective comparative study of 230 patients who underwent splenectomies at the Royal Medical Service Hospitals in Jordan over a 2-year duration, from July 2022 to June 2024.

Data collection: Data collected from patients' files and from the National Electronic Medical Records System (HAKEEM) from all military hospitals in Jordan. Patient demographics, time of surgery, time of vaccination, and history of fever or infection after the procedure were recorded. Then all the data was statistically collected and analyzed.

Inclusion and exclusion criteria: The inclusion criteria were all cases that underwent splenectomies as emergent or elective causes and received the Hemophilus, meningococcal, and pneumococcal vaccines before and after the procedure. Immunocompromised elderly (more than 60) and non-vaccinated patients were excluded from the study.

Study sample: The study sample is divided into two groups for comparison: Group A (n=110), those who underwent the elective procedures, and Group B (n=120), who underwent emergent splenectomy. Then we followed the patients' data revision to the emergency department and clinics for 2 years to compare the infection risk after the procedures and vaccination.

Procedure: patients should receive 3 types of vaccinations as follows: the primary dose of meningococcus vaccine 14 days before surgery, then a booster dose every 3 years, whereas pneumococcus and H. Influnza vaccines should be received 2 weeks before surgery and a booster dose every 5 years. In the case of urgent splenectomy, the primary vaccine dose should be received 2 weeks after the procedure.

Outcomes: We reviewed patients' data on readmission and emergency referrals to measure the infection rate and compare infection risk between the two groups.

Ethical approval: The study was approved for publication by the ethics committee of the Royal Medical Service, reference number 30/8/26.

RESULTS

A total of 230 patients underwent splenectomy, Group A (n=110), who underwent elective splenectomies and received vaccination 14 days before surgery. Group B (n=120), who underwent emergent splenectomies. Male patients were more common in Group B, 85%, whereas the percentage in Group A was completely different. The female percentage accounts for about 60%. The middle-aged (26-50 years) group was the most common and account for 76% in both groups. The infection risk in the post-operative group was slightly higher than the preoperative group, 5.5% and 4.2%, respectively, with no significant difference; the P value was 0.6.

DISCUSSION

All patients who planned for elective splenectomy received the vaccine 14 days before surgery to guard against infection and to allow the immune system to have a defense mechanism against encapsulated bacteria. According to the international recommendation, all gastroenterology society advice to give the vaccine 14 days before the procedure. At our center, KHMH, we follow the international protocol.^[4,5]

In addition, in the emergency case and if the splenectomy performed due to trauma, the optimum timing for vaccination will be after 14-30 days from the procedure as recommended by Webb CW and Crowell K, Cravens Din, their study, which was published in August 2006. At our center, we give the vaccine 2 weeks after splenectomy.^[2]

Furthermore, the percentage of male in Group A (emergent splenectomy) is higher than female, whereas the female ratio in elective group is high, our results just resemble the result of ofBonanni and Grazzini M in their study.^[1]

Lastly, in all literature review about the vaccination timing, the rate of infection is higher in emergent group, and the P-value is more than 0.6, because of that, the difference is not significant, and the risk of infection is slightly lower in the elective cases.^[5-13]

Table 1: Shows differences between the open and laparoscopic groups regarding age, gender, type, and the site of hernia.

Variables	Elective group	Emergent group	Test value	p-value
Age / year Mean (SD)	54.71 (15.42)		-0.043 ^t	0.966
Gender				
Male	40%	60%	2.666 ^{x2}	0.102
Female	(60%)	40%		
Risk of infection	4.2%,	5.5%	28.306 ^{x2}	<.0.6

CONCLUSION

The risk of infection is almost the same in both groups, either giving the vaccination before or after the splenectomy.

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