



STUDY OF COMPLICATIONS AND EFFECTS OF LAPAROSCOPIC SPLENECTOMY

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Article history:	Abstract:
<p>Received: August 26th 2021 Accepted: September 26th 2021 Published: November 1st 2021</p>	<p>This paper focuses on the knowledge of the Complications and Effects of laparoscopic splenectomy, where 100 patients were collected from Teaching Hospital, Baghdad, Iraq, where the average age through real value extraction and standard regression was 39 ± 3.3 for men, who were 60 patients, and for women, the average age was 38.3 ± 4.5 with 40 patients</p> <p>The spleen was removed and during this operation 3 to 4 small holes are made in the abdomen through which the spleen is removed. It is preferred because it results in a small wound, the operation is less painful and the patient can leave the hospital within a day or two</p> <p>In some cases of spleen enlargement or disease, the treatment is to eradicate it. This eradication has no effect on the body in general. A person can live without the spleen a normal life. Among the diseases or problems that require the removal of the spleen as a result of an accident or a strong blow to it, and this usually results in severe bleeding from the spleen. ITP (Idiopathic Thrombocytopenic Purpura,): This disease is considered one of the most common reasons for spleen removal, and in this disease there are antibodies from the spleen that break platelets in the blood</p>

Keywords: LAPAROSCOPIC, SPLENECTOMY, Complications, diseases, ITP.

INTRODUCTION

The splenectomy occupies one of the main places among the organs of the immune system, it is responsible for the destruction of blood-forming elements, ensures the activity of the hematopoietic system and hemostasis however, with some blood diseases such as Thalassemia, microcytic anemia, immune thrombocytopenia and many others, splenectomy becomes a necessary treatment procedure[1].

Since early 1990's, when it was inaugurally introduced, laparoscopic splenectomy has been performed with excellent results in terms of intraoperative and postoperative complications. Nowadays laparoscopic splenectomy is the approach of choice for both benign and malignant diseases of the

spleen. However some contraindications still apply[3]. The evolution of the technology has allowed though, cases which were considered to be absolute contraindications for performing a minimal invasive procedure to be treated with modified laparoscopic approaches.

Currently, the priority surgical treatment of patients with diseases of the blood system that require splenectomy has become laparoscopic splenectomy, However, at the same time, the number of shunts in Opening the abdomen due to bleeding, trauma to neighboring organs in some cases, especially when giant splenomegaly, surgeons initially perform splenectomy from Classic access large volume of the spleen, periosplenitis, short and infiltration of the gastro-splenic ligament leads to the fact that during



open access, manipulations are related to the technique and some, for example, filling the spleen with the surface of the diaphragm, the surgeon performs his work in limited conditions[2,3,4,5].

Contemporary researchers as an open approach to splenectomy mainly use the left oblique abdominal incision[6,7].

When performing a laparotomy, especially in circumstances with limited time, the surgeon determines its size subjectively and can make it unnecessarily large and too small a surgical access that is too large leads to additional trauma and unreasonably small reduces the efficiency of the operating reception which sometimes has serious consequences[8,9].

Any surgical intervention, including removal of the spleen, is accompanied by the risk of complications, These can be: bleeding or damage to nearby organs during the operation, the addition of infection in the postoperative period, In addition, a hernia may appear at the incision site. There are also a number of negative factors that aggravate the situation: overweight, chronic diseases, problems with blood clotting, etc. To avoid complications, you should contact a medical facility where an individual approach is practiced, and treatment is carried out by experienced specialists. In addition, the risk of complications today can be minimized thanks to the modern equipment of the clinic [10,11,12].

After the operation, regardless of the complexity, a number of negative symptoms can develop: the spleen participates in the process of hematopoiesis, and its removal negatively affects the work of the whole organism [13,14].

After removal, the body will take some time to rebuild, after which it will be possible to replace the lost organ But during this period, immunity decreases, the body becomes susceptible to infections, viruses, and even hypothermia aim [15,16].

In addition, changes in the composition of the blood may appear, which can lead to thromboembolism, possible violations of the liver, cholecystitis, etc. to avoid such violations [17].

MATERIAL AND METHOD

During the surgical intervention, the ligamentous apparatus of the organ is sequentially crossed, the vessels are ligated, after which the spleen is removed, which was previously placed in a closed container thanks to the use of video endoscopy technology. During laparoscopy, all manipulations are visually controlled, while viewing image on screen.

After extraction, the peritoneal organs are reviewed, if necessary, drainage is performed. In the

course of surgical treatment, autologous transplantation of the patient's spleen tissue into the greater omentum can be performed, the purpose of which is to preserve the immunological properties.

Eventually, depending on the indications, a locking drain can be installed in the peritoneal cavity for a few days for the outflow of fluid. The operation is performed under general anesthesia and takes about 90 minutes.

Splenectomy can be performed in two ways - it can be an abdominal incision (opening) and a laparoscopic splenectomy. The technique of the operation is distinguished mainly by the fact that with laparotomy of the splenectomy, the spleen is accessed through a large incision in the left hypochondrium, which in itself is a shock to the patient.

Laparoscopic splenectomy involves the creation of a few small holes in the abdominal wall, through which the organ is accessed. This greatly reduces the risk of complications during and after surgery.

Laparoscopy is performed using a special laparoscopic instrument - a laparoscope. It is equipped with a video camera and a light source, which allows to monitor the progress of the operation from the monitor, and enlarge the image if necessary.

RESEARCH OBJECTIVES

1. To study the complications of open (conventional) and laparoscopic splenectomy
2. Identify the factors of predicting technical difficulties and complications from- covered (conventional) and laparoscopic splenectomy
3. Justify the way of objectifying the choice of technology and individual an alternative version of laparoscopic splenectomy on a three-dimensional computer Term model based on magnetic resonance imaging data
4. Develop contraindications for laparoscopic splenectomy with splenomegaly
5. Develop and clinically validate the concept of individual preoperative planning, preparation and conduct of laparoscopic splenectomy

SCIENTIFIC MODERNITY OF PAPER (RESEARCH)

A combination of increased anatomical complexity with the splenectomy procedure is considered an anatomical risk and In the conditions of the anatomical experiment, the left subcostal oblique abdominal incision was best parameters for access to the spleen at the site of the center of the abdominal incision and a prediction technique was developed and presented in the form of an algorithm Optimal practical



access to the spleen, depending on Features of the patient's clinical anatomy, allowing to achieve Optimum treatment results for patients

STATISTICAL ANALYSIS

Data and demographic information were collected and analyzed using the statistical analysis program SPSS Soft 25, where the data is displayed by relying on categorical variables in the form of n (%), in addition to the ages were evaluated based on the amount of recurrence that exists in relation to age in addition to mean +SD Data analysis and P value extraction were also performed

RESULT

100 patients were collected from Yarmouk Hospital in Baghdad, Karkh - Iraq. The samples were divided into 60 men group and 40 women group as shown in the figure below.

Figure 1- distribution of patient depend on sex

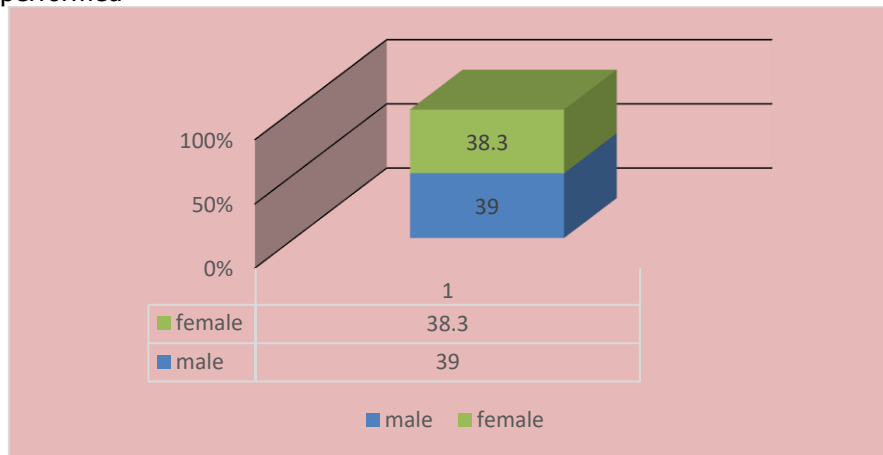


Figure 2 – distribution of patient depend on age

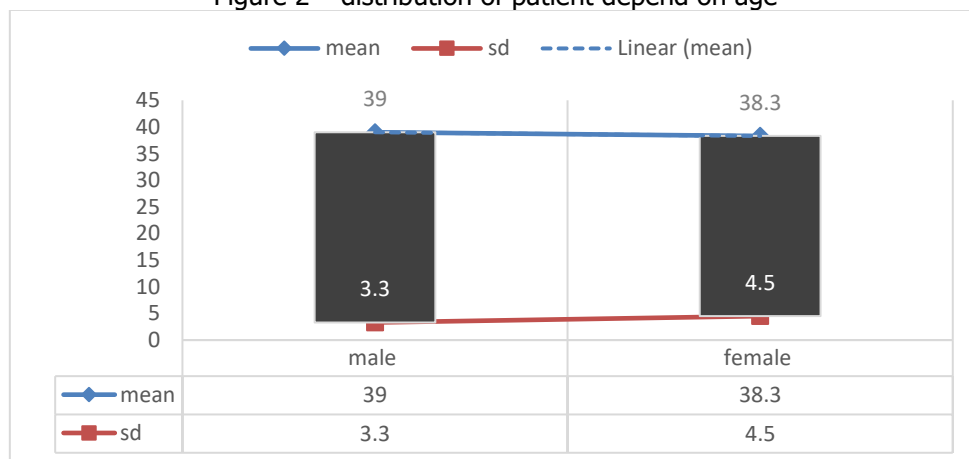


Table 1- Nosological forms in operated patients

T	N
Aplastic anemia	55%
Immune thrombocytopenia	25%

Autoimmune hemolytic anemia	7%
Hereditary hemolytic anemia	5%
Diseases of the blood system	8%

Figure 3 – p value of Nosological forms

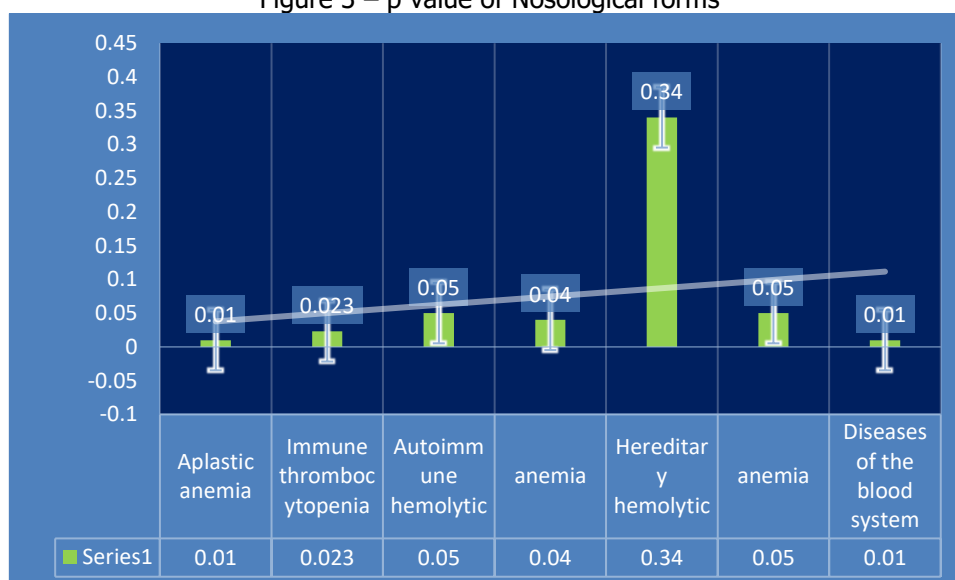


Table 3 - Characteristics of early postoperative complications splenectomy

T	N
Bleeding	2.5%
Pleuropulmonary complications	1%
Infected pancreatic necrosis	1.3%
bath fluid accumulations	1.7%
Suppuration of the wound	1.8%
Perforation of acute gastric ulcer	1.2%
stomach wall damage	1.1%

Pancreatic fistula	1.2%
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Figure 4- P value of complications splenectomy

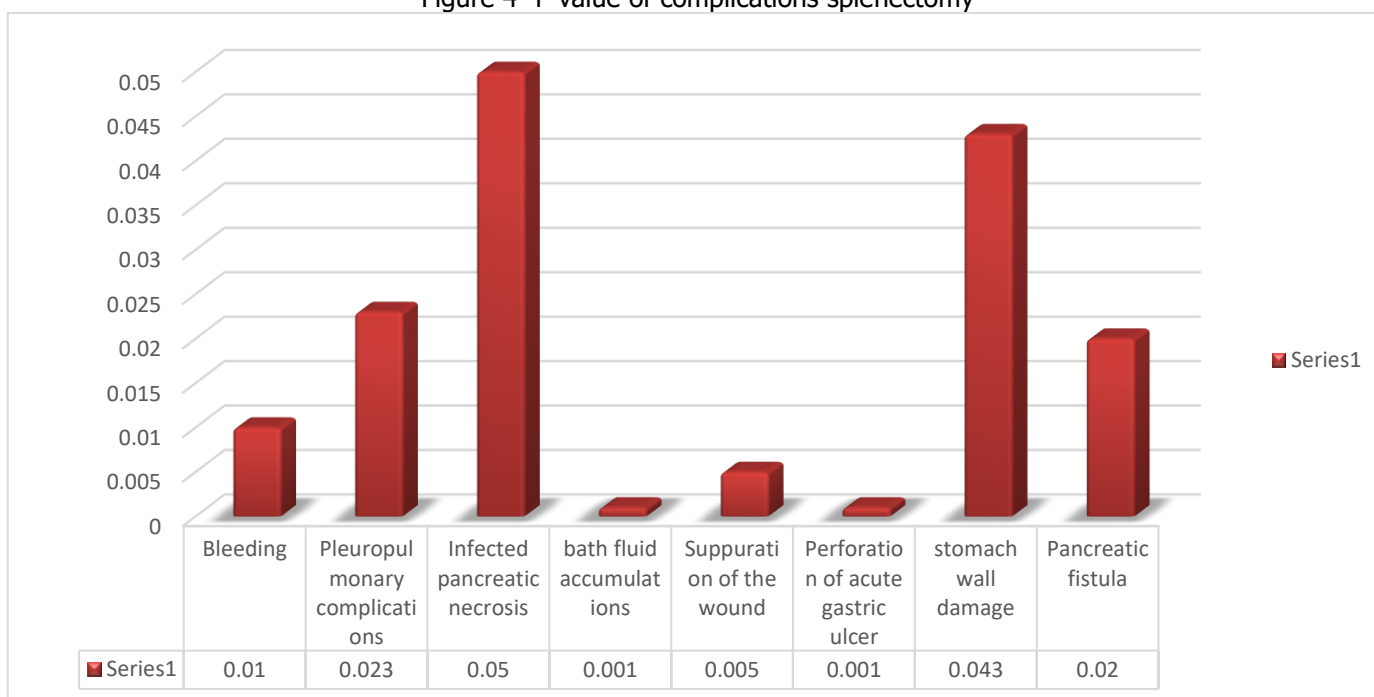


Table 4- Characteristics of the severity of complications

Grade	P %
First	2.2
second	8.3
Third	3.4
Fourth	1.1

Analysis of the data obtained showed that the volume of blood during the operation In case of loss, the duration of laparoscopic open splenectomy is not dependent Shedding the platelet count Blood loss after In addition to that, comparative analysis that

intraoperative blood volume losses and drug duration do not depend on the platelet count has been proven The level of platelets is not a factor in diagnosing technical difficulties as shown in figure below

Figure 5- Influence of hormone therapy on the course and development of complications splenectomy

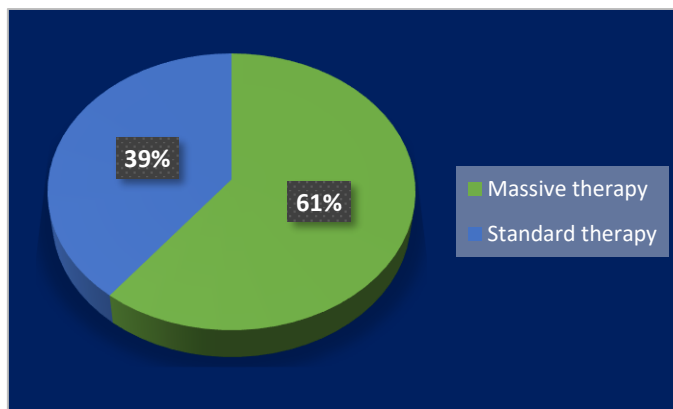


Table 5- Influence of the type of division of the splenic artery on laparoscopic splenectomy

P	Time min	Clipping, N
Backbone	25.9±6.2	6.6±0.9
distributive	39.4±6.2	11.53.1

Table 6- Impact of splenomegaly on the results of open splenectomy and laparoscopic splenectomy

	Splenomegaly 28	No splenomegaly 72
Complications	56%	28%
Duration,	70.3±5.1	74.88±5.23
Blood loss ml	502.45±21.2	511.98±14.2



Table 7- correlation

	The size spleen	Age
Blood loss	0.003	0.004
P value	0.05	0.001
Duration,	0.19	0.13
P value	>0.05	>0.05

DISCUSSION

100 patients were collected from teaching Hospital Baghdad and divided into 60% men and 40%

% of women and a splenectomy is a surgical procedure that involves removing the spleen. The operation can be performed routinely, which often occurs in hematological diseases accompanied by an enlarged spleen. For emergency indications, surgical treatment of injuries or malignant processes is recommended, in which case the operation should be performed immediately.

A healthy spleen performs a number of functions that are responsible for the functioning of the whole organism: protective, hematopoietic, metabolic, filtering. But with some diseases, the spleen ceases to function normally, moreover, this can negatively affect the condition of other organs, posing a threat to health, and even human life

Several complications associated with the removal of the spleen were identified, including bleeding, which is one of the main complications that occur during laparoscopic surgery, and it was at a rate of 5.2 percent, which occurs due to several factors, including the presence of injury in the short blood vessels and is considered a life-threatening complication and it can occur in a manner Early after surgery Another complication associated with postoperative splenectomy is immersive post-splenectomy (OPSI).

OPSI is suspected when the patient presents after splenectomy with sudden systemic infection, sometimes dermatitis and DIC, while there is no obvious site of infection although the pathogenesis of OPSI remains unclear, it is characterized by rapid and overwhelming onset.

The technical feasibility of performing a laparoscopic splenectomy is determined only by a preliminary examination of the abdominal cavity at the beginning of the operation, without excluding the possibility of diversion, that is, the transition to a traditional surgical approach where the laparoscopic approach provides an opportunity not only to remove minor traumas from the spleen, but also to take a biopsy of the liver and glands Lymph in the abdominal cavity simultaneously to assess the prevalence of the pathological process.

In order to preserve the morphological structure of the spleen, the organ completely removed from the abdominal cavity is removed in an internal bundle through an additional small access in the left hypochondrium.

Analysis of the obtained data showed that there were statistically significant differences in the number of Complications in patients with different classification forms It has been shown that after surgery bleeding always had a local source and was not a direct result of thrombocytopenia to study the effect of platelet levels, duration of intervention and intraoperative blood loss in patients

CONCLUSION

We conclude from the study that if the spleen is damaged as a result of injuries, road accidents, etc., the patient may need to remove it immediately, as it results in life-threatening internal bleeding.

A person may need to remove the spleen if he suffers from rare blood disorders that do not respond to treatment, and from these include sickle cell anemia, hemolytic anemia, idiopathic thrombocytopenic



purpura, and polycythemia Vera, and laparoscopic splenectomy is faster and less painful in the recovery period than open splenectomy the spleen is then removed with a small instrument.

REFERENCES

1. Stasi, R. and Provan, D., 2004, April. Management of immune thrombocytopenic purpura in adults. In *Mayo Clinic Proceedings* (Vol. 79, No. 4, pp. 504-522). Elsevier.
2. Stasi, R., Stipa, E., Masi, M., Cecconi, M., Scimò, M.T., Oliva, F., Sciarra, A., Perrotti, A.P., Adomo, G., Amadori, S. and Papa, G., 1995. Long-term observation of 208 adults with chronic idiopathic thrombocytopenic purpura. *The American journal of medicine*, 98(5), pp.436-442.
3. Sailer, T., Lechner, K., Panzer, S., Kyrle, P.A. and Pabinger, I., 2006. The course of severe autoimmune thrombocytopenia in patients not undergoing splenectomy. *Haematologica*, 91(8), pp.1041-1045.
4. Habermalz, B., Sauerland, S., Decker, G., Delaitre, B., Gigot, J.F., Leandros, E., Lechner, K., Rhodes, M., Silecchia, G., Szold, A. and Targarona, E., 2008. Laparoscopic splenectomy: the clinical practice guidelines of the European Association for Endoscopic Surgery (EAES). *Surgical endoscopy*, 22(4), pp.821-848.
5. Khan, L.R. and Nixon, S.J., 2007. Laparoscopic splenectomy is a better treatment for adult ITP than steroids—It should be used earlier in patient management. Conclusions of a ten-year follow-up study. *The Surgeon*, 5(1), pp.3-8.
6. Kojouri, K., Vesely, S.K., Terrell, D.R. and George, J.N., 2004. Splenectomy for adult patients with idiopathic thrombocytopenic purpura: a systematic review to assess long-term platelet count responses, prediction of response, and surgical complications. *Blood*, 104(9), pp.2623-2634.
7. Vianelli, N., Galli, M., de Vivo, A., Intermesoli, T., Giannini, B., Mazzucconi, MG, Barbui, T., Tura, S., Baccaranion, M. and Gruppo Italiano per lo Studio of Adult Hematological Diseases, 2005. Efficacy and safety of splenectomy in immune thrombocytopenic purpura: long-term results of 402 cases. *haematologica*, 90(1), pp. 72-77.
8. Bellows, C.F. and Sweeney, J.F., 2006. Laparoscopic splenectomy: present status and future perspective. *Expert review of medical devices*, 3(1), pp.95-104.
9. Bolton-Maggs, P.H., Langer, J.C., Iolascon, A., Tittensor, P. and King, M.J., 2012. Guidelines for the diagnosis and management of hereditary spherocytosis—2011 update. *British journal of haematology*, 156(1), pp.37-49.
10. Guizzetti, L., 2016. Total versus partial splenectomy in pediatric hereditary spherocytosis: a systematic review and meta-analysis. *Pediatric blood & cancer*, 63(10), pp.1713-1722.
11. Dubois, L. and Gray, D.K., 2010. Splenectomy: Does it still play a role in the management of thrombotic thrombocytopenic purpura?. *Canadian Journal of Surgery*, 53(5), p.349.
12. Lechner, K. and Jäger, U., 2010. How I treat autoimmune hemolytic anemias in adults. *Blood, The Journal of the American Society of Hematology*, 116(11), pp.1831-1838.
13. Katkhouda, N., Hurwitz, M.B., Rivera, R.T., Chandra, M., Waldrep, D.J., Gugenheim, J. and Mouiel, J., 1998. Laparoscopic splenectomy: outcome and efficacy in 103 consecutive patients. *Annals of surgery*, 228(4), p.568.
14. Stanek, A., Stefaniak, T., Makarewicz, W., Kaska, Ł., Podgórczyk, H., Hellman, A. and Lachinski, A., 2005. Accessory spleens: preoperative diagnostics limitations and operational strategy in laparoscopic approach to splenectomy in idiopathic thrombocytopenic purpura patients. *Langenbeck's archives of surgery*, 390(1), pp.47-51.
15. Katkhouda, N., Manhas, S., Umbach, T.W. and Kaiser, A.M., 2001. Laparoscopic splenectomy. *Journal of Laparoendoscopic & Advanced Surgical Techniques*, 11(6), pp.383-390.
16. Velanovich, V. and Shurafa, M., 2000. Laparoscopic excision of accessory spleen. *The American journal of surgery*, 180(1), pp.62-64.
17. Gigot, J.F., Mabrut, J.Y., Matairie, S., Jamar, F., Ferrant, A., Van Beers, B. and Gianello, P., 2002. Failures following laparoscopic splenectomy and their management with special reference to accessory spleens and splenosis. *Problems in General Surgery*, 19(3), p.80.