DOI: https://doi.org/10.2298/SARH200223052M
UDC: 616.411-089

CASE REPORT / ПРИКАЗ БОЛЕСНИКА

Accessory spleen diagnostically hidden, laparoscopically removed – case report and review of the literature

Vladimir Milosavljević[1], Boris Tadić[2,3], Nikola Grubor[2,3], Dragče Radovanović[4], Slavko Matić[2,3]

[1]Gracia Medica Polyclinic, Belgrade, Serbia;
[2]Clinical Centre of Serbia, Clinic for Digestive Surgery – First Surgical Clinic, Belgrade, Serbia;
[3]University of Belgrade, Faculty of Medicine, Belgrade, Serbia;
[4]Clinical Centre of Kragujevac, Clinic for Digestive Surgery, Kragujevac, Serbia

SUMMARY

Introduction Accessory spleen represents ectopic spleen tissue separated from the body of the spleen, with the percentage share of 10–15% in a population.

Case outline We present a female patient in which immune thrombocytopenic purpura was diagnosed 12 years previously and, after a failed initial treatment, it was decided by a hematologist to perform a laparoscopic splenectomy. The mentioned operation was carried out in a safe and efficient manner wherein the accessory spleen was detected and removed intraoperatively. The operative and postoperative course passed without any complications. The definitive histopathological findings confirmed previously set hematological diagnosis.

Conclusion The laparoscopic approach is a superior modality in terms of diagnostic and therapeutic procedures when it comes to surgical removal of the accessory spleen. Taking into consideration the advantages of this approach presented and proven in literature, even in the case of diagnostically or intraoperatively overlooked accessory spleen or *de novo* discovered after the operation, there should be no dilemma which surgical approach should be applied.

Keywords: spleen; accessory spleen; laparoscopy; splenectomy

INTRODUCTION

The accessory spleen (AS), also known as splenikul or splenul, represents the inherited focal point of the spleen tissue separated from the main body of the spleen. It occurs due to splenic buds not merging during the organogenesis [1]. AS is represented by 10–15% in the general population. In most cases, its dimension is 1–2 cm. The most frequent localization of AS is the posteromedial side of the spleen, spleen hilus, followed by the tail of the pancreas, gastrocolic ligament, large omentum [2].

Diagnostics, or intraoperative detection and surgical removal of the AS is of particular importance in the case of hematological diseases of the spleen. Otherwise, they may grow and lead to a recurrence of the hematological disease for which the patient is subjected to splenectomy [3].

The AS is mainly verified as an incidental finding or are accidentally detected as part of the diagnostic procedures for other diseases. The initial diagnostics are ultrasonography of the abdomen, computerized tomography (CT), and nuclear magnetic resonance (NMR) [4].

Surgical removal of the AS is the only curative treatment modality. As the laparoscopic splenectomy has become the gold standard in the treatment of most diseases of the spleen, it should certainly be given preference over the traditional surgical approach for the treatment of the AS. In addition, laparoscopic splenectomy is a diagnostic and therapeutic option with many benefits [1, 5].

The aim of our work is to present a case in which the laparoscopic splenectomy was a diagnostic tool, in addition to the therapeutic effect, superior comparing to preoperative imaging diagnostics for the detection of the AS in immune thrombocytopenic purpura (ITP).

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Written consent to publish all shown material was obtained from the patient.

CASE REPORT

We present a female patient aged 26 years, in which the diagnostics were performed and the primary diagnosis was set by the hematologist. Specifically, the patient was diagnosed with ITP 12 years previously. Since then, she was treated and followed-up by the hematologist. Primary medication (e.g. corticosteroid, immunomodulatory) therapy did not result in the expected therapeutic response. Accordingly, the consultative decision on surgical treatment was

Received • Примљено: February 23, 2020
Revised • Ревизија: July 27, 2020
Accepted • Прихваћено: July 28, 2020
Online first: September 2, 2020

Correspondence to:
Slavko MATIĆ
Clinic for Digestive Surgery
Clinical Centre of Serbia
Dr Koste Todorovića 6
11000 Belgrade, Serbia
profslavkomatic@gmail.com

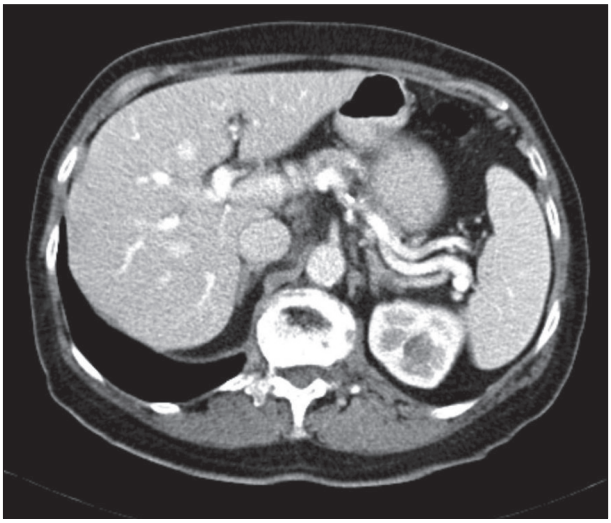

Figure 1. The appearance of the preoperative computed tomography examination

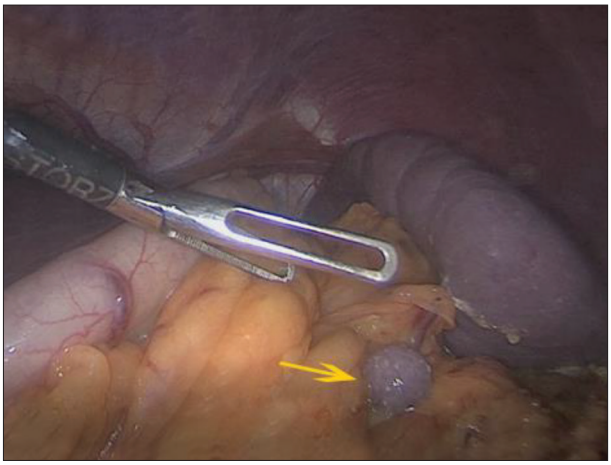

Figure 2. The appearance of the accessory spleen identified intraoperatively (arrow)

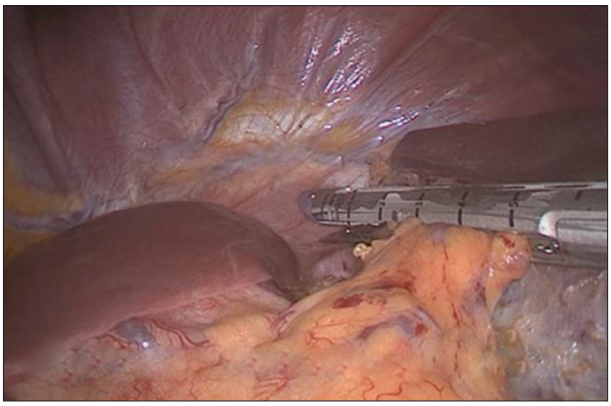

Figure 3. The appearance of the endo-stapler used for hilum of the spleen

Figure 4. The appearance of the spleen removed from the abdomen in fragments

Figure 5. Image of the accessory spleen specimen

made by the hematologist and the surgeon. The laparoscopic splenectomy was to be done.

Upon admission to the clinic, the patient underwent the preoperative CT of the abdomen, where the spleen of normal size was seen, with a diameter of 110 mm in the craniocaudal direction (Figure 1). The patient was set on an operating table in the right lateral position. After adequate preoperative preparation under general endotracheal anesthesia, initially, an artificial pneumoperitoneum was created by using the Veress needle. A port for the laparoscope was placed infraumbilically, and after introducing the camera with a (30°) folded angle, the other working ports were placed in typical locations for the operation. The inspection of the abdomen did not indicate any anomalies. During the mobilization of the spleen, in close proximity to the hilus, an AS of about 1 cm in diameter was identified intraoperatively (Figure 2), which had not been seen at the previous diagnostics. With the use of a bipolar electrosurgical device (LigaSure, Medtronic, Minneapolis, MN, USA) it was entirely removed. Next, we started the liberation and complete mobilization of the spleen by the cutting of splenic ligaments and of short gastric vessels, also with the use of the LigaSure device. Hilus of the spleen was managed by an endovascular stapler with staple feed (Figure 3). After the management of vascular structures of the hilus, the spleen was completely released and placed into a polythene bag for extraction, within which we performed an instrumental destruction of the spleen, which was completely removed from the abdomen in fragments (Figure 4). A silicone abdominal drain was placed in the left subphrenic space, the gas was sucked out and operative incisions were reconstructed by anatomical layers. The prepared AS was

removed entirely from the abdomen (Figure 5) and, with the other fragments of the spleen, was sent for definitive histopathological verification.

The operative and postoperative course was uneventful. The abdominal drain was removed during the second postoperative day, the patient was released from the clinic three days after the surgery with prescribed antibiotic prophylaxis and mandatory postsplenectomy immunization according to the current literature guidelines and according to the guidelines for the prevention of postsplenectomy infections [6, 7].

One month after the operation, a follow-up abdominal ultrasound examination showed normal findings, as did an NMR examination performed six months post-surgery. At the moment of writing the report, the patient is still being followed-up and is monitored by the hematologist.

Definitive histopathological findings of the revised spleen tissue confirmed that there were changes that indicated immune thrombocytopenic purpura.

DISCUSSION

The AS represents ectopic splenic tissue that is separated from the spleen. AS occurs because of that splenic buds placed in dorsal mesogastrium do not merge during the fifth week of embryonic organogenesis [1]. The most common localization of the AS is near the hilum and vascular pedicles of the spleen, the tail of the pancreas, followed by left testicle or ovary due to splenogonadal fusion. It can often be found in the large or small omentum, mesentery of the small intestine, along the greater curvature of the stomach, in the Douglas space, and so on [2, 8, 9].

In the case that we present, AS was positioned near the hilum of the spleen.

Regarding the size and number, AS generally are smaller than 2 cm, rarely can be up to 4 cm in size, and everything bigger than this represents a rare occurrence. Generally, only one AS occurs, two are very rare occurrences, and a larger number is extremely rare [4].

The AS is generally discovered as an incidental finding in the framework of various diagnostic tests that rely on ultrasound, CT, NMR, abdominal scintigraphy, and other tests. Even though previously mentioned modern diagnostic methods are in use, a number of AS remain diagnostically unrecognized [4, 8].

Hematological disorders of the spleen, namely ITP, represent approximately 65% of all indications for splenectomy. These are the patients among which the AS is the most common finding during the diagnostic tests [10]. Detection of AT in hematological patients demands the utmost caution and is of great importance because of the fact that it is very important to detect it and perform a surgical removal; otherwise it can grow and take over the function of the spleen, which leads to disease recurrence [5 ,11].

In our case, despite the diagnostics conducted by hematologists, as well as preoperative imaging diagnostics, the AS was not detected, but we verified it intraoperatively.

Splenectomy represents the only modality of treatment in hematology patients. In cases of trauma or benign diseases of the spleen in which splenectomy is indicated, AS should be preserved and left in the abdomen [1, 8].

Laparoscopic splenectomy is the gold standard in the treatment of hematological diseases of the spleen, undoubtedly with all known benefits that are carried by minimally invasive surgical approach. In one of the recent studies, the superiority of it was confirmed, not only in terms of surgical treatment but also in terms of diagnostics. Namely, Koshenkov et al. [5] have published a study in which the results showed that the intraoperative detection of AS during laparoscopic splenectomy was 100%, while the percentage in pre-operative CT diagnosis was 12.5%.

In cases of a diagnostically and intraoperatively overlooked AS, which is detected during the control diagnostic testing, a repeated surgery with laparoscopic approach should certainly be preferred due to validated greater sensitivity and specificity in the AS detection. One should also take into account possible postoperative complications related to the healing of the incision wound in the classical approach, faster recovery, and, finally, a cosmetic effect, which should not be ignored [12, 13, 14].

The AS, mainly as an incidental finding, is mostly diagnosed in hematological diseases of the spleen, which are most frequently encountered as an indication for splenectomy. Using cameras with 20–30 × optical zoom, a laparoscopic approach represents superior, efficient, and safe modality of detection and of treatment, with extremely rare oversight and low complication rate. In cases where the AS gets overlooked intraoperatively, at reoperation one should not have any dilemma about the approach, in view of the proven benefits of minimally invasive, compared to the classical surgical approach.

Conflict of interest: None declared.

REFERENCES

1. Fieldman L, Munshi A, Al-Mahroos M, Fried G. The Spleen. Maingot's abdominal operations. 13th ed. New York: McGraw-Hill; 2019. p. 1239–49.
2. Gill N, Nasir A, Douglin J, Pretterklieber B, Steinke H, Pretterklieber M, et al. Accessory Spleen in the Greater Omentum: Embryology and Revisited Prevalence Rates. Cells Tissues Organs. 2017;203(6):374–8.
3. Adrian PE, Eduardo TM. Spleen. In: Brunicardi FC, Andersen DK, Billiar TR, Dunn DL, Hunter JG, editors. Schwartz's principles of surgery. Tenth edition. New York: McGraw-Hill Education; 2015. p. xviii, 2069.
4. Xu SY, Sun K, Xie HY, Zhou L, Zheng SS, Wang W. Accessory spleen located in the right parietal peritoneum: The first case report. Medicine (Baltimore). 2017;96(38):e7957.
5. Koshenkov VP, Pahuja AK, Németh ZH, Abkin A, Carter MS. Identification of Accessory Spleens During Laparoscopic Splenectomy Is Superior to Preoperative Computed Tomography for Detection of Accessory Spleens. JSLS. 2012;16(3):387–91.
6. Tahir F, Ahmed J, Malik F. Post-splenectomy Sepsis: A Review of the Literature. Cureus. 2020;12(2):e6898.

7. Theilacker C, Ludewig K, Serr A, Schimpf J, Held J, Bögelein M, et al. Overwhelming Postsplenectomy Infection: A Prospective Multicenter Cohort Study. Clinical Infectious Diseases. 2016;62(7):871–8.
8. Palumbo V, Mannino M, Teodoro M, Menconi G, Schembari E, Corsale G, et al. An extremely rare case of an oversized accessory spleen: case report and review of the literature. BMC Surg. 2019;19(1):45.
9. Matić S, Knežević D, Ignjatović I, Grubor N, Dugalić V, Micev M, et al. Laparoscopic distal pancreatectomy for intrapancreatic accessory spleen: case report. Srp Arh Celok Lek. 2015;143(3–4):195–8.
10. Bagrodia N, Button AM, Spanheimer PM, Belding-Schmitt ME, Rosenstein LJ, Mezhir JJ. Morbidity and mortality following elective splenectomy for benign and malignant hematologic conditions: analysis of the American College of Surgeons National Surgical Quality Improvement Program data. JAMA Surg. 2014;149(10):1022–9.
11. Palandri F, Polverelli N, Sollazzo D, Romano M, Catani L, Cavo M, et al. Have splenectomy rate and main outcomes of ITP changed after the introduction of new treatments? A monocentric study in the outpatient setting during 35 years. Am J Hematol. 2016;91(4):E267–72.
12. Leo CA, Pravisani R, Bidinost S, Baccarani U, Bresadola V, Risaliti A, et al. Postsplenectomy recurrence of idiopathic thrombocitopenic purpura: role of laparoscopic splenectomy in the treatment of accessory spleen. G Chir. 2015;36(4):153–7.
13. Spoletini D, Lisi G, Levi Sandri GB, Grieco M, Marcellinaro R, Sorrentino F, et al. Technique of laparoscopic splenectomy. Ann Laparosc Endosc Surg. 2020;5:23.
14. Vaos G, Mantadakis E, Gardikis S, Pitiakoudis M. The role of laparoscopy in the identification and management of missing accessory spleens after primary splenectomy: A case report and literature review. J Indian Assoc Pediatr Surg. 2016;21(4):196–8.

Акцесорна слезина дијагностички непрепозната, лапароскопски уклоњена – приказ болесника и преглед литературе

Владимир Милосављевић[1], Борис Тадић[2,3], Никола Грубор[2,3], Драгче Радовановић[4], Славко Матић[2,3]

[1]Поликлиника *Gracia Medica*, Београд, Србија;
[2]Клинички центар Србије, Клиника за дигестивну хирургију – Прва хируршка клиника, Београд, Србија;
[3]Универзитет у Београду, Медицински факултет, Београд, Србија;
[4]Клинички центар Крагујевац, Клиника за дигестивну хирургију, Крагујевац, Србија

САЖЕТАК

Увод Акцесорна слезина представља ектопично ткиво одвојено од тела слезине, са процентуалном заступљеношћу 10–15% у популацији.

Приказ болесника У нашем раду представљамо болесницу код које је 12 година раније дијагностикована имунолошка тромбоцитопенијска пурпура, те после неуспеле иницијалне терапије од стране хематолога донета одлука да се уради лапароскопска спленектомија. Поменута операција је изведена на сигуран и ефикасан начин, при чему је итраоперативно детектована и уклоњена акцесорна слезина. Оперативни и постоперативни ток су протекли без компликација. Дефинитивни хистопатолошки налаз је потврдио претходно постављену хематолошку дијагнозу.

Закључак Лапароскопски приступ представља супериоран поступак у дијагностичком и у терапијском смислу када је у питању хируршко уклањање акцесорне слезине. Узимајући у обзир до сада литературно представљене и доказане предности овог приступа, чак и у случају дијагностички и/или интраоперативно превиђене акцесорне слезине или *де ново* откривене после операције, не треба да постоји дилема који хируршки приступ треба применити.

Кључне речи: слезина; акцесорна слезина; лапароскопија; спленектомија