Laparoscopic Accessory Spleen Excision with Handheld Gamma Probe in A Patient with Recurrent Immune Thrombocytopenic Purpura Who Had Undergone Open Splenectomy

A 30-year-old male patient who had undergone open splenectomy due to immune thrombocytopenic purpura was referred to our clinic for accessory spleen (AS) evaluation. Tc-99m labeled red blood cell scintigraphy showed a focal uptake in the left hypochondrium compatible with AS. On the morning of surgery, he was injected with 5 mCi of Tc-99m labeled red blood cells. Hand-held gamma probe covered with sterile sheath was directed into the abdomen via 15 mm incision at the left hypochondrium. Laparoscopic accessory splenectomy was applied by using handheld gamma probe two hours after administration of Tc-99m labeled red blood cells. Handheld gamma probe can be used like laparoscopic probe for intraoperative localisation and excision of the AS.

Key Words: Spleen, laparoscopy, gamma probe

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Accessory spleen (AS) can be found in 14-30 % of population, which is slightly higher in individuals with hematologic diseases, and in 31-43 % of patients with recurrent immune thrombocytopenic purpura (ITP).

Tc-99m labeled red blood cell scintigraphy (Tc-99m RBC) is useful for detecting of AS. Although preoperative imaging and laboratory studies help with the diagnosis of AS, its intraoperative laparoscopic identification and excision can be difficult. Laparoscopic or open surgical technique has been applied to excision of AS using intraoperative probes after administration of Tc-99m labeled heat damaged red blood cells.

In this case report, we present laparoscopic accessory spleenectomy with handheld gamma probe in a patient with recurrent ITP who had undergone open splenectomy.
A 30-year-old man was referred with persistent thrombocytopenia two years after a splenectomy for ITP. He was on a 16 mg / day steroid therapy at the time of admission to our clinic. His platelet count one month prior to admission was 42000 / mm³. Preoperative Tc-99m RBC revealed focal increased uptake compatible with accessory spleen in the left hypocondrium (Figure 1). On the morning of surgery, he was injected with 5 mCi of Tc-99m labeled red blood cells two hours before surgery. In the operating room, the patient was positioned in the supine position. A small infraumbilical incision was done. A 10-mm working port was placed with open technique. Pneumoperitoneum to 15 mm Hg was achieved. Laparoscopic camera was inserted via this infraumbilical port. 5-mm working ports were placed several centimeters right lateral to the previous midline incision. There were very dense adhesions at the prior splenectomy site between the greater curvature of the stomach, the tail of the pancreas, and the left colon. After limited blunt dissection with the laparoscope, 5-mm working ports were placed at the left hypochondrium. Laparoscopic lysis of adhesions was performed, freeing the omentum, greater curve of stomach, and transverse colon. During this stage, there was no obviously visible lesion consistent with the accessory spleen within the abdomen. The left hypochondrium port site was enlarged to 15 mm to allow passage of the hand-held gamma probe with lead shield into the abdomen (Figure 2). Port was not used, and towel clips on the skin maintained pneumoperitoneum. The hand-held gamma probe (C-Trak System; Care Wise, Morgan Hill, California) was directed into the abdomen. The handheld gamma probe we used was 17.1 cm in length and 15 mm in diameter. A brief search with the probe was performed. The count obtained was 520 / 10 sec from the liver, and 310 / 10 sec from the stomach. The highest activity was detected at the prior splenectomy site with a count of 1800 / 10 sec. Careful dissection was applied according to the gamma probe counting. The adhesions were cut and a round mass (2 × 1 cm) was searched with the aid of the handheld gamma probe. The location of the AS was adjacent to the tail of the pancreas. The activity counted by the gamma probe from the mass was 2240 / 10 sec. The soft red round mass was removed via the 10-mm port. Extracorporeal examination of the mass with
the handheld gamma probe confirmed that this mass was “hot”; the count was 1550 / 10 sec. The abdomen was checked again with the handheld gamma probe to see if any “hot” lesion was missed within the abdomen, but no counts higher than the liver were obtained. The operation was completed with the anatomical closure of the incision. The operating time was 130 min. The patient made an uneventful recovery. Platelet count was 132.000 / mm³ in the first postoperative day. Histological examination of the mass confirmed the diagnosis of AS.

**DISCUSSION**

ITP is an autoimmune disorder characterized by platelet destruction caused by autoantibodies. Splenectomy is a major treatment modality when conservative medical therapy such as oral cortico-steroids, intravenous immunoglobulin have failed. Despite an initial response rate of 70-80% with splenectomy, 15% of patients will develop a recurrent thrombocytopenia. These patients should be reexamined for the presence of an AS, because as many as 50% of these patients could have AS, and the disease could relapse weeks to years after the initial splenectomy.

Laparoscopic accessory spleen excision has gained popularity in the treatment of recurrent hematologic disease after splenectomy, with studies demonstrating shorter hospital stay, more rapid recovery, and morbidity equivalent to open surgery. The clinical cure rate in these patients varies from 20% to 73% after reoperation and successful removal of the AS. In literature, the rate of clinical response to the laparoscopic approach was similar.

Tc-99m RBC is the most sensitive test to search for functional splenic tissue. The preoperative labeling of the red blood cells with Tc-99m and using the gamma probe during the operation offers a great advantage to the surgeon in order to localize and find the small AS in an area with dense adhesions due to previous splenectomy.

Antevil et al. reported the first use of an intraoperative intracorporeal gamma probe through a laparoscopic port incision to aid in the laparoscopic localisation of an AS in patients with recurrent ITP who had undergone open splenectomy. They used Tc-99m sulphur colloid for intraoperative AS localisation by gamma probe.

Altarf et al. applied preoperative CT guided percutaneous methylene blue injection and intraoperative probes 24 hours after administration of Tc-99m labeled heat damaged red blood cells for laparoscopic AS excision in six patients (only in one of the patients, primary splenectomy was done) and five of these patients had an improvement in platelet counts.

In our study, laparoscopic accessory splenectomy was applied by using handheld gamma probe two hours after administration of Tc-99m labeled heat damaged red blood cells in a patient with recurrent ITP who had undergone open splenectomy. Handheld gamma probe was used like laparoscopic gamma probe in the laparoscopic accessory spleen excision operation helped to detect AS in a short time and without unnecessary dissection.

**REFERENCES**