OPEN ACCESS

Saudi Journal of Medicine
Abbreviated Key Title: Saudi J Med
ISSN 2518-3389 (Print) | ISSN 2518-3397 (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: https://saudijournals.com

Original Research Article

Laparoscopic Management of Hepatic Hydatid Cyst at Bangabandhu Sheikh Mujib Medical University

Dr. Md. Abul Kalam Chowdhury[1*], Dr. Md. Rassell[2], Dr. Nusrat Ara Yousuf[3], Saif Uddin Ahmed[4], AHM Towhidul Alam[5]

[1]Associate Professor, Department of General Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh
[2]Associate Professor, Department of Surgical Oncology, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh
[3]Junior Consultant Department of Obstetrics & Gynaecology, Mugda Medical College & Hospital, Dhaka, Bangladesh
[4]Professor, Department of Surgical Oncology, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh
[5]Professor, Department of General Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh

DOI: 10.36348/sjm.2022.v07i03.008 | **Received:** 19.02.2022 | **Accepted:** 23.03.2022 | **Published:** 30.03.2022

***Corresponding Author:** Dr. Md. Abul Kalam Chowdhury **E-Mail ID:** drkalambd@gmail.com
Associate Professor, Department of General Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh

Abstract

Background: Laparoscopic management of hydatid cyst in the liver is now becoming popular with the introduction of modern devices like Pallanivelue Hydatid Cyst Cannula System that makes the procedure easier, safe, and acceptable. The laparoscopic approach is not only a cosmetic issue; it also prevents the recurrence rate by preventing spillage and complete removal of endocyst. ***Objective:*** Here we assess the Laparoscopic management of hydatid cyst in the liver of 30 cases at the Department of General Surgery. ***Methods:*** It is a prospective study having ages ranging from 18 to 65 years were included in this study, from April 2015 to March 2020. Laparoscopic endocystectomy was performed in all cases with deroofing of the cyst wall and observed the outcome of the procedure. All the cases were diagnosed clinically and confirmed by ultrasonography and CT scan. ***Results:*** A total of 30 patients, 13 males, and 17 were females. The most common presenting complaints were pain in the abdomen in 20(66.66 %), a lump in the right upper abdomen in 18(60 %), jaundice 2(10 %). Hepatic Hydatid cyst diagnosed by USG, CT scan, and serological test were included in this study. The distribution of cyst sizes was: 1-5 cm 3; 6-10 cm 8; 11-15 cm 10; > 15 cm 9 patients. Abdominal ultrasound and CT scan were done to confirm the diagnosis of hepatic hydatid cyst in all patients. The right lobe was involved in 25(83.33 %), left lobe in 4(13.33 %) with both lobes in 1(3.33 %). Intraoperative complications 5(16.66%). Per operative bleeding 1(3.33%), spillage 2(6.66%), and cystic biliary communication 2(6.66%). The main operating time was 95(60-120) minutes. The mean duration of hospital stay was 5.22(3-10) days. ***Conclusion:*** The laparoscopic cyst evacuation and omentoplasty using PHS are safe for treating the hydatid cyst of the liver in the selected patients, while addressing all the conventional surgical principles of treating the hydatid cysts, like aspiration, prevention of spillage, sterilization of cysts, and partial deroofing. It aids early recovery with good cosmetic results. PHS is an ideal method for single or multiple hydatid cysts of the liver with minimal complications and morbidity.

Keywords: Laparoscopic management, Hydatid cyst in the liver, Pallanivelue Hydatid Cyst Cannula System, Laparoscopic approach.

INTRODUCTION

Echinococcus granulosus is a cestode that produces a hydatid cyst. In humans, cysts occur mainly in the liver (50-75 %) followed by lungs (25%), and 5-10% distribute along with the arterial system to other organs of the body [1]. It has the highest incidence in developing countries. In most cases, surgery is the mainstay of the management of hydatid disease of the liver. Laparoscopic treatment of hepatic hydatid disease has been increasingly popularized in the last decade due to various advantages over conventional surgery. There are various techniques described in the literature to deal with hydatid cysts laparoscopically to prevent spillage and recurrences. We are presenting our experience of 30 patients with hydatid cysts of the liver, treated laparoscopically with a technique of Palanivelu hydatid system.

METHODS AND MATERIALS

It is a prospective study where 30 patients of Hydatid Cyst of the Liver were treated laparoscopically in the department of general surgery, BSMMU from April 2015 to March 2020. All the cases were diagnosed clinically and confirmed by ultrasonography and CT scan. All patients had endocystectomy alone by using Pallanivalue Trochar Cannula System with high-pressure suction. Inclusion criteria were ultrasonogram or CT documented hydatid cyst with symptoms, peripherally located cysts, and exclusions criteria include deeply located, inaccessible posteriorly located cyst and cyst involving multi-organ. Preoperatively, all patients were given anthelmintics for 2 weeks irrespective of age. The hydatid cyst was identified on the surface of the liver, after the creation of pneumoperitoneum. The maximum bulging point of the cyst wall was identified Adhesions were gently separated where needed and the cyst surface was identified. Povidone-iodine-soaked gauze was placed on the surface of the liver lesion to prevent peritoneal contamination. Over the hydatid cyst, the PHS trocar with cannula was introduced into the peritoneal cavity directly. Once the PHS enters the hydatid cyst, the trocar was removed and the cavity irrigated through the main channel while maintaining continuous suction all the time simultaneously. The reroofing of deflated cysto walls was done with the help of an energy source. The laminated membrane and daughter cysts were carefully sucked. For any overt cyst-biliary communication, telescope was introduced into the cavity to visualize the interior. Omentoplasty was done for cases with large cysts. A drainage tube was kept near the cyst. The postoperative period was uneventful in all the cases except three, oral fluid intake was allowed on the next day of operation, and drain was removed 72 hours after the operation if no apparent bile leak. Patients were advised and discharged for follow-up at 2 weeks with 1, 3, and 6 months for USG monitoring. All patients were given Albendazole at a dose of 10 mg/Kg body weight for 6 weeks in the postoperative period.

RESULTS

The study of the laparoscopic management of hepatic hydatid cyst was conducted at Bangabandhu Sheikh Mujib Medical University**.** A total of 30 patients, 13 males and 17 females having ages ranging from 18 to 65 years were included in this study.

Table 1: Age distribution (N-30)

Age (in years)	Frequency (n)	Percentage (%)
10-20 yrs.	2	6.66
21-30 yrs.	5	16.66
31-40 yrs.	8	26.66
41-50 yrs.	10	33.33
51-60 yrs.	3	10.0
61-70 yrs.	2	6.66

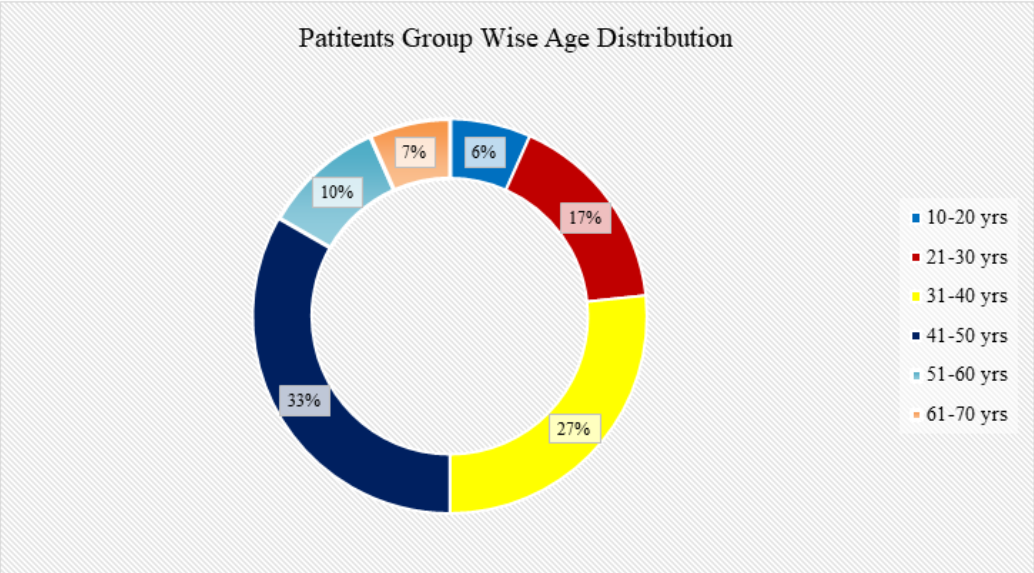

Figure I: Patients Age Group Wise Distribution

The most common presenting complaints were pain in the abdomen in 20 patients (66.66 %), a lump in the right upper abdomen in 18 patients (60 %), jaundice in 2 patients (10 %).

Table 2: Presenting complaints (N-30)

Presenting Complaints	Frequency (n)	Percentage (%)
Abdominal pain	20	66.66
Lump in the right upper abdomen	18	60.0
Jaundice	2	6.66

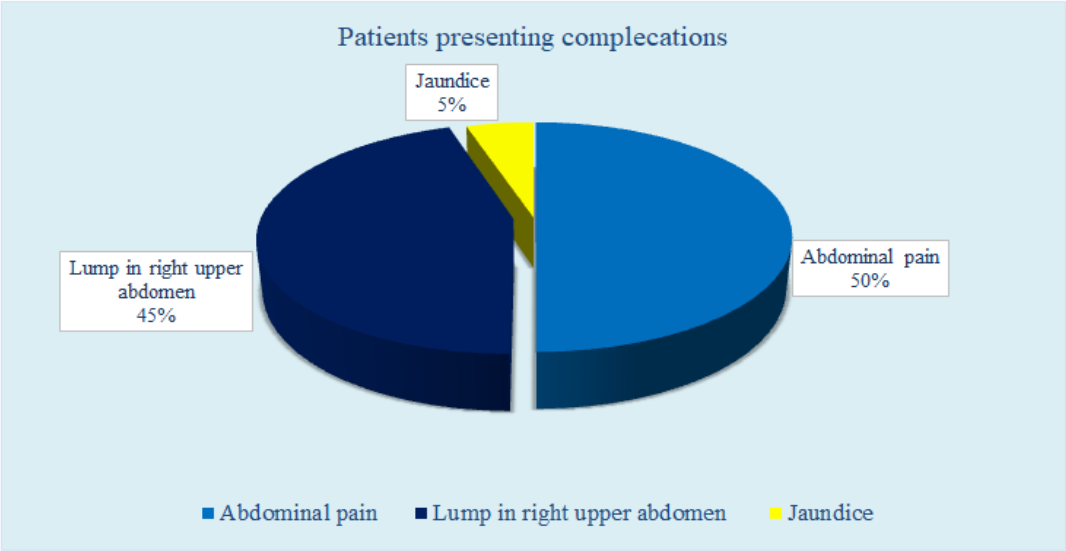

Figure II: Patients presenting complications

Hepatic Hydatid cyst diagnosed by USG, CT scan, and serological test were included in this study. The distribution of cyst sizes was: 1-5 cm 3; 6-10 cm 8; 11-15 cm 10; > 15 cm 9 patients.

Table 3: Distribution of Cyst Size (N-30)

Cyst Size	Frequency (n)	Percentage (%)
1-5cm	3	10.0
6-10 cm	8	26.66
11-15 cm	10	33.33
15-20 cm	9	30.0

Abdominal ultrasound and CT scan were done to confirm the diagnosis of hepatic hydatid cyst in all patients. Single hydatid cyst was found in 28 patients, and 2 patients had multiple cysts. The right lobe was involved in 25(83.33%) patients, the left lobe in 4(13.33 %) patients, both lobes in 1(3.33%) patient.

Table 4: Location of Cyst in Liver (N-30)

Location	Frequency (n)	Percentage (%)
The right lobe of the liver	25	83.33
Left lobe of the liver	4	13.33
Both lobes of the liver	1	3.33

In most cases, there was a single cyst except two where the cysts were multiple. Laparoscopic endocystectomy was performed in all cases with deroofing of the cyst wall. Two cases needed intracorporial suturing to secure biliary leakage during operation.

Table 5: Major Complications (N-30)

Type of Complication	Frequency (n)	Percentage (%)
Per operative unusual bleeding	1	3.33
Spillage	2	6.66
Biliary Leakage	2	6.66

Five patients have intraoperative complications (16.66%). One (3.33%) has got per operative bleeding and two (6.66%) have got spillage and two (6.66%) biliary communication. Two patients (6.66%) had minor bile leak postoperatively which stopped within 6 weeks spontaneously. The main operating time was 95

(60-120) minutes. There was no major wound-related complication. The mean duration of hospital stay was 5.22 (3-10) days. There was no recurrence in the mean follow-up of 2 years. There was no mortality but good cosmetic results.

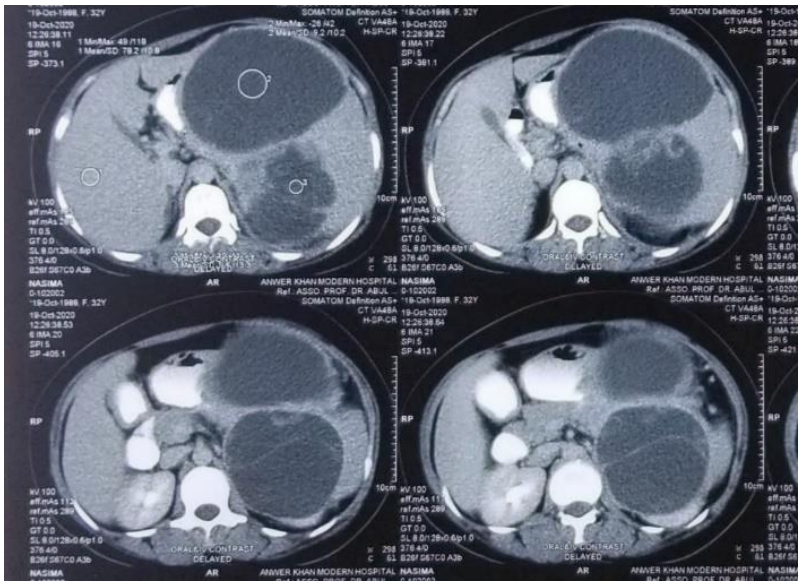

Figure III: CT scan of Hydatid cyst

Figure IV: Palanivelu hydatid system (PHS)

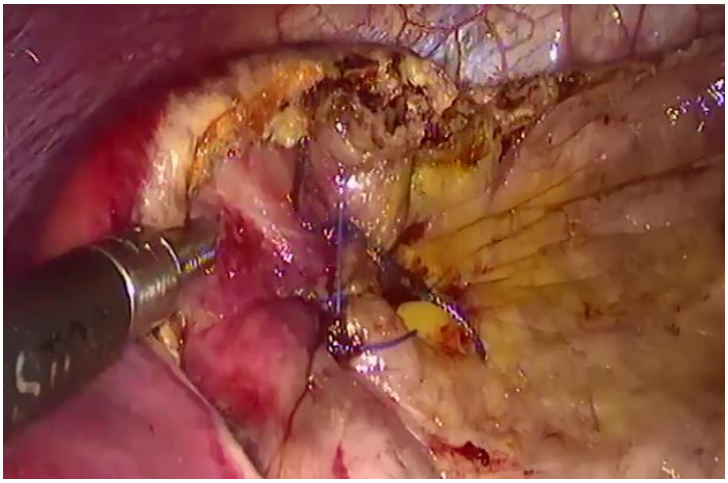

Figure V: Sutured -biliary communication

DISCUSSION

Echinococcus granulosus is the causative organism of Hepatic hydatid disease. Hydatid cyst disease of the liver is common in Asia. It can affect all age groups but is more common in the third and fourth decade [2]. In my study affected age group of the third decade and fourth decade are 26.66% and 33.33% respectively which is similar to the study of Ništcigorska J. Liver hydatid disease may be asymptomatic or patients can present with hepatomegaly, Jaundice, Urticaria, Malaise, Abdominal pain, Abdominal mass, Fever, Anorexia, and cough. Abdominal pain and mass are the common forms of presentation [3]. In our study, the most common presenting symptom was a pain in the abdomen in 20 patients (66.66%) followed by a lump in the abdomen in 18 patients (60%). In our series, a single hydatid cyst was found in 28 patients, and 2 patients had multiple cysts. The right lobe was involved in 25 patients (83.33%), left lobe in 4 patients (13.33%) with both lobes in 1 patient (3.33%). which is comparable to Ništcigorska *et al*., who reported that the most common pathology is a single cyst in the right lobe of the liver [2]. Ultrasonography (USG) and Computed tomography (CT) are both valuable imaging methods for the diagnosis of hepatic hydatid disease [4]. In terms of treatment for patients with hydatid disease of the liver, surgery is the gold standard. First published report of laparoscopic treatment of hydatid cyst of the liver Bickel A *et al*., (1994) [5] and was followed soon thereafter by the first report of anaphylactic shock complicating laparoscopic treatment of hydatid cysts of the liver by Khoury G *et al*., (1998) [6] but in our series, there was none having this major complication. In fact, an exaggerated fear of anaphylaxis seemed to discourage surgeons from more widely adopting minimal access techniques for the treatment of hydatid cysts [7]. Laparoscopy is ideal in patients with superficial and fluid-filled cysts [8]. Laparoscopic pericystectomy can be regarded as the gold standard for the management of small, peripherally located hydatid cysts lying away from major vessels [9]. Therefore, we included mostly the peripherally situated cysts. Morbidity associated with open surgery can be reduced by using the laparoscopy technique [10]. Laparoscopy has more advantages against open surgery. As incidences of anaphylaxis and spillage are minimal with laparoscopy, several reports have confirmed the advantage of a laparoscopic procedure for the treatment of a hydatid cyst of the liver [11]. Laparoscopic procedure involves aspiration, installation of scolicidal agent, removal of all contents, deroofing, and converting the cyst into a large size cavity. Various surgeons have used different aspiration suction devices, like simple needle aspiration [12], suction with liposuction device [13], large-diameter transparent cannulas [14], Palanivelu hydatids system [15], special trocar used to suspend the cyst against the abdominal wall [16], and an aspirator grinder apparatus [17]. The vacuum seal created using PHS (Palanivelu hydatid system) described by Palanivelu *et al*., (2006) [15] helps maintain the negative pressure inside the system and segregates the high intraabdominal pressure due to pneumoperitoneum for the low-pressure zone of PHS. PHS not only prevents any spillage of hydatid fluid but also assists complete evacuation of the cyst content and allows intracysto visualization for cyst-biliary communication. Either alone or deroofing with endocystectomy or liver resection, laparoscopic management of liver hydatid cysts consists of aspiration and instillation of a scolicidal agent in the cyst and aspiration of contents [18]. The cyst wall can be excised with the help of electrical diathermy or with a harmonic scalpel and endo-GIA stapler [19]. The cavity can be obliterated with the greater omentum to decrease the chances of collection and of recurrence [20, 21]. We have performed all the cases using the Palanivelu hydatid system. Mean operative time in this series was 95 (60-120) minutes which is comparable to the literature showing mean operative time ranging 52-102 min [15, 22-25]. Baskaran V *et al*., [25] had five intraoperative spillages, and Chowbey PK *et al*., [22] had one trochar-induced bowel perforation whereas we had only five (16.66%) intraoperative complications, one excessive bleeding, two spillages, and two biliary leakages We had no recurrences in our series as compared to Seven R *et al*., [16] who had one and Baskaran V *et al*., [25] who had two recurrences. Early ambulation and minimally invasive procedure reduce hospital stay. No recurrence was found in our series.

CONCLUSION

The laparoscopic cyst evacuation and omentoplasty using PHS are safe for treating the hydatid cyst of the liver in the selected patients while addressing all the conventional surgical principles of treating the hydatid cysts, like partial deroofing, sterilization of cysts, aspiration, and prevention of spillage. It aids early recovery with good cosmetic results. PHS is an ideal method for single or multiple hydatid cysts of the liver with minimal complications and morbidity.

REFERENCE

1. Gode, D. (2010). Laparoscopic management of hydatid cyst of the liver. *J Indian Med Assoc*, 108, 672-673.
2. Ništcigorska, J., Sluzar, T., Marczewska, M., Karpińska, E., Boroń-Kaczmarska, A., Morańska, I., & Daniel, B. (2001). Parasitic cysts of the liver-practical approach to diagnosis and differentiation. *Medical science monitor: international medical journal of experimental and clinical research*, *7*(4), 737-741.
3. Haddad, M. C., Al-Awar, G., Huwaijah, S. H., & Al-Kutoubi, A. O. (2001). Echinococcal cysts of the liver: a retrospective analysis of clinico-radiological findings and different therapeutic modalities. *Clinical imaging*, *25*(6), 403-408.

4. Gharbi, H. A., Hassine, W., Brauner, M. W., & Dupuch, K. (1981). Ultrasound examination of the hydatic liver. *Radiology*, *139*(2), 459-463.
5. Bickel, A., Loberant, N., & Shtamler, B. (1994). Laparoscopic treatment of hydatid cyst of the liver: initial experience with a small series of patients. *Journal of Laparoendoscopic Surgery*, *4*(2), 127-133.
6. Khoury, G., Jabbour-Khoury, S., Soueidi, A., Nabbout, G., & Baraka, A. (1998). Anaphylactic shock complicating laparoscopic treatment of hydatid cysts of the liver. *Surgical endoscopy*, *12*(5), 452-454.
7. Yaghan, R., Heis, H., Bani-Hani, K., Matalka, I., Shatanawi, N., Gharaibeh, K., & Bani-Hani, A. (2004). Is fear of anaphylactic shock discouraging surgeons from more widely adopting percutaneous and laparoscopic techniques in the treatment of liver hydatid cyst?. *The American journal of surgery*, *187*(4), 533-537.
8. Sayek, I., & Cakmakci, M. (1999). Laparoscopic management of echinococcal cysts of the liver. *Zentralblatt fur Chirurgie*, *124*(12), 1143-1146.
9. Bickel, A., Loberant, N., Singer-Jordan, J., Goldfeld, M., Daud, G., & Eitan, A. (2001). The laparoscopic approach to abdominal hydatid cysts: a prospective nonselective study using the isolated hypobaric technique. *Archives of Surgery*, *136*(7), 789-795.
10. Misra, M. C., Khan, R. N., Bansal, V. K., Jindal, V., Kumar, S., Noba, A. L., ... & Kumar, A. (2010). Laparoscopic pericystectomy for hydatid cyst of the liver. *Surgical Laparoscopy Endoscopy & Percutaneous Techniques*, *20*(1), 24-26.
11. Manterola, C., Fernandez, O., Munoz, S., Vial, M., Losada, H., Carrasco, R., ... & Barroso, M. (2002). Laparoscopic pericystectomy for liver hydatid cysts. *Surgical Endoscopy and Other Interventional Techniques*, *16*(3), 521-524.
12. Hassan, H. M., & El-Sayed, O. M. (2010). Laparoscopic treatment of liver hydatid cyst. *J Med Biomed Sci*, 1, 47-51.
13. Al-Shareef, Z., Hamour, O. A., Al-Shlash, S., Ahmed, I., & Mohamed, A. A. (2002). Laparoscopic treatment of hepatic hydatid cysts with a liposuction device. *JSLS: Journal of the Society of Laparoendoscopic Surgeons*, *6*(4), 327-330.
14. Bickel, A., & Eitan, A. (1995). The use of a large, transparent cannula, with a beveled tip, for safe laparoscopic management of hydatid cysts of liver. *Surgical endoscopy*, *9*(12), 1304-1305.
15. Palanivelu, C., Senthilkumar, R., Jani, K., Rajan, P. S., Sendhilkumar, K., Parthasarthi, R., & Rajapandian, S. (2006). Palanivelu hydatid system for safe and efficacious laparoscopic management of hepatic hydatid disease. *Surgical Endoscopy and Other Interventional Techniques*, *20*(12), 1909-1913.
16. Seven, R., Berber, E., Mercan, S., Eminoglu, L., & Budak, D. (2000). Laparoscopic treatment of hepatic hydatid cysts. *Surgery*, *128*(1), 36-40.
17. Alper, A., Emre, A., Acarli, K., Bilge, O., Özden, İ., & Arioğul, O. (1996). Laparoscopic treatment of hepatic hydatid disease. *Journal of laparoendoscopic surgery*, *6*(1), 29-33.
18. Pinto, G. (2001). Results of 22 years of experience in radical surgical treatment of hepatic hydatid cysts. *Hepato-gastroenterology*, *48*(37), 235-243.
19. Sinha, R., & Sharma, N. (2001). Abdominal hydatids: a minimally invasive approach. *JSLS: Journal of the Society of Laparoendoscopic Surgeons*, *5*(3), 237-240.
20. Altinli, E., Saribeyoglu, K., Pekmezci, S., Uras, C., Tasçi, H., & Akçal, T. (2002). An effective omentoplasty technique in laparoscopic surgery for hydatid disease of the liver. *JSLS: Journal of the Society of Laparoendoscopic Surgeons*, *6*(4), 323-326.
21. Ertem, M. (2001). False recurrence of laparoscopically treated hydatid cysts. *Surgery*, *129*(3), 383.
22. Chowbey, P. K., Shah, S., Khullar, R., Sharma, A., Soni, V., Baijal, M., ... & Dhir, A. (2003). Minimal access surgery for hydatid cyst disease: laparoscopic, thoracoscopic, and retroperitoneoscopic approach. *Journal of Laparoendoscopic & Advanced Surgical Techniques*, *13*(3), 159-165.
23. Ertem, M., Karahasanoglu, T., Yavuz, N., & Erguney, S. (2002). Laparoscopically treated liver hydatid cysts. *Archives of Surgery*, *137*(10), 1170-1173.
24. Sağlam, A. (1996). Laparoscopic treatment of liver hydatid cysts. *Surgical laparoscopy & endoscopy*, *6*(1), 16-21.
25. Baskaran, V., & Patnaik, P. K. (2004). Feasibility and safety of laparoscopic management of hydatid disease of the liver. *JSLS: Journal of the Society of Laparoendoscopic Surgeons*, *8*(4), 359-363.