ORIGINAL ARTICLE

Spleen-preserving Surgery for Parasitic Splenic Lesion Management and Outcome: Single-institution Experience

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ABSTRACT

Background: Splenic cysts are rare clinical entity encountered in surgical practice. It has been classified into primary (true) and secondary (pseudo) cysts. Parasitic cysts are zoonotic disease caused by *Echinococcus granulosus*. The previous accepted standard of care was splenectomy, but the likelihood of developing overwhelming post-splenectomy infection and sepsis has pushed surgeons to adopt various techniques to preserve as much viable splenic tissue as possible and so nowadays laparoscopic partial pericystectomy or partial splenectomy with preservation of the spleen are opted as surgical options.

Objectives: The objectives of this study were to analyze the outcome and effectiveness of laparoscopic treatments and clinical manifestations of splenic hydatid cysts.

Materials and Methods: Retrospectively, we reviewed 14 patients who were operated laparoscopically for splenic hydatid cyst between July 2009 and June 2016 at B.P. Koirala Institute of Health Sciences Dharan, Nepal, over a period of 7 years. We recorded the epidemiologic characteristics of the patients, their symptoms, physical examination findings, laboratory and radiographic investigations, surgical methods implemented, length of hospital stay, post-operative complications, further follow-up, and recurrence.

Results: The mean age was 35.5 years (range 22–58 years). The left hypochondrium pain with dragging sensation was the common symptom in seven cases. 10 patients were managed with partial cystectomy with omentopexy, two patients were managed with partial splenectomy using harmonic device as energy source, and two patients were managed with splenectomy. One patient developed recurrence after 1 year managed with open splenectomy.

Conclusion: Management of a splenic hydatid cyst is not consensual. Total splenectomy is optimal because it provides definitive treatment. However, nowadays, spleen-preserving surgery is the preferred treatment in some selected patients.

Key words: Echinococcosis, partial cystectomy, spleen-preserving surgery, splenic cysts

INTRODUCTION

Echinococcosis, a zoonotic disease caused by *Echinococcus granulosus*. It remains a considerable public health problem in several Mediterranean countries.[1] Although it is most frequently localized to the liver (60–70%) and lung (20%), it can involve any organ in the body. The spleen localization is the third organ which can be affected.[2,3] Even in country where hydatid disease is endemic, the splenic localization is uncommon. It occurs in 0.5–6% of cases and it can either be isolated or concomitant with liver hydatid disease. Due to the multiple functions of the spleen, the preferred management of parasitic cystic lesions is nowadays laparoscopic partial pericystectomy or partial splenectomy with preservation of the spleen.[3] The aim of this study was to analyze the outcome and effectiveness of laparoscopic treatments and clinical manifestations of splenic hydatid cysts.

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MATERIALS AND METHODS

Retrospectively, we reviewed 14 patients who were operated laparoscopically for splenic hydatid cyst between July 2009 and June 2016 at B.P. Koirala Institute of Health Sciences Dharan, Nepal. We recorded the epidemiologic characteristics of the patients, their symptoms, physical examination findings, laboratory and radiographic investigations, surgical methods implemented, length of hospital stay, post-operative complications, further follow-up, and recurrence**.** The surgical techniques used were: A total splenectomy, a partial splenectomy, and a partial pericystectomy. When a total splenectomy was indicated, because of the risk of overwhelming post-splenectomy infection, the patients received immunization against *Streptococcus pneumoniae* and *Haemophillus influenzae* 2 weeks prior surgery or as soon as after splenectomy.

All procedures were done under general anesthesia. Antibiotic (ceftriaxone 1 g) administered with the induction of anesthesia. A 30° telescope was inserted through the left midaxillary line subcostal 10 mm port. Pneumoperitoneum was created and the cyst identified on the surface of the spleen. Another two 5 mm ports were inserted in the left subcostal anterior and posterior axillary line. To prevent accidental spillage of the cystic contents, the puncture site was covered with betadine-soaked gauzes. The cyst fluid was aspirated, 10% betadine solution (scolicidal agent) was injected into the cyst cavity and aspirated after 10 min, followed by unroofing of the cyst wall. A sucker was introduced and all the cyst contents were thoroughly evacuated and irrigated with betadine solution. The cavity was examined for any remaining contents and daughter cysts. The remaining cystic cavity was obliterated by omentum. A drainage tube was introduced into the cyst cavity for post-operative drainage.

RESULTS

A total of 14 patients were included in this study to know the laparoscopic management of splenic hydatid cyst in terms of symptoms relieve, complications, conversion, and recurrence rate. The mean age was 35.5 years (range 22–68 years). There were eight female and six male patients with female-to-male ratio was 1.33. Isolated spleen location was found in nine patients and five patients had coexistent cyst in the liver. The left hypochondrium pain with dragging sensation was common symptom in seven cases; three patients were admitted with splenomegaly, and in four cases diagnosed incidentally. Demographic, symptomatology, and surgical data of patients are shown in Table 1.

Abdominal plain X-ray, abdominal ultrasonography [Figure 1] was done in all patients. Computed tomography (CT) scan was carried out in nine patients where results of ultrasonography were equivocal and to know the exact anatomical site and size of cyst [Figure 2]. The mean cyst diameter was 9.6 cm (range 5.8–13.5 cm). The most common radiographic finding was a soft tissue mass in the left hypochondrium. 10 patients were managed with partial pericystectomy with omentopexy, two patients were managed with partial splenectomy, and another two patients were managed with splenectomy where the cyst size was large involving whole of spleen.

The partial pericystectomy [Figures 3-5] was the preferred surgical approach done in 10 patients. One patient developed anaphylaxis during immediate post-operative period but was managed successfully. Two patients had intraoperative bleeding from cyst wall managed with electrocautery and abgel packing. The complications of surgery are shown in Table 2.

The mean duration of hospitalization was 6.8 days ranged from 5 to 15 days. The post-operative course was uneventful except in one patient, who underwent partial splenectomy, latter on developed collection in splenic recess managed with percutaneous drainage. One patient developed recurrence after 1 year managed with open total splenectomy. There was no mortality in our series.

DISCUSSION

Cystic lesions of the spleen are unusual and comprise non-parasitic (pseudocysts, dermoid, epidermoid, or epithelial cysts, and cystic hemangiomas or lymphangiomas) and parasitic forms. Hydatid cyst disease remains a considerable public health problem, especially in pastoral and farming regions. Splenic hydatid disease is observed in 0.5–4% cases of abdominal hydatidosis.[3,4]

Table 1: Demographic, symptomatology, and surgical data of patients

Sex	Age	Chief complain	Coincident lesion	Size of splenic cyst	Treatment strategy
F	48	Dragging left upper abdominal pain		9.5 cm in lower pole	Partial cystectomy+omentopexy
M	29	Pain abdomen with nausea and vomiting	Liver hydatid	8.7cm in lower pole	Partial cystectomy+omentopexy
F	22	Incidental finding		7.5 cm in mid pole	Partial cystectomy+omentopexy
F	41	Incidental finding		5.8 cm in lower pole	Partial splenectomy
M	68	Pain abdomen with nausea and vomiting		13.5 cm in lower and mid pole	Total splenectomy
F	54	Left hypochondriac lump	Liver hydatid	8.3 cm in lower pole	Partial cystectomy+omentopexy
M	38	Dragging left upper abdominal pain		6 cm in lower pole	Partial splenectomy
F	53	Left hypochondriac lump		12.7 cm in lower and mid pole	Total splenectomy
M	42	Dragging left upper abdominal pain	Liver hydatid	7.8 cm in lower pole	Partial cystectomy+omentopexy
F	36	Pain abdomen with nausea and vomiting	Liver hydatid	8.9 cm in mid pole	Partial cystectomy+omentopexy
M	26	Incidental finding		7.4 in mid pole	Partial cystectomy+capitonnage
F	29	Left hypochondriac lump		8.2 cm in lower pole	Partial cystectomy+omentopexy
M	40	Dragging left upper abdominal pain	Liver hydatid	8 cm in lower pole	Partial cystectomy+omentopexy
F	43	Incidental finding		7.3 cm in lower pole	Partial cystectomy+omentopexy

Table 2: Complications of surgery

Complications	Number of patients (%)
Anaphylactic shock	1 (7.14)
Hemorrhage	2 (14.28)
Port site/wound infection	1 (7.14)
OPSI	None
Recurrence	1 (7.14)

OPSI: Overwhelming post-splenectomy infection

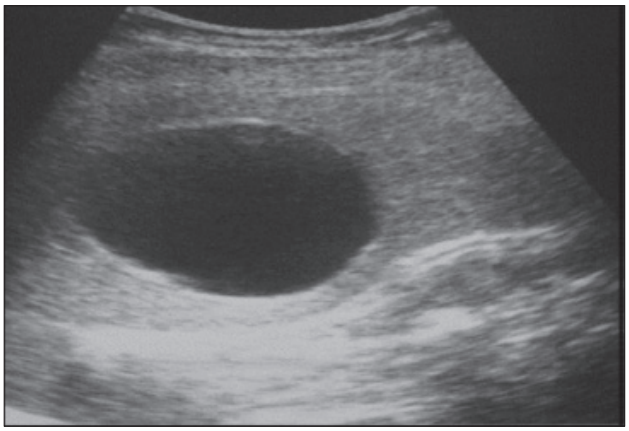

Figure 1: Ultrasonography showing splenic hydatid cyst

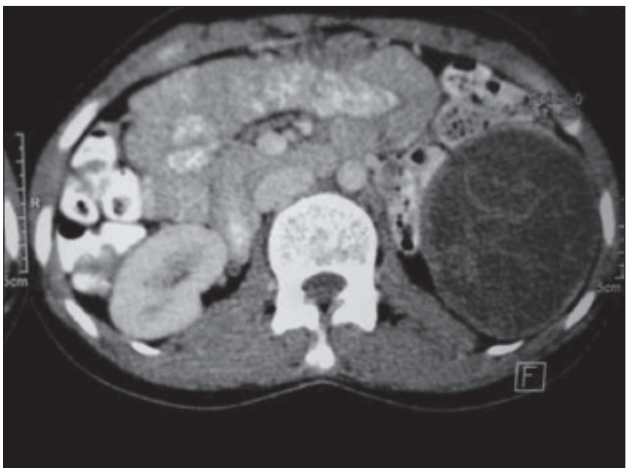

Figure 2: Computed tomography scan showing splenic hydatid cyst in lower pole

The frequency of splenic hydatid cyst in our study was comparable with that reported in the literature. Splenic hydatid cysts develop insidiously and may reach a large size. Clinical manifestations of hydatid splenic disease are usually mild and non-specific.

In our study, 50% of our patients presented with pain of the left hypochondrium. The main symptom in the literature is the mild abdominal discomfort.[2-4] Other symptoms are the left hypochondrium pain and left hypochondrium mass. Complications such as rupture into the abdominal cavity, secondary infection, or anaphylactic shock can be reported.[5] Splenic hydatid cyst can be diagnosed preoperatively and it greatly aided by the abdominal ultrasonography and CT scan.[6,7]

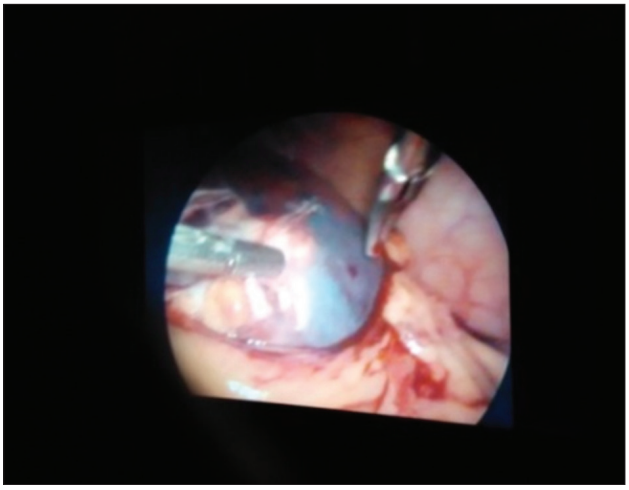

Figure 3: Laparoscopic view of splenic hydatid cyst

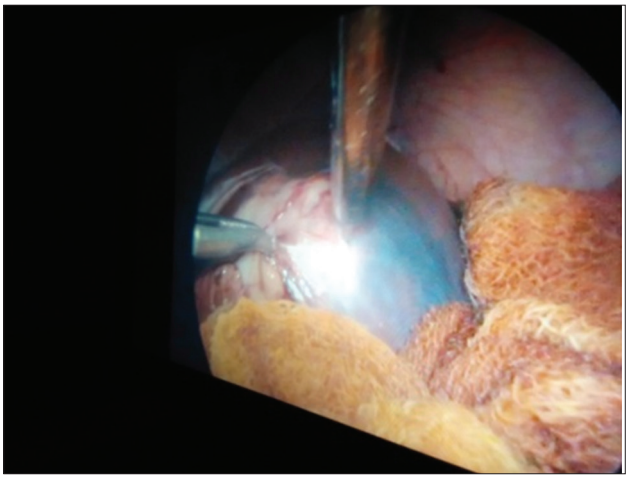

Figure 4: Suctioning of hydatid fluid and 10% betadine-soaked ribbon gauze around it

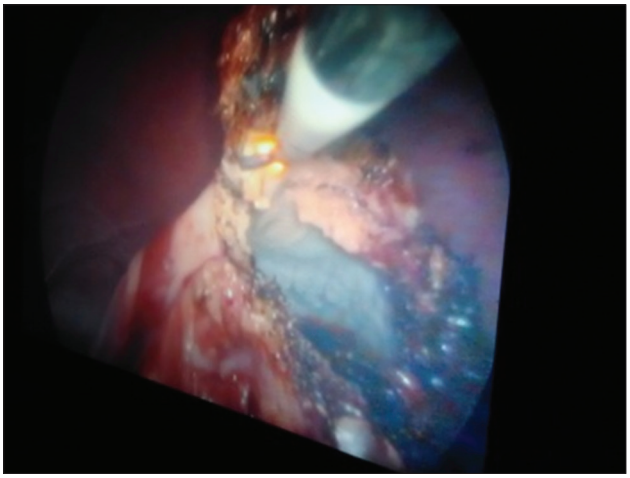

Figure 5: Laparoscopic view of partial cyst excision for splenic hydatid cyst

Atmatzidis *et al.* compared splenectomy and spleen-preserving surgery. There was no significant difference between the splenectomy and spleen-preserving groups concerning median hospital stay and post-operative complication rate.[8] The median follow-up was 52 months. Recurrence occurred in 12% patients in the splenectomy group and in 14% patients in the spleen-preserving group.

The study concluded there showed no significant increase in recurrence between the two surgical approaches.

CONCLUSION

Management of a splenic hydatid cyst is not consensual. Surgery remains the treatment of choice to avoid serious complications. Total splenectomy is optimal because it provides definitive treatment. However, laparoscopic spleen-preserving surgery is the preferred treatment in some selected patients. It also offers all the advantages of minimally invasive surgery and further studies are needed in this field because there is no universally accepted standard technique.

REFERENCES

1. Franquet T, Montes M, Lecumberri FJ, Esparza J, Bescos JM. Hydatid disease of the spleen: Imaging findings in nine patients. AJR Am J Roentgenol 1990;154:525-8.
2. Narasimharao KL, Venkateswarlu K, Mitra SK, Mehta S. Hydatid disease of spleen treated by cyst enucleation and splenic salvage. J Pediatr Surg 1987;22:138-9.
3. Safioleas M, Misiakos E, Manti C. Surgical treatment for splenic hydatidosis. World J Surg 1997;21:374-8.
4. Rasheed K, Zargar S, Telwani A. Hydatid cyst of spleen: A diagnostic challenge. North Am J Med Sci 2013;5:10-20.
5. Polat FR, Sezer A, Polat S. Laparoscopic treatment of hydatid cyst of the spleen without splenectomy: Report of a case. Surg Laparosc Endosc Percutan Tech 2009;19:e215-6.
6. Bas G, Alimoglu O, Sahin M, Uranues S. Laparoscopic partial splenic resection in hydatid disease. Eur Surg 2009;41:90-3.
7. Barbaros U, Dinccag A. Single-incision laparoscopic splenectomy: The first two cases. J Gastrointest Surg 2009;13:1520-3.
8. Atmatzidis K, Papaziogas B, Mirelis C, Pavlidis T, Papaziogas T. Splenectomy versus spleen-preserving surgery for splenic echinococcosis. Dig Surg 2003;20:527-31.