

Table (3): Shows types of operations, postoperative minor and major complications, length of postoperative hospital stay and recurrence rates

Surgical techniques	Number	%	Minor complications	Major complications	Total complications	Morbidity	Confirmed recurrence	Mean length of hospital stay
Conservative procedures:								
Partial cystectomy + omentoplasty	3	18.7 %						
Partial cystectomy + omentoplasty + CBD exploration and T-tube drainage.	1	6.2 %	1 (25 %)	1 (25 %)	2 (50 %)	-	1 (25 %)	15.5 days
Partial cystectomy + tube drainage	5	31.7 %	1 (20 %)	2 (40 %)	3 (60 %)	1 (20 %)	1 (20 %)	14.5 days
Modified procedure:								
Partial cystectomy + modified Capitonage	4	25 %	1 (25 %)	-	1 (25 %)	-	-	8.5 days
Radical procedures:								
Cystopericystectomy	1	6.2 %						
Segmentectomy	1	6.2 %	1 (33.3 %)	1 (33.3 %)	2 (66.6 %)	-	-	12.3 days
Wedge resection	1	6.2 %						
Total	16	100 %	4 (25 %)	4 (25 %)	8 (50 %)	1 (6.2 %)	2 (12.5 %)	12.7 days

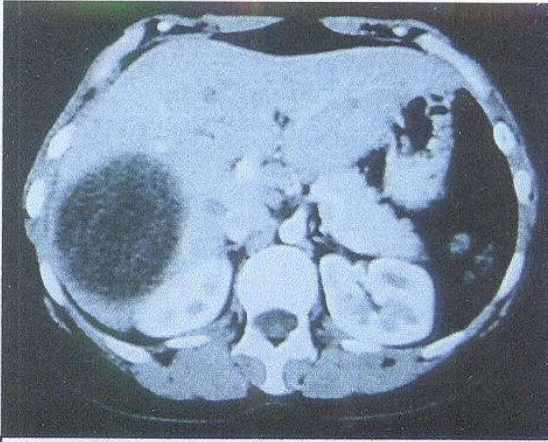


Fig. (1) CT scan showing hydatid cyst in the right lobe of the liver

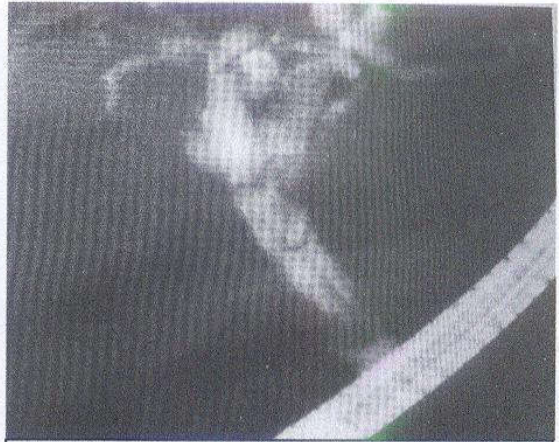


Fig. (2) Retrograde cholangiogram showing Echinococcal material in dilated bile duct

Steps of partial cystectomy with modified capitonage

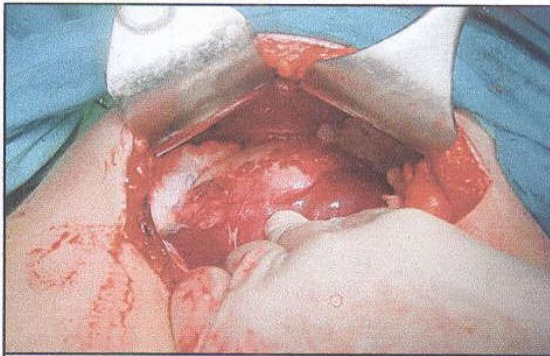


Fig (3) Exposure of the cyst through subcostal incision

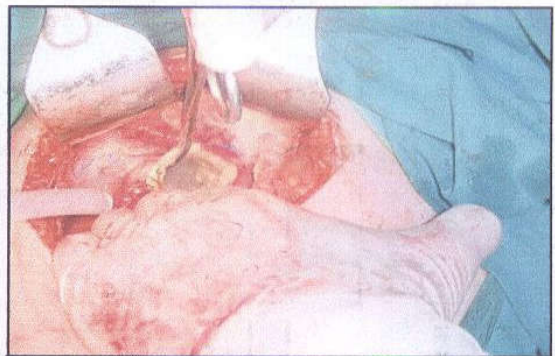


Fig (4) Sterilization of the cyst and suction of its content

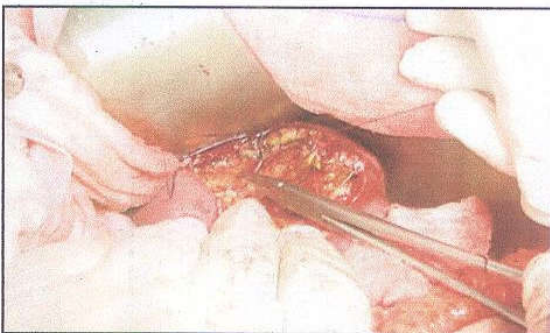


Fig (5) Suturing of the remnant of the anterior wall of the cyst to the posterior wall

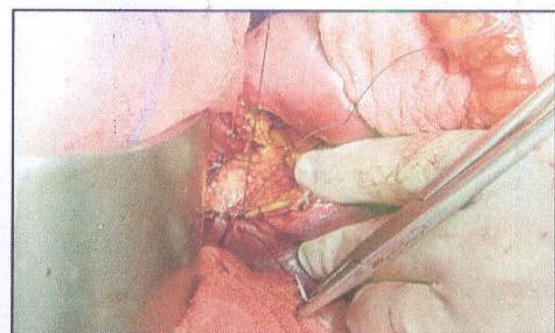


Fig (6) Formation of rosette-like capitonage and obliteration of the cyst cavity

Discussion

Cystic hydatid disease of the liver is caused by larval forms of the canine tapeworm, *Echinococcus granulosus*. Despite detailed knowledge of its life cycle and proven methods of eradication, the worm continues to thrive in many parts of the world where humans, dogs and sheep coexist (*Senyuz et al, 2001*). In the Middle East, its annual incidence ranges from 1 to 220 per 100,000 inhabitants, where it causes major health and economic problems (*WHO, 1996*). In our study, there were statistically significant differences between rural and urban areas with respect to the incidence of the disease (75 % versus 25 % respectively, $P < 0.05$). Traveling to an endemic areas such as Iraq and Saudi Arabia didn't statistically affect the incidence in this study (3/16, 18.7 %, $P > 0.05$). The clinical features of liver hydatid disease depend on the site, size and stage of development of the hydatid disease (*Wong et al, 1999*). The most common symptom in hydatid cyst of the liver is vague abdominal pain, being present in 80 % of the cases (*Haddad et al., 2001*). Other symptoms are either related to minor leak and mass effect of the cyst or major rupture with acute peritoneal signs, cholangitis and anaphylaxis (*Yorganci & Sayek, 2002*). In our study, abdominal pain was the most predominant symptoms being present in 50 % of cases (8/16) ($P = 0.02$) and upper right quadrant and epigastric tenderness were the most remarkable physical findings being present in 62.5 % of patients (10/16) ($P = 0.003$). The incidence of associated illness was 43.7 % in this study. Obesity was included as an associated illness because it is a well known risk factor for some of the post-surgical complications (*Foley & Lee, 1990*). However, in our study, obesity didn't

show any influence on complications and length of hospital stay ($P > 0.05$). The rate of complications and length of hospital stay increased significantly in patients who had co-morbidity illness other than obesity ($P = 0.02$). Moreover, logistic regression analysis demonstrated that the conventional & radical procedures are important determinants for complication rate and length of hospital stay. The same results had reached by *Yorganci and Sayek (2002)*. Operative resection of hydatid disease requires accurate preoperative and intra-operative diagnosis of the disease (*Wong et al, 1999*). Most studies support the concept that preoperative diagnosis of the disease mainly depends on US & CT (*Safioleas et al, 1994, Haddad et al, 2001 and Yorganci & Sayek, 2002*). There are many findings that are specific for this disease (*Gharbi et al, 1981 & El-Tahir et al, 1992*). However, some cysts may still present a diagnostic dilemma with US and CT scan and post-surgical evaluation of hydatid disease may be also difficult (*Akhan et al, 1999*). In this study, the diagnostic and further morphologic accuracy of US & CT was 93.3 % & 83.3 % and 87.5 % & 100 %, respectively. ELISA was used in equivocal cases and follow up of the patients. These results were consistent with previous studies (*Safioleas et al, 1994 and Haddad et al, 2001*). *Rodriguez et al (1998) and Dumas et al (1999)* demonstrated the usefulness of ERCP in liver hydatid disease in a small number of cases. On the other hand, *Lai and Wong (1990)* reported that neither HIDA scan nor ERCP were helpful in determining the type of hepatic cyst or in revealing the presence of biliary communication. In our study, pre-operative ERCP was performed in 2 patients. In one patient with slightly

hyperbilirubinemia, ERCP and sphincterotomy successfully relieved the obstruction, and further biliary exploration was not required at the time of surgery. In the other patient with dilated bile ducts in US, ERCP had failed to clarify the presence of cystobiliary communications and exploration of the bile ducts was performed during surgery. Ideal therapy of the liver hydatid disease should be able to cure the disease with a low morbidity. Failure of treatment is defined as recurrence in the same localization and complication related to the intervention (*Yorganci & Sayek, 2002*). The current available drug therapy, although showing satisfactory penetration into hydatid cyst fluid and eradication of some daughter cysts, has not been established as an alternative to operative resection for hydatid liver disease (*Wong et al, 1999*). Many surgical techniques have been used and ranged from percutaneous aspiration, drainage, and marsupialization to the complete excision of the cyst with segmentary liver resection (*Salinas et al, 2001*). Surgical treatment by the conventional (partial cystectomy with omentoplasty or tube drainage) or radical procedures (cystopericystectomy or any type of liver resection) are the techniques of first choice, but still under debate with respect to the complication rate and length of hospital stay (*Buttenschoen et al, 2004*). In partial cystectomy, small pericystic areas, which are located close to vascular and biliary vessels, are not resected and so long term results as regard to recurrence are not satisfactory when compared with radical procedures (*Fillippou et al, 2004*). Moreover, capitonage of the remaining cyst cavity by omentoplasty increases the incidence of septic complications that results from postoperative necrosis of the omentum

(*Utkan et al, 2001*). In radical operations, the parasite content and entire pericystic membrane are removed. The operations are accompanied by increased morbidity and mortality. However, the incidence of local recurrence is low (*Alfieri et al, 1997*). All of the techniques applied in liver echinococcosis surgery present minor or major disadvantages and various postoperative complications (*Fillippou et al, 2004*). These results agree with our results and show similar observations. There were no statistically significant differences between conventional and radical procedures with respect to major complication rate (33 % for each) and length of hospital stay (15 versus 12.3 days), but with the application of some modifications on partial cystectomy a significantly lower major complication rate ($P = 0.001$) and shorter length of hospital stay ($P < 0.05$) were recorded. This method is easy to perform, quick, safe and avoids most of the major postoperative complications, while eradicating the disease. It is a modified combination of "rosette-like" capitonage and interoflexion. Our results obtained by this method seem to be in accordance with that recorded by *Ariogul et al, (1989) & Kayaalp et al (2002)* on the classic type "slit-like" interoflexion, although the number of our patients is too small to allow comparison. In our cases, no specific difficulties or method related complications were recorded. The only possible limitation of this technique may relate with the anatomic location of the hydatid cyst. Concerning the bile ducts and vessel injury, deep sutures that may cause vessel or bile duct injuries were not used except from some fixation sutures. The overall complication rate, of the all mentioned techniques, in this study, was 50 %. As might be expected, the overall

complication rate was significantly increased in cases treated with conventional and radical procedures (58.3 %) in comparison with the modified partial cystectomy (25 %) ($P < 0.05$). The rate of complication after liver hydatid surgery has been reported by some investigators. *Sayek et al (1980)* reported a complication rate of 47 % in 1000 patients, *Dziri et al (1999)* reported a complication rate of 39.1 % in 115 patients and *Yorganci & Sayek (2002)* reported a complication rate of 40 % in 95 patients. The overall mortality rate, in this series was found to be 6.2 % which corresponds well with that of *Sayek et al (1980)* (3 %), *Dziri et al (1999)* (3 %) and *Yorganci & Sayek (2002)* (1.1 %). Operative complications, diseases related with age and infection in the remaining cyst cavity have been reported as major causes of death in liver hydatid surgery (*Alfieri et al., 1997 & Balik et al., 1999 & Yorganci and Sayek., 2002*). The rate of recurrence after liver hydatid surgery has been reported in different series. *Magistrelli et al., (1991)* recorded a recurrence rate of 9.6 % within 36 months mean period of follow up. *Vagianos et al., (1995)* recorded a recurrence rate of 4.5 % within 2.5-7 years and *Yorganci & Sayek (2002)* recorded a recurrence rate of 25 % within 33 months. In our study, among 5 patients (31.7 %) with remained elevation of the total levels of serum IgG, 2 (12.5 %) developed confirmed recurrence within mean period of 14 months after the conventional procedures. In patients with radical procedures, no recurrence was noted and the serum IgG returned to its normal levels within one year after surgery. In patients with modified partial cystectomy, although 2 patients (2/4, 50 %) showed remained elevation of the total levels of IgG, none of them

developed confirmed recurrence within a mean period of 16 months after surgery.

Conclusion:

Partial cystectomy with modified capitonage in obliteration of the cyst cavity is easy to perform, quick and safe procedure with satisfactory results provided that the hydatid cyst is in favorable anatomical location. The conventional procedures are associated significantly with an increased treatment failure as regard to the complication and recurrence rates. Radical procedures are effective in complete eradication of the disease but has significantly higher rate of complications. Serological tests, using ELISA should be considered in the follow-up of patients and in the diagnosis of equivocal cases.

References:

- 1) *Alfieri S., Doglietto G.B., Pancelli F., et al (1997)*: Radical surgery for liver hydatid disease: a study of 89 consecutive patients. *Hepato-gastroenterology*; 64: 496-500.
- 2) *Akhan O., Ozmen M.N. (1999)*: Percutaneous treatment of liver hydatid cysts. *Eur J Radiol*; 32:76-85.
- 3) *Ariogul O., Emre A., Alper A. et al (1989)*: Interflexion as a method of surgical treatment for hydatid disease. *Surg. Gynecol. Obstet.*; 169:356-8.
- 4) *Balik A.A., Basoglu M., Celebi F., et al (1999)*: Surgical treatment of hydatid disease of the liver. *Arch Surg.*; 134:166-9.
- 5) *Bulut V., Lihan F., Yasar J., et al (2001)*: Immunological follow-up of

- hydatid cyst cases; Vol. 96 (5): 669-671.
- 6) **Buttensehoen K., Schorcht P., Reuter S., et al (2004):** Surgical treatment of hepatic infections with *Echinococcus granulosus*. Am. J. Gastroenterol; 42(10):1101-8.
 - 7) **Dawson J.L., Stamatakis J.D., Strringer M.D., et al (1988):** Surgical treatment of hepatic hydatid disease. Br. J. Surg.; 75:946-650.
 - 8) **Deger E., Hokelek M., Deger B.A., et al (2000):** A new therapeutic approach for the treatment of cystic
 - 9) echinococcosis percutaneous albendazole sulphoride injection without reaspiration. Am J Gastroenterol; 95:248-54.
 - 10) **Dumas R., Gall P.L., Hastier P., et al (1999):** The role of retrograde cholangiopancreatography in the management of hepatic hydatid disease. Endoscopy; 31:242-7.
 - 11) **Dziri C., Paquet J.C., Hay J.M., et al (1999):** Omentoplasty in the prevention of deep abdominal complications after surgery for hydatid disease of the liver: amulticenter prospective, randomized trial. J. Am. Coll. Surg.; 188: 28 1-9.
 - 12) **El-Tahir M.I., Omojola M.F., Malatani T., et al (1992):** Hydatid disease of the liver: evaluation of ultrasound and computed tomography.Br. J. Radiol; 65:390-2.
 - 13) **Erdener A., Ozak G., Demircan M. (1992):** Surgical treatment of hepatic hydatid disease in children. Eur. J. Pediatric Surg.; 2:87-89.
 - 14) **Fillippou D.K., Kolimpiris C., Anemodouras N., et al (2004):** Partial Cystectomy for liver hydatid disease. B.M.C. Surg.; 4:8.
 - 15) **Foley K., Lee R.B. (1990):**Surgical complications of obese patients with endometrial carcinoma. Gynecological; 39: 171-4.
 - 16) **Gharbi H.A., Hassine W., Brauner M., et al (1981):** Ultrasound examination of the hydatid liver. Radiology; 139:459-63.
 - 17) **Haddad M.C., Al-Awar G., Huwajjah S.H., et al (2001):** Echinococcal cysts of the liver: a retrospective analysis of clinico-radiological findings and different therapeutic modalities. Clin. Imaging 25 (6): 403-8.
 - 18) **Kayaalp C., Neriman S., Muse A. (2002):** Importance of cyst content in hydatid liver surgery. Arch Surg.; 137:159-163.
 - 19) **Lai E.C.S. & Wong J. (1990):** Sympathetic non parasitic cysts of the liver. World J. Surg.; 14:452-6.
 - 20) **Magistrelli P., Masetti R., Coppola R. (1991):** Surgical treatment of hydatid disease of the liver. Arch. Surg.; 126:518-23.
 - 21) **Meyers W.C., Kim R.D., Chari R.S. (2001):** Echinococcal cysts. In: **Townsend C.M., Beauchamp R.D., Evers B.M. Mattor K.L.**, editors. Sabiston textbook of Surgery: the biological basis of modern surgical practice. Philadelphia: W.B. Saunders, P: 1053-5.
 - 22) **Rodriguez A.N., Sanchez del Rio A.L., Aiguasil L.V., et al (1998):** Effectiveness of endoscopic sphincterotomy in complicated hepatic hydatid disease. Gastrointerest En-dosc.; 48:593-7.

- 23) **Safioleas M., Misiakos E.P., Kakisis J., et al (2000):** Surgical treatment of human echinococcosis. *Int. Surg. J.*; 8 (5): 358-65.
- 24) **Safioleas M., Misiakos E., Manti C. (1994):** Diagnostic evaluation and surgical management of hydatid disease of the liver. *World of Surg*;18:859-65.
- 25) **Salinas S.G., Velasquez H.C., Saavedra T.L. (2001):** Laparoscopic treatment of the hydatid liver cysts. *Rev Gastroenteral Peru*; 21(4):306-11.
- 26) **Sayek I., Yalin R., Sanac Y. (1980):** Surgical treatment of hydatid disease of the liver. *Arch Surg*; 115:847-50.
- 27) **Senyuz O.F., Yesildag E., Celayir S. (2001):** Albendazole therapy in treatment of hydatid liver disease. *Surg. Today*; 31 (6): 487-91.
- 28) **Silva M.A., Mirza D.F., Barmhall S.R., et al (2004):** Treatment of hydatid disease of the liver: evaluation of a UK experience. *Journal of Digestive surgery*; 21:227-234.
- 29) **Utkan N.Z., Canturk N.Z., Gonulu N., et al (2001):** Surgical experience of hydatid disease of the liver: Omentoplasty or Capitonage versus tube drainage. *Hepatogastroenterology*; 48:203-7.
- 30) **Vagianos C.E., Karavias D.D., Kakkos S.K., et al (1995):** Conservative surgery in the treatment of hepatic hydatidosis. *Eur. J. Surg.*; 164:415-20.
- 31) **WHO Informal Working Group on Echinococcosis (1996):** Guide-lines for treatment of cystic and alveolar echinococcosis in humans. *Bull World Health Org.*; 74:231-420.
- 32) **Wong O., Neto X.U., Buckel S., et al (1999):** Hydatid liver disease as a cause of recurrent pancreatitis. *J.R. Coll Surg. Edinb.*; 44:407-9.
- 33) **Yorganci K., Sayek I. (2002):** Surgical treatment of hydatid cysts of the liver in the era of percutaneous treatment. *Am. J. Surg.*; 184:63-69.

الابجاز العربي

تقييم الطرق الجراحية المختلفة لعلاج حويصلات الكبد الطفيلية الغدرية علاء السيوطي قسم الجراحة - كلية طب سوهاج - جامعة جنوب الوادي

تعتبر جراحة حويصلات الكبد الطفيلية الغدرية (hydatid cysts) من الجراحات بالغة الدقة التي تستوجب تقنيات جراحية خاصة لتلافي حدوث مضاعفات جراحية تمثل خطراً على حياة المريض كالنزيف الدموي من الكبد والتجمع الصيدي بالبطن والحساسية المفرطة لمحتويات الحويصلة الغدرية، ولذا فقد أجريت هذه الدراسة بمستشفى سوهاج الجامعي على ١٦ مريضاً "متوسط أعمارهم ٢٤ عاماً" تحمل أكبادهم في طبائهم مثل هذه الحويصلات، وذلك في الفترة من يناير ١٩٩٩ إلى يناير ٢٠٠٥. وقد تم تشخيص وجود مثل هذه الحويصلات بالكبد عن طريق استخدام الموجات الصوتية في كل الحالات. وفي بعض الحالات التي تثير التساؤل حول نوعية الحويصلة الكبدية وعددها وموضعها بالكبد استخدمت الأشعة المقطعية والاختبارات المعملية كـ ELISA test. وبناء على الطريقة المستخدمة لإزالة الحويصلة من الكبد، تم تقسيم المرضى إلى ثلاث مجموعات:

المجموعة الأولى: وشملت ٩ مرضى استخدم فيها استئصال الحويصلة الجزئي كطريقة للتخلص منها وسد التجويف الكبد الناتج عن الإزالة باستخدام نسيج من المساريقا أو وضع أنبوبة داخل التجويف الكبدية لفترة يتسنى خلالها ضمور هذا التجويف.

المجموعة الثانية: وشملت ٤ مرضى استخدم فيها استئصال الجزء الأمامي لجدار الحويصلة وتفريغ محتوياتها وتطهيرها من بقايا الطفيل باستخدام مطول ملحي مركز، ويعقب ذلك سد التجويف الكبدية عن طريق رتق بقايا الجدار الأمامي للحويصلة بجدارها الخلفي.

المجموعة الثالثة: وشملت ٣ مرضى استخدم فيها الاستئصال الكلي للحويصلة وذلك بإزالة الجزء المصاب من الكبد أو إزالة الحويصلة الغدرية مع النسيج الكبدية المحيط بها.

وقد سجلت النتائج النقاط التالية:

- ارتفاع نسبة الإصابة بالمرض بالمناطق القروية مقارنة بالمناطق المدنية (٧٥% إلى ٢٥% على التوالي).
 - معظم شكوى المرضى (٥٠%) كانت وجود ألم بالجزء العلوي الأيمن من البطن واستخدام الموجات الصوتية لتشخيص المرض لهي طريقة فاعلة وحساسة في ٩٣.٧% من المرضى.
 - انخفاض معدل المضاعفات الجراحية في المجموعة الثانية (٢٥%) مقارنة بالمجموعة الأولى والثالثة (٥٨.٢% لكل منهما)، وهذا الانخفاض ذو دلالة إحصائية، وترتب على ذلك قصر مدة إقامة المجموعة الثانية بالمستشفى بمتوسط ٨.٥ يوم، مقارنة بمتوسط إقامة المجموعة الأولى والثالثة بداخل المستشفى (١٥، ١٢.٣ يوم على التوالي).
 - مثلت نسبة ارتجاع الحويصلة الغدرية حوالي ١٢.٥% من العدد الكلي للمرضى (١٦/٢) وكانت هاتان الحالتان بالمجموعة الأولى، بينما لم تسجل النتائج حدوث ارتجاع للحويصلات بالمجموعة الثانية والثالثة باستخدام الأشعة التشخيصية.
- وقد انتهى البحث إلى ما يلي:
- أن الاستئصال الجزئي للحويصلة الكبدية الغدرية ورتق الجزء المتبقي من الجدار الأمامي بجدارها الخلفي لهي طريقة سريعة وأمنة ومقبولة النتائج بفرص وجود الحويصلة تشريحياً بالمكان المناسب داخل الكبد لعمل مثل هذه التقنية الجراحية.
 - الاستئصال الجزئي للحويصلة الكبدية الغدرية وسد التجويف الكبدية الناتج عن الإزالة بنسيج المساريقا ووضع أنبوبة داخله لتصريف المحتويات المتركمة حتى ضموره لهي طريقة سيئة من حيث نسبة حدوث المضاعفات الجراحية وارتجاع الحويصلات بعد إزالتها.
 - يعتبر الاستئصال الكلي للحويصلة الغدرية طريقة فاعلة من حيث انخفاض نسبة ارتجاع الحويصلات ولكنها طريقة غير آمنة من حيث ازدياد نسبة حدوث المضاعفات الجراحية.
 - تعتبر الاختبارات المعملية باستخدام (ELISA) طريقة فاعلة لاكتشاف ارتجاع الحويصلات المبكر وكذلك تشخيص هذا المرض عندما يتعذر تشخيصه، باستخدام الموجات الصوتية والأشعة المقطعية.

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