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# Giant liver cyst as incidental finding secondary to severe abdominal trauma ten years after: a case report and review of the literature

## *Quiste hepático gigante secundario a trauma abdominal severo. Hallazgo a 10 años y revisión de la literatura*

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Hepatic liver, post-traumatic, giant cyst.

***Palabras clave:***
*Hígado hepático, postraumático, quiste gigante.*

**ABSTRACT**

**Introduction:** Abdominal trauma is one of the most frequent reasons for admission to the emergency department. Hepatic trauma represents the main cause of death in blunt abdominal trauma with a fatality rate of up to 15%. Hepatic cysts are the least frequent sequelae. **Objective:** To present a rare clinical case of giant liver cyst and review of the literature. A 40-year-old male case, with a history of automobile accident that required surgery in which hepatic resection was performed is presented. Ten years later, he came to the emergency department again with multiple contusions due to aggression by third parties and during the radiological approach a giant hepatic cyst was detected. **Material and methods:** A review of the international literature was made through electronic search engines, obtaining only five original articles limited to case reports. **Result:** There is no reliable algorithm to follow for the management of post-traumatic liver cysts because the evidence described is limited to case reports. There are no management standardized approaches, and they are particular to each case. **Conclusions:** Post-traumatic liver cysts represent a low percentage in the incidence of liver pathology and invasive treatment is reserved for those patients showing local complications. In our case, the patient had no symptoms or complications caused by the cyst despite its size and time of evolution.

***RESUMEN***

***Introducción:*** *El trauma abdominal es uno de los motivos más frecuentes de ingreso al servicio de urgencias. El trauma hepático representa la principal causa de muerte en el trauma abdominal cerrado con una tasa de hasta 15%. Los quistes hepáticos son la secuela menos frecuente.* ***Objetivo:*** *Presentar un caso clínico raro y revisión de la literatura. Masculino de 40 años de edad, con antecedente de accidente automovilístico que requirió cirugía en la cual se realizó resección hepática. 10 años después, acude al servicio de urgencias policontundido por agresión de terceras personas, durante el abordaje radiológico se detecta un quiste hepático gigante.* ***Material y métodos:*** *Se hizo una revisión de la literatura internacional a través de buscadores electrónicos, obteniendo sólo cinco artículos originales limitados a reportes de caso.* ***Resultado:*** *No existe un algoritmo fi dedigno a seguir para el manejo de los quistes hepáticos postraumáticos debido a que la evidencia descrita se limita a reportes de casos con abordajes no estandarizados y particulares de cada caso.* ***Conclusiones:*** *Los quistes hepáticos postraumáticos representan un porcentaje bajo en la incidencia de la patología hepática y el tratamiento invasivo se reserva a aquellos pacientes que muestran complicaciones locales. En nuestro caso, el paciente carecía de sintomatología o complicaciones ocasionadas por el quiste a pesar del tamaño y tiempo de evolución.*

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## INTRODUCTION



Hepatic trauma is frequent in both penetrating and blunt trauma; mortality in hepatic trauma depends on the degree of injury, with grade VI injuries being frequently fatal.[1] Hepatic trauma usually has sequelae, among which are: biliary leakage, abscesses, ischemic necrosis, etc. Hepatic cysts are the least frequent sequelae.

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## CASE PRESENTATION

This is the case of a 40-year-old man with a history of a car accident 10 years prior to his admission. He required surgery for blunt abdominal trauma, with cholecystectomy and liver resection, the extent of which is unknown, as well as intestinal resection and repair of a femoral vascular lesion. This present time he was taken by paramedics to the emergency room after being assaulted by third parties. He presented multiple contusions in the head, thorax, abdomen, and thoracic limbs, after which he was run over by a car with the vehicle passing over his abdomen.

On admission he was anxious, alert, and oriented. His initial ATLS (Advanced Trauma Life Support) assessment revealed no hemodynamic compromise, no neurological deficit, thorax with dermabrasions, bilateral ventilated lung fields, and basal hypoventilation of the right hemithorax. The abdomen showed skin tire marks, and was soft, depressible with deep generalized tenderness on palpation, and peritoneal irritation signs in lower quadrants. His thoracic limbs had dermabrasions on both forearms. ATLS protocol films were taken. The chest X-ray *(Figure 1)* showed right hemithorax with elevation of the hemidiaphragm, without pneumothorax or pleural effusion. A primary FAST (Focused Abdominal Sonography for Trauma) was performed that revealed no fluid in the pericardium, hepatorenal, splenorenal or pelvic spaces. A simple and contrasted thoraco-abdominal-pelvic computed axial tomography scan was performed *(Figures 2 and 3)* in which an image compatible with a simple hepatic cyst of 12. 6 × 14.7 cm was seen.

***Figure 1:*** *AP chest X-ray showing elevation of the right diaphragm of undetermined cause.*

Because of the tomographic finding associated to the giant hepatic cyst the patient remained under surveillance for 48 hours after his admission to the hospital. Control laboratory tests and imaging studies were performed *(Figure 4)* that showed no significant changes compared to those obtained during his admission. There was no evidence of hemorrhagic conversion of the hepatic cyst. At discharge, the patient showed symptomatologic improvement, without any other complications.

## LITERATURE REVIEW

Cystic liver disease is of diverse origin and the differential diagnosis includes pathologies such as bacterial and parasitic abscesses, biliomas, cystadenomas, and cystadenocarcinomas. They can also be classified according to their origin as congenital or acquired. Among the acquired ones, traumatic and neoplastic disease represent the lowest percentage, leaving post-traumatic cysts as a described entity with a prevalence of less than 0.5%.[2] Diagnosis is mainly achieved through trans-operative findings due to complications and the rest is incidentally diagnosed during imaging techniques.[3] Treatment tends to be conservative; however, there is controversy regarding which one is the best treatment and its availability.[4]

A literature search was performed in PubMed database for original articles in Spanish and English languages with the words MESH in a crisscrossed form "Liver"[Mesh], "Cysts"[Mesh], "Post-traumatic"[Word] to review the literature in terms of incidence, diagnosis, etiopathogenesis, and treatment. Five original articles published between the years 1996 and 2015 were retrieved, all corresponding to case reports. A comparative table between them was created *(Table 1)*.

***Figure 2:*** *Paramedial sagittal section of thorax and abdomen computed tomography scan with a hepatic cystic lesion displacing segments VII and VIII and diaphragm into intrathoracic region.*

The liver is the organ mainly involved in blunt abdominal trauma.[5] Non-infectious liver cysts are an entity first described in 1937 by Sanders,[6] of which the most common presentation is that of congenital origin; thus, acquired cysts secondary to traumatic injury represent the least frequent variety.[7] There is a small number of cases described in the international literature, mainly from Asian countries and in pediatric patients. The most frequent location is in the right lobe and usually they occur as unilocular lesions. The incidental finding is the most frequent presentation with a history of trauma, due to the increasingly frequent non-surgical management of patients with grade IV and V liver injuries.[4,6] However, other series have found no correlation between the degree of trauma and cyst formation.[7] In our case there were no records detailing the degree of injury or the growth rate of the cyst, since the patient remained totally asymptomatic during 10 years prior to current admission, and it was only diagnosed as a finding following the abdominal trauma study protocol.

Cyst formation is secondary to traumatic injury causing leakage of bile and blood resulting in a pseudocyst (no epithelium). Bleeding is usually self-limiting through coagulation, while the flow of bile continues promoting thus the growth of the cyst.[8] For this reason, symptoms are usually late.[9] In our case, despite the size and time of evolution, the patient denied any symptomatology, and had it not been for the current incident, he would not have been diagnosed with this giant liver cyst.

The clinical presentation varies, as most resolve spontaneously and another percentage progress asymptomatically to ultimately cause compressive symptoms, in which case they require treatment.[4] Despite this, complications such as obstructive jaundice, hemorrhagic shock and biliary peritonitis tend to be rare as in our case.

Spontaneous regression of post-traumatic cysts has been described;[6] however, in the case

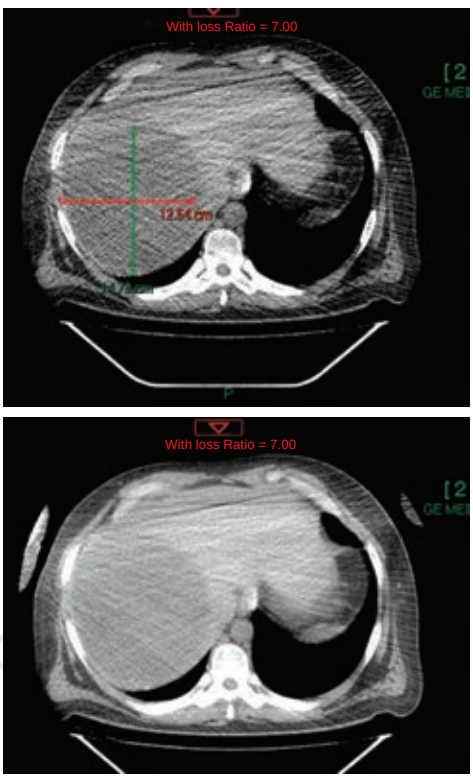


***Figure 3:*** *Thorax and abdomen simple computed tomography scan. Axial section showing a liver cyst in the right lobe measuring 12.64 × 14.73 cm.*

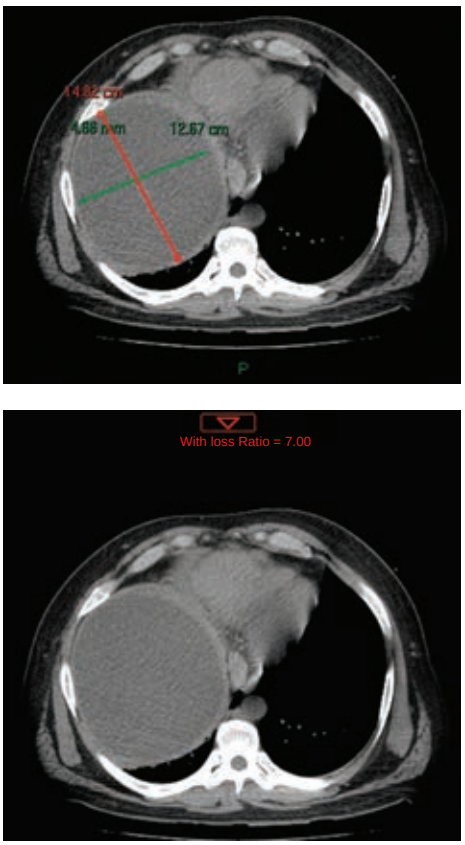


***Figure 4:*** *Thorax and abdomen simple computed tomography scan. Axial section taken 48 hours later showing no volume increase.*

of symptomatic cysts, among the therapeutic options is drainage with a high recurrence at two years. Likewise, it has been reported that once the contents of the fistula are drained, they usually resolve spontaneously.[4] In the case of simple cysts, excision and unroofing are viable therapeutic options with a recurrence rate of 0-20% and a mortality rate of up to 5%. In the case of our patient, conservative treatment was chosen given the absence of symptoms and favorable evolution and no hemorrhagic conversion.

Post-traumatic liver cyst is linked to bile duct injury and another proportion is linked to cholecystectomy, but the etiology of most is linked to a history of trauma.

## CONCLUSIONS

For giant liver cysts, the least morbid therapeutic option is percutaneous drainage, mainly indicated in patients with compressive symptoms at the abdominal level. There is no a defined algorithm for the diagnosis and treatment of these lesions within the current classifications; however, tomography scan represents, as in our case, the most efficient and accurate diagnostic tool.

Treatment is controversial and without well-defined indications, and surgical treatment is

**Table 1: Literature review of post-traumatic liver cyst.**

| Reference | Patient (gender and age) | Time of evolution | Hemodynamic status | Cyst size (cm) | Local complications | Management |
|---|---|---|---|---|---|---|
| Chen et al.[2] | Female 63 years | 1 year | Stable | 12 × 10 | Extrinsic stomach compression | Unroofing |
| Chuang et al.[6] | Female 7 years | 5 years 8 months | Stable | 11 × 11 | Chronic pain* | Resection |
| Dalal et al.[10] | Male 22 years | 3 months | Stable | 12 × 10 | Chronic pain* | Percutaneous drainage |
| Singh et al.[9] | Female 34 year | 2 months | Stable | 10 × 10 | Extrinsic stomach compression | Unroofing |
| Sharma et al.[5] | Female 18 months | 2 months | Stable | 10 × 11 | Chronic pain* | Open drainage |

* Chronic pain according to IDC-11.[11]

emphasized in all patients with compressive, painful, or gastrointestinal symptoms.

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