Inguinal hernioplasty improves the quality of life in patients with cirrhosis

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Abstract

BACKGROUND: The optimal management of symptomatic inguinal hernia (SIH) in cirrhotics is still undefined. Both hernia and cirrhosis impair quality of life (QOL). The aim of this study was to evaluate QOL by a Short Form-36 (SF-36) questionnaire in cirrhotic patients undergoing inguinal hernioplasty.

METHODS: Thirty-two cirrhotic patients undergoing inguinal hernioplasty were evaluated. They were classified according to Child’s class and to the absence or presence of refractory ascites. The SF-36 questionnaire was administered the day before and 6 months after surgery. Global analyses of the 8 domains of SF-36 and of 2 comprehensive indexes of SF-36, Physical Component Summary (PCS) and Mental Component Summary (MCS), were performed.

RESULTS: Lichtenstein hernioplasty for SIH originated no major complications. All 8 domains of SF-36 and MCS and PCS scores improved remarkably after hernioplasty especially in patients in Child’s class C and/or with refractory ascites.

CONCLUSIONS: Inguinal hernioplasty for SIH in patients with cirrhosis is a safe procedure. The improvement of QOL represents a clear cut indication for elective hernia repair.

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KEYWORDS: Cirrhosis; Hernia; Quality of life

The incidence and natural history of inguinal hernias (IHs) in cirrhotic patients are not fully described.1 Because of the limited number of patients in each study and their heterogeneity in terms of functional class, it is difficult to assess the risk of complications of untreated IH in cirrhotic patient, even though life-threatening sequelae, such as strangulation, are relatively uncommon.2 Because patients with liver cirrhosis have on average a limited life expectancy, an expectant approach for the management of IH in these patients has been recommended.3

Up to one third of patients affected by IH are asymptomatic or have only mild symptoms from their hernia,4 the most common being moderate pain that does not affect their working or leisure activities.5 By converse, patients with advanced decompensated cirrhosis usually have severe symptoms because, when fluid retention increases, ascites enter into the hernial sac both in the standing position and when recumbent. The hernia is then enlarged and often painful; it may hamper deambulation and frequently forces the patient to stay in bed. Over the last years, evaluation of the quality of life (QOL) in patients with chronic degenerative diseases has achieved a central role in management and decision making because the main goal of care has been refocused on maintaining the longest possible time of being disease free from invalidating symptoms.

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Both hernia and cirrhosis may affect the QOL of patients. Different questionnaires have been used to evaluate QOL. Among them, the brief version of Medical Outcome Study, a short form with 36 answers (SF-36), is the most used. The SF-36 has been used to measure and validate QOL both in cirrhotics and in patients with IH, but only 1 study has evaluated QOL in cirrhotic patients undergoing hernioplasty.6 In this study, all patients stated that hernia operation improved their QOL after discharge, but the methodology of investigation and the relation with the stage of progression of liver disease are not fully reported.

In this study, we administered pre- and postoperatively an Italian version of the SF-36 questionnaire7,8 to all patients with cirrhosis of various etiologies classified according to Child’s class and the absence or presence of refractory ascites admitted to our unit for a Lichtenstein hernioplasty because of a symptomatic inguinal hernia (SIH) in order to evaluate prospectively the effect of surgery on their QOL.

**Patients and Methods**

Thirty-two consecutive patients with cirrhosis and SIH were included in this prospective study from November 2002 to November 2006 (Fig. 1). They had been admitted to the Gastrointestinal and Liver Unit to evaluate their functional hepatic status and subsequently referred to the General Surgery Unit to perform a Lichtenstein hernioplasty in order to get symptomatic relief. All patients gave written informed consent, and the local ethics committee approved the study. None of these subjects, at the time of hospitalization, had complications of the inguinal hernia symptomatic, but all were symptomatic. Exclusion criteria were the presence of a large umbilical hernia, hepatocellular carcinoma, or severe heart disease. All patients underwent surgery as an elective procedure after a careful metabolic and coagulation assessment and were classified according to Child’s class9 and to the presence or absence of refractory ascites. All patients with ascites were treated with increased doses of diuretics up to 400 mg of spironolactone per day, 160 mg of furosemide per day, and sodium restriction (50 mEq/d). This medical management was continued until the disappearance of ascites, and only at this point were the patients operated on. A lack of body weight response, defined as a loss of body weight less than 200 g/d after 4 days, or the development of diuretic-induced complications that precluded the use of effective diuretic dosage were defined as refractory ascites.10 No patient received transjugular intrahepatic portosystemic shunt or peritoneovenous shunt before enrollment and during the study period.

All hernioplasties were performed by 1 surgeon (GDV) after short-term antibiotic prophylaxis with 2 g intravenous ceftazidime 1 hour before surgery. In 8 patients, hernioplasty was performed under local anesthesia using a mixture of 40 mL 1% mepivacaine and 20 mL 0.5% bupivacaine plus 2 mL sodium bicarbonate. The remaining 24 were treated under general anesthesia using thiopental sodium for induction, vecuronium for neuromuscular blockade, isoflurane and fentanyl citrate for analgesia. All patients received a tension-free Lichtenstein hernioplasty using a polypropylene mesh. The hernial sac was carefully isolated from the related structures in order to avoid perforation, and, subsequently, it was invaginated without opening the abdominal cavity. In patients with a large-size hernial sac, it was cautiously isolated from the close structures. It was subsequently fastened on the basis, and its distal part was cut and secured with a transfix suture to avoid the risk of ascitic leak and, finally, invaginated at the internal inguinal ring. The aponeurosis was closed performing water tight closure with a running suture using a nonabsorbable monofilament. A tubular suction drainage was placed in the dead space only when it was large and in all patients with refractory ascites. Patients were classified according to the presence or absence of refractory ascites and Child’s class.9

**QOL assessment**

The SF-36 is a widely used and validated scale that yields scores for 8 dimensions of health-related QOL: (1) physical functioning (PF): limitations to physical activities due to health, such as self care, walking, and climbing stairs; (2) role physical (RP): interference with work or daily activities due to physical health; (3) general health (GH): overall evaluation of health; (4) bodily pain (BP): pain intensity and how this pain affects work in and out of the home; (5) vitality (VT): how full of energy the patient feels; (6) mental health (MH): overall emotional and psy-
chologic status; (7) social functioning (SF): how much health interferes with social interactions; and (8) role emotional (RE): limitations to work or daily activities due to emotional health.

The scores for each domain range from 0 to 100, 0 being the poorest and 100 the best possible health status. However, 0 is not equivalent to death, and 100 is not equivalent to perfect health. Two comprehensive indexes of QOL were also evaluated: the Physical Component Summary (PCS), which equals the value of the physical subscale (PF, RP, GH, and BP), and the Mental Component Summary (MCS), which equals the value of the psychosocial subscale (VT, MH, SF, and RE).11,12

We used an Italian adaptation of the SF-36 generic health–related QOL scale.7,8 The SF-36 questionnaire was administered after a careful explanation by a trained physician (BS) to all patients the day before surgery. An identical follow-up questionnaire was presented to the patients at a follow-up visit 6 months after hernioplasty.

Global analysis of all patients was made through PCS, MCS, and the evaluation of each of the 8 domains, whereas only PCS and MCS were used to analyze the patients according to their allocation related to the presence or absence of refractory ascites and to Child’s class.

Statistics

All statistical analyses were done using a statistical program (GraphPad Instat Version 3.06 for Windows, San Diego, CA USA). Continuous variables were summarized by mean and standard deviation or median, categoric ones by frequencies. Data from each domain of SF-36 were analyzed by using nonparametric tests. The Mann-Whitney U test was used to compare preoperative and postoperative scores for each domain of SF-36. The 2 comprehensive indexes of SF-36, PCS and MCS, were obtained by the sum of the physical (PF, RP, GH, and BP) and the psychosocial (VT, MH, SF, and RE) subscale and analyzed by the same statistical test. Any P value <.05 was considered significant.

Results

Demographic data (age, sex, etiology of cirrhosis, Child’s class, and status of ascites) are shown in Table 1. The type of hernia, according to Nyhus classification13; the side of hernia; duration of operation; and duration of hospital stay are reported in Table 2.

No significant complications were observed in any of these patients during surgery. After surgery, ascites leakage from the surgical wound or wound infection was never observed. The wound drainage, placed in 18 patients, was removed between 24 and 48 hours after surgery. During the postoperative in-hospital time, 2 inguinoscrotal hematomas appeared, both in a class B patient without ascites. A suction drainage was not placed in any patient. Therefore, both resolved spontaneously over the next week, with no need for blood transfusions or reintervention. Six months after hernioplasty, all patients were alive, no hernia recurrence was detected, and liver disease was stable in all subjects.

The assessment of QOL

The subjects, actively involved in the study protocol, showed a high level of satisfaction and a good compliance to SF-36. In fact, all of them completed their questionnaire both preoperatively and 6 months after surgery. All 8 domains of SF-36 improved significantly during the postoperative time (Fig. 2). This enhancement was more evident for BP, RP, SF, and GH (Fig. 2). Postoperative MCS and PCS scores significantly increased as compared with basal values (Fig. 3A and B).

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Demographic data of 32 patients with cirrhosis and SIH</th>
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<tr>
<td>Age (y)</td>
<td>Mean ± SD</td>
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<tr>
<td>Sex</td>
<td>Female</td>
</tr>
<tr>
<td>Etiology of liver cirrhosis</td>
<td>HCV</td>
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<tr>
<td></td>
<td>Alcoholic</td>
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<tr>
<td>Child’s class</td>
<td>A</td>
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<tr>
<td>Refractory ascites</td>
<td>Present</td>
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HCV = hepatitis C virus; HBV = hepatitis B virus.

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<tr>
<th>Table 2</th>
<th>Classification of inguinal hernia and description of surgical features of 32 patients with cirrhosis and SIH</th>
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</thead>
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<tr>
<td>Type of hernia (Nyhus)</td>
<td>II</td>
</tr>
<tr>
<td>Side of hernia</td>
<td>Right</td>
</tr>
<tr>
<td>Duration of operation (min)</td>
<td>Mean ± SD</td>
</tr>
<tr>
<td>Hospital stay (d)</td>
<td>Mean ± SD</td>
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SD = standard deviation.
The improvement of PCS was more important in patients with refractory ascites with respect to those with treatable ascites (Fig. 4A); in fact, the rate of increase of the PCS score was 40.2% versus 17.7%, respectively. Even more remarkable results were observed in MCS where the respective increase was 61.1% and 6.8% (Fig. 4B).

The values of MCS were increased with respect to those detected in the preoperative assessment in all Child’s classes. Specifically, this change was more relevant in patients in class C with an increase of 61.3% between the preoperative and postoperative scores. Actually, the difference among pre- and postoperative values was significant also in patients of class A and B (Fig. 5A). The postoperative scores for PCS were remarkably higher as compared with those detected in preoperative time in all Child’s classes, even though in patients of class C the rate of increase was 45.5% and the results more apparent as compared with other classes (Fig. 5B).

**Comments**

The optimal management of IH in patients with cirrhosis with or without ascites remains a matter of debate. Pere et al.
reported on 3 patients with stable cirrhosis and controlled ascites whose conditions severely deteriorated after elective inguinal herniorrhaphy. A Danish nationwide cohort study showed that among 256 patients with cirrhosis undergoing IH repair 7 died within 30 days compared with 5 of 74 in the control group, resulting in an adjusted odd ratio for 30-day mortality of 4.4. Others studies based on treatment experience of hernias of the abdominal wall (umbilical, inguinal, and incisional) have suggested that in patients with decompen-
sated cirrhosis these hernias may be safely repaired on elective basis, without an increased surgical risk or an undue incidence of recurrences.

Patients in our study underwent elective hernia repair after an extensive clinical assessment and intensive management of ascites. This allowed us to show that a tension-free hernioplasty for SIH is associated with a low rate of problems even when performed in patients with advanced, decompensated cirrhosis. The short time to recovery and the improved objective and subjective states of health go along with an improved QOL at 6 months of follow-up. The specific SF-36 analysis, obtained comparing preoperative and postoperative data, was assessed as a paired dataset of the same patient and analyzed using nonparametric tests. This approach has revealed an overall improvement of each domain of SF-36, this being more relevant for BP, RP, SF, and GH. The overall analysis of MCS and PCS showed that both parameters improved more markedly in patients with ascites and advanced liver disease (ie, those in whom the negative effects of SIH are more likely to occur).

Over the last 15 years, there has been an increasing consensus regarding the centrality of the patient’s point of view in the assessment of health status. In fact, the perception of one’s own health status may be more relevant than prolonging length of life because patients are frequently more concerned about quality and disability than longevity. Both IH and cirrhosis are responsible for the impairment of QOL. Mathur et al using cross-sectional psychometric analysis have shown that otherwise healthy subjects with IH have a significantly lower QOL compared with age-, sex-, and comorbidity-matched controls. In all 8 domains of the SF-36 score, patients achieved lower scores than controls, including an impaired QOL in terms of their vitality, social functioning, mental health, and overall perceptions of general health.

Hernioplasty itself is able to improve QOL. O’Dwyer et al’s trial surgery has been compared with a “wait and see” policy in patients with asymptomatic hernia. They found that, after 6 months, there was a significant improvement in most dimensions of the SF-36 in the operation group, whereas after 12 months, although the trend remained the same, the differences were only significant for change in the general health domain. Lawrence et al in a randomized controlled trial of patients undergoing IH repair have observed a significant improvement of QOL, assessed using SF-36, between preoperative and postoperative score. In particular, this improvement was much higher for the domains of pain and physical function. Zieren et al in their study, using the SF-36 to compare preoperative and postoperative QOL in patients undergoing “plug and patch” hernia repair, showed a significant postoperative overall improvement of QOL in all domains of SF-36. In a large prospective randomized trial, it has been shown that in both open and laparoscopic herniorrhaphy there was an improvement in MCS and PCS scores at 2 years; also, a hernia recurrence did not affect a patient’s postoperative health status, whereas neuralgia or orchitis resulted in a decrease in overall health status compared with patients without those complications.

On the other hand, QOL is variably impaired in cirrhosis. Marchesini et al measured QOL by SF-36 questionnaires in patients with cirrhosis, and all domains scored significantly lower in comparison to a matched healthy Italian population. The largest differences were observed in the role limitation physical, general health, and role limitation emotional, whereas bodily pain was minimally affected. Also, the severity of disease, evaluated by Child’s score,
was the factor most closely associated with poor health status perception.25

In conclusion, we showed that tension-free inguinal hernia repair in cirrhotic patients can be safely done with a low rate of complications. The improvement of QOL, especially in patients with symptomatic hernia and advanced liver disease, could represent a clear indication for elective hernia repair.

References