Chapter 11

LAPAROSCOPIC RADIOFREQUENCY THERMAL ABLATION OF HEPATOCELLULAR CARCINOMA IN PATIENTS WITH LIVER CIRRHOSIS

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1. INTRODUCTION

Although surgical resection is considered one of the best available options for the treatment of small hepatocellular carcinoma (HCC) arising in patients with liver cirrhosis and good hepatic function, it still shows a significant operative morbidity and a high recurrence rate. This reason accounted for an increased use of alternative ablative therapies. Percutaneous ethanol injection and, more recently, cryotherapy, radiofrequency interstitial thermal ablation (RITA), interstitial laser photocoagulation or microwave coagulation therapy have been performed with promising results. The increased diffusion of laparoscopy in the oncologic field prompted some authors, which were routinely using the laparoscopic ultrasound (LUS) during cholecystectomy, to employ this method for interventional manoeuvres, as alternative to the percutaneous access in selected patients. The rationale of this approach was to combine the advantages of an improved staging allowed by the intracorporeal ultrasound examination with a safe approach to liver lesions difficult or impossible to be treated percutaneously.
2. **CHOICE OF THE LAPAROSCOPIC ACCESS**

From a general point of view, the percutaneous approach is less invasive, produces low morbidity, can require only a neuroleptanalgesia\(^1\), can be performed in some instances on an outpatient basis, is relatively inexpensive and can be easily repeated as necessary to treat recurrent tumours. However, the laparoscopic thermal ablation of HCC provides some distinct advantages. Laparoscopic ultrasound (LUS) with a high-frequency transducer allows detection of small additional liver nodules undetected using any other imaging technique\(^12\). In our experience\(^13\), LUS yielded additional information in 62% and a more accurate staging in 23% of HCC patients. Furthermore, difficult lesions adjacent to the diaphragm, bowel or gallbladder may be treated safely under the laparoscopic approach\(^14\). The use of a high-frequency transducer allows a great deal of accuracy in placing the RITA needle. Finally, a Pringle’s manoeuvre (temporary occlusion of the hepatic artery and portal vein) can be accomplished aiming to increase the diameter of the thermal ablation. The occlusion of the hepatic artery can also be performed percutaneously, but it adds to the complexity and cost of thermal ablation alone\(^15\).

The disadvantages of the laparoscopic approach\(^16\) include the added invasiveness of the technique (with its specific complications), the need for a general anaesthesia, the added cost and technical difficulties of the procedure itself which require a “learning curve” to correctly perform all the interventional manoeuvres.

3. **INDICATIONS AND PATIENT SELECTION**

The laparoscopic approach to RITA is actually under evaluation in our Centre in patients with HCC and liver cirrhosis. Patients with a single nodule or multinodularity (up to three lesions with at least one nodule \(\leq 50\) mm) in liver cirrhosis are enrolled in the study if they fulfil the following criteria: severe impairment of the coagulation tests (platelets \(< 40,000\) and/or INR \(> 1.20\)); superficial lesions adjacent to visceral structures which can be displaced by laparoscopic manoeuvres; large tumours or multiple lesions requiring repeated punctures; deep-sited lesions with a very difficult or impossible percutaneous approach; short-term recurrence of HCC following ethanol injection or TACE. The exclusion criteria are tumour size larger than 5 cm, the presence of more than 3 nodules, a complete portal thrombosis and a coexisting severe liver disease (Child’s C cirrhosis).