



Scientific letter

Ultrasound guided thermal ablation of synchronous liver metastases and simultaneous resection of colorectal cancer: A single-center case series[☆]

Ablación ecoguiada simultánea de metástasis hepáticas sincrónicas y resección del cáncer colorrectal. Serie de casos unicéntrica

Approximately 25% of patients with colorectal cancer (CRC) present liver metastases (LM) at diagnosis. The best therapeutic option involves resection of both tumor foci in association with chemotherapy, which provides 5-year survival rates of 20%–50%.^{1,2} However, few patients are candidates for simultaneous resection, due to either the extent of the liver disease or the combination of 2 surgeries that entail high complexity or risk of morbidity.³

In selected cases, it is possible to perform simultaneous ultrasound ablation (UA) during the CRC surgery as a curative alternative to major or complex liver resections.

To determine the associated survival, we conducted a retrospective study on patients who underwent UA exclusively, without liver resection, together with simultaneous CRC resection. The inclusion period was between March 2015 and March 2022, and the follow-up was until December 2022. Patients treated with simultaneous resection and combined UA for LM (n = 3) were excluded. Likewise, patients with persistent macroscopic disease (R2; n = 2) after CRC resection were also excluded. In all cases, the indication for simultaneous UA was previously assessed by a multidisciplinary tumor committee.

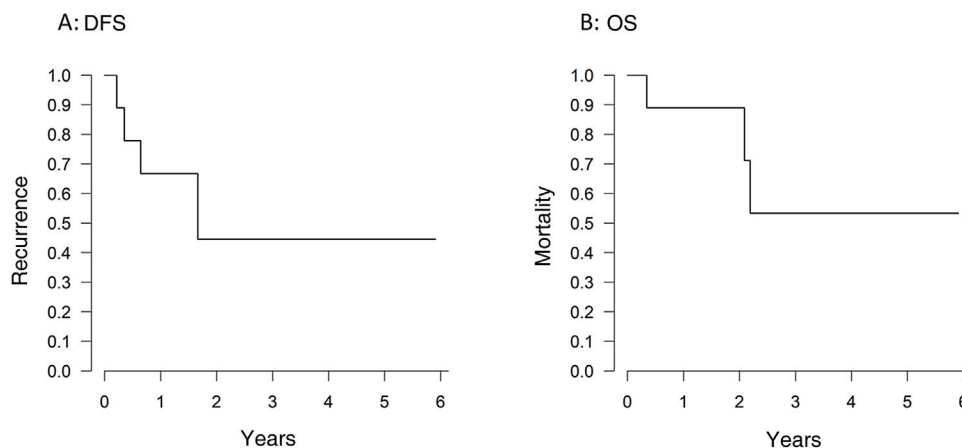


Fig. 1 – Kaplan-Meier survival curves: 1A) Disease-free survival (DFS); 1B) Overall survival (OS). DFS was defined from the date of the surgical intervention until recurrence, and OS from the date of the surgical intervention until death or last follow-up.

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During the study period, UA procedures and CRC resection were performed on a total of 9 patients, representing less than 1% of the total annual elective interventions for CRC. The median age was 81 years (range: 42–85), and 6 were women (66.6%). All but one had an ASA score of 3 (88.8%), with an average Charlson comorbidity index of 11.6 points (SD 2.2).⁴ Regarding their functional status, all the cases were ECOG 0-1 (88.8%), except for one ECOG 2. The median preoperative CEA was 2.4 ng/mL (1.2–81.8), and only one patient received neoadjuvant chemotherapy (11.1%). The CRC location was on the right in 3 cases (33.3%), on the left in 2 (22.2%), and in the rectum/sigmoid colon in 4 (44.4%).

In all cases, simultaneous UA was performed in the operating room by an Interventional Radiologist, with the patient under local anesthesia and sedation, and immediately before CRC resection in order to unify 2 procedures that are usually performed independently and to optimize the general anesthesia time. In addition, the percutaneous approach was used instead of direct puncture of the liver, since the incisions normally used for colorectal resection do not usually provide good access to the supramesocolic compartment.

Contrast-enhanced ultrasound did not detect more LM than those that had been diagnosed preoperatively in any of the patients. A total of 14 LM were treated, using radiofrequency in 5 cases (55.5%) and microwave ablation in cases with a diameter >25 mm and proximity to thermosensitive vascular-biliary structures >2 mm (44.4%). Some 55.5% of the patients had a solitary LM, 33.3% presented 2 LM, and one patient had 3 LM (11.1%). The median lesion size was 13 mm (3–33), and the distribution by segments was as follows: 3 LM in segment III, 2 in segment VI, 5 in segment VII, and 4 in segment VIII. In 5 cases, CRC resection was laparoscopic (55.5%). The average time for both procedures was 270 ± 73 min, while the time for ultrasound-guided percutaneous ablation itself usually ranged from 20–60 min, depending on the number of LM to be treated and the technical difficulty of the approach.

No patient presented major complications (Dindo-Clavien \geq III⁵). The median hospital stay was 6 days (4–11), and no readmission was required within 90 postoperative days. Two patients (22.2%) received adjuvant chemotherapy.

After a median follow-up of 35 months (11–46), one-year and 3-year overall survival and disease-free survival rates were 88.8% and 55.5%, and 66.6% and 44.4%, respectively (Figs. 1A, 1B). Four patients (44.4%) developed disease recurrence. The recurrence was at the ablation site in only one case (11.1%) (Table 1).

As there have been reports of a significantly higher risk of progression of synchronous LM left untreated after resection of the primary tumor,⁶ it is advisable to assess their simultaneous treatment in certain patients with oligometastatic disease. Although the publications about simultaneous UA of LM and CRC resection are very scarce, authors like Lei P et al. have observed that UA, compared to simultaneous resection, was associated with less blood loss and shorter hospital stay, without negatively influencing the safety of the procedure, survival rates or intrahepatic recurrence.⁷ It should be noted that local recurrence in the thermal ablation area is relatively low (4.3%).⁸ In our experience, simultaneous UA has been a technically feasible procedure, which does not seem to be associated with a significant increase in morbidity (33%

Table 1 – Characteristics of colorectal cancer and liver metastases; surgical and ablative techniques; perioperative variables; survival results.

Characteristics of liver metastases	
Number	
1	5 (55.5)
2	3 (33.3)
3	1 (11.1)
Location	
RLL	11 (78.6)
LLL	3 (21.4)
Size	
<20 mm	10 (71.4)
>20 mm	4 (28.6)
Ablation type	
Radiofrequency	5 (55.5)
Microwave	4 (44.4)
CRC surgical technique	
Open surgery	5 (55.5)
Laparoscopic surgery	4 (44.4)
Right hemicolectomy	2 (22.2)
Left hemicolectomy	3 (33.3)
Sigmoidectomy	1 (11.1)
Upper ARR + Partial MRE	1 (11.1)
Middle ARR + Total MRE (TME)	1 (11.1)
Complications	3 (33.3)
Clavien-Dindo I-II	3 (33.3)
Wound infection	2 (22.2)
Pelvic collection	1 (11.1)
Clavien-Dindo \geq III	0
Perioperative results	
Surgical time (minutes)	245 (203–450)
ERAS	7 (77.7)
Postoperative stay (days)	6 (4–11)
Readmission within 90 days	0
Oncological results	
Follow-up time (days)	1037 (205–2158)
Recurrence-free time (days)	182.5 (79–366)
Recurrence	4 (44.4)
Ablation site ^a	1 (11.1)
Other liver segment ^a	1 (11.1)
Multiple hepatic ^b	1 (11.1)
Multiple intra/extrahepatic ^c	1 (11.1)
^a Re-ablation LM	2 (22.2)
^b Rescue chemotherapy	1 (11.1)
^c No rescue	1 (11.1)
Death	3 (33.3)

Median (range); Number (percentage).

RLL: right liver lobe; LLL: left liver lobe; CRC: colorectal cancer; ARR: anterior resection of the rectum; MRE: mesorectal excision; ERAS: early recovery after surgery; LM: liver metastases.

minor complications, not related to the procedure) and which does not seem to negatively affect the oncological results.

We should recognize the limitations of this paper to establish a more generalized recommendation of UA. The number of patients treated with simultaneous ablation is small, and some cases present a short follow-up. Most publications are retrospective and heterogeneous, as they include patients treated with resection as well as thermal ablation of LM. In addition, it is difficult to propose comparative analyses due to the differences between patients who are selected for simultaneous resection or for UA. All of this undoubtedly limits the level of evidence.

Since thermal ablation is a curative and less aggressive technique for the treatment of LM, we believe that UA should be considered in selected cases with high surgical risk due to advanced age, comorbidities, or the need for parenchyma preservation. In these cases, we must accept the possibility of local recurrence in 5%–10% of patients, which could be treated with another percutaneous ablation procedure or surgical resection. In addition, in cases with oligometastatic liver disease, simultaneous UA for LM provides patients with other benefits, such as reduced hospital stay, lower accumulated morbidity than what a second procedure would entail, and early access to adjuvant therapies.⁹

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Arkaitz Perfecto^{ab}, Beatriz Villota^b, José María García^{bc}, Iñaki Martín^d, Mikel Gastaca^{ab}

^aUnidad de Cirugía Hepatobiliar y Trasplante Hepático

^bServicio de Cirugía General y del Aparato Digestivo, Hospital Universitario Cruces, Barakaldo, Instituto de Investigación Sanitaria BioCruces-Bizkaia, Spain

^cUnidad de Coloproctología

^dServicio de Radiología, Unidad de Ecografía Intervencionista, Hospital Universitario Cruces, Barakaldo, Spain

*Corresponding author. arkaitz.perfectovalero@osakidetza.eus (A. Perfecto).

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Hepatic tumor resection with venous vascular infiltration: Techniques and results[☆]

Resección de tumores hepáticos con infiltración vascular venosa: técnicas y resultados



Liver resection is the only potentially curative treatment for most malignant liver tumors.^{1,2} Traditionally, tumors that compromised portal or hepatocaval confluence vessels were considered unresectable. The objective of our study is to evaluate the surgical results and applicability of the techni-

ques used in hepatic resection of tumors with compromised venous vasculature.

We present a retrospective, descriptive study of patients who had undergone liver resection for malignant tumors with venous vascular compromise during the period between January 2015 and December 2022. Perioperative variables were analyzed.

We define venous vascular invasion as tumor infiltration of the vena cava, main trunks of the portal vein and/or hepatic

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