

9.4. COMPLEX CASES AND LAPAROSCOPIC RESECTIONS

It was traditionally considered that there were some easy and accessible segments (from 2 to 6) and complex segments (4a, 7 and 8). This initial conception (which was formulated as such at the Louisville Conference) has been refined and several difficulty scores have been formulated in order to adequately classify laparoscopic liver resections and establish prognosis and learning curve strategies. The most widely validated one is the Iwate difficulty score, in which parameters such as location, size, cirrhosis, proximity to major vessels and type of approach define 4 levels of difficulty from low to expert [37]. There are some others in which different variables are also included [38]. Independently of the difficulty score chosen, it should be considered preoperatively how difficult the case is going to be and what the level of expertise of the attendant surgeon should be in order to obtain a proper balance and optimal results [39].

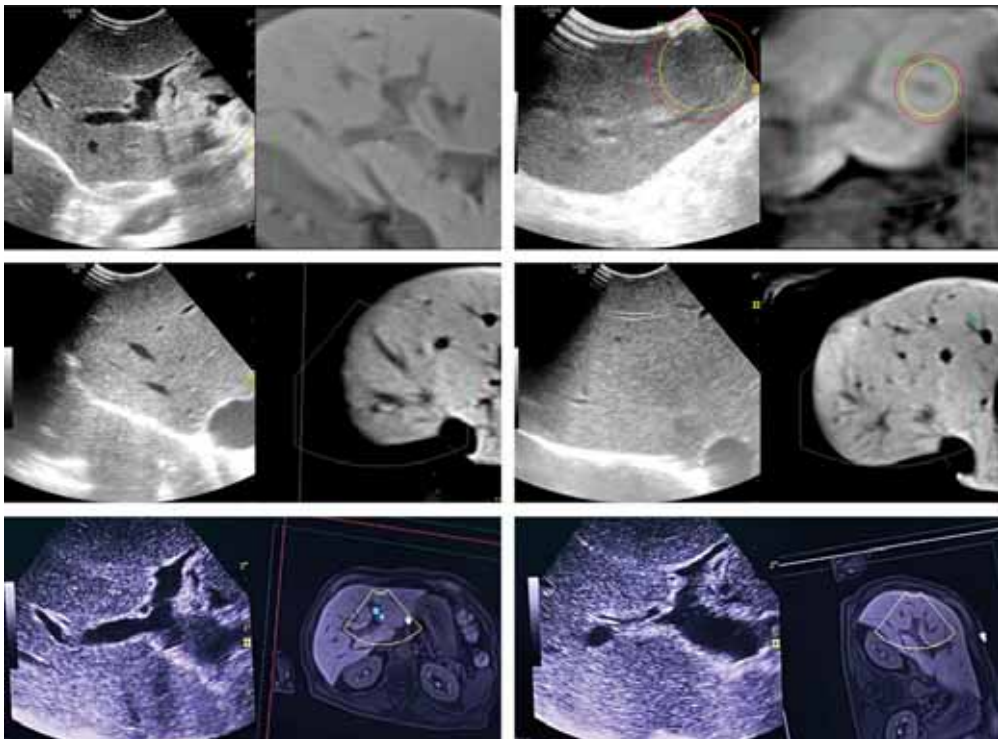
Laparoscopic simultaneous resections of colorectal primary tumours and liver metastases have been reported with excellent results. The largest multicenter series included 142 cases, with overall morbidity and mortality of 31% and 2.1%, respectively [40]. Overall 1-, 3-, and 5-year survival rates were 98.8, 82.1, and 71.9%, respectively. It should be noted that more than 75% of the cases had a single liver metastasis, which may prompt one to consider that these liver resections were not difficult ones. Similar results were observed in another single-centre series, in which no significant differences were observed in perioperative results between the laparoscopic and open approaches [41].

Repeat liver resections have been shown to result in improved outcomes in the long-run [42]. Considering this, the role of the laparoscopic approach may be optimal, as it may reduce postoperative adhesions compared to open approaches. Its feasibility has been demonstrated and several repeat laparoscopic liver resections have been safely performed [43]. However, a recent study reports an increase in liver-specific morbidity which should be noted and analysed [44].

Complex bilobar metastases are always challenging. A recent study matches 25 open versus 25 laparoscopic patients undergoing a 2-stage hepatectomy procedure [45]. The laparoscopic group had a shorter hospital stay, transfusion rates, liver-specific complications and improved recurrence patterns. Bilobar resections do not only require major procedures. The same group analyzed 269 laparoscopic hepatectomies and matched parenchymal-sparing versus major hepatectomies in both their primary resections and in their recurrent resections [46]. Laparoscopic parenchymal-sparing resections were associated with fewer complications, reduced CCI and a shorter hospital stay and blood loss. However, interestingly, those undergoing a laparoscopic parenchymal-sparing approach as the primary resection could require a repeat resection in up to 70% of the cases, whilst this was true for only 22% if the primary resection was a major hepatectomy. For these cases, we strongly suggest adhering to the following 3 rules:

- Always consider a hybrid approach when the strategy is to perform several limited resections. Mobilize the liver fully and then make a limited midline incision of 12–14 cm. Such helpful, fast and oncological control of all the spectrum of metastases is warranted.
- Consider advanced radiological techniques, including preoperative 3-D models and intraoperative fusion US-CT/MRI (Figure 9.3).

Figure 9.3.



Fusion techniques using ultrasonography and CT/MRI. Some cases need special caution as metastases below 1cm or hidden metastases should be resected adequately. In this case, fusion techniques using advanced ultrasonography make intraoperative location easier. As observed, fusion techniques allow metastases that are almost invisible to ultrasound to be located and resected. It is important to note that after mobilization of the probes need to be repositioned and recalibrated. Some areas can be used for calibrating. In our experience, portal vein bifurcations are the most useful ones.

- Always bear in mind that the optimal surgery is the one that leads to optimal clearance with limited resections in order to obtain early access to adjuvant chemotherapy.