Recent advances and controversies in surgical management of liver diseases: Summary of Liver Sessions of 7th World Congress of IHPBA 2006

RONNIE T.P. POON

Department of Surgery, University of Hong Kong, Queen Mary Hospital, Hong Kong, China

Introduction

Over the past few years, there has been significant progress in the surgical management of various liver diseases as a result of advances in surgical technologies and the effort of liver surgeons around the world to improve the treatment outcome of their patients through active research. However, partly because of the paucity of high-level evidence in the literature, there are still a lot of controversies in several areas in liver surgery. The programme of the 7th World Congress of the International Hepato-pancreato-biliary Association held in Edinburgh on 3–7 September 2006 has incorporated most of the recent advances and controversies in liver surgery. The main topics presented and discussed in various keynote lectures, symposia, and free paper sessions of the Congress can be summarized into five areas: advances in surgical techniques of liver resection, role of ablative therapies, applications of liver transplantation, recent trends in management of colorectal liver metastasis, and controversies in management of hepatocellular carcinoma (HCC).

Advances in techniques of liver resection

The main challenge of liver resection is the control of bleeding during liver transection. Finger fracture or clamp crushing are the conventional techniques of liver transection widely used in many centers. Ultrasonic dissection, introduced in the early 1990s, has become a standard technique in other centers. In recent years, a few other techniques or instruments based on new technologies have been developed, with an aim towards bloodless hepatic resection. These include the water jet, harmonic scalpel, Ligasure, Tissuelink and radiofrequency-assisted liver transection. The pros and cons of these techniques were presented in a keynote lecture by the author, with a particular emphasis on the evidence from a few randomized trials comparing different techniques recently available in the literature [1–4]. In addition to advances in technologies and instruments, the understanding of the importance of inflow vascular control and low central venous pressures is another major contribution to lower blood loss in hepatic resection. The role of the Pringle maneuver was the subject of debate in a session in the Congress. While a previous randomized trial from the author’s institution showed that intermittent Pringle maneuver reduced blood loss during liver resection [5], a more recent randomized trial conducted by an Italian group showed no benefit of the use of the Pringle maneuver [6]. The recent demonstration of an adverse effect of ischemic-reperfusion injury on long-term tumor recurrence in the liver remnant in an animal model by a Dutch group raised a concern about the use of the Pringle maneuver [7]. In the Congress, the same group presented a paper showing that prolonged use of the Pringle maneuver in liver resection for colorectal metastasis significantly reduced the disease-free survival of patients based on a retrospective analysis [8]. This further intensified the debate on the use of the Pringle maneuver. Data from a prospectively randomized cohort are required to provide more definite evidence regarding the effect of the Pringle maneuver on long-term tumor recurrence after resection of liver cancers. However, in experienced centers, low blood loss and transfusion rates can now be achieved in liver resection without the Pringle maneuver [9].

The other important recent advance in liver surgery is laparoscopic liver resection, which started later than...
liver resection for patients with HCC.

Increasing role of liver ablation

Ablative therapies, especially radiofrequency ablation (RFA), are gaining popularity in the management of liver malignancies. In a symposium in the Congress, the importance of performing RFA in experienced centers to reduce morbidity and increase complete ablation rate was emphasized based on experience reported in two recent publications [11,12]. Furthermore, the role of surgeons in ablation of RFA was highlighted by a recent study that suggested that a surgical approach achieved a more complete tumor eradication and lower tumor recurrence rate compared with a percutaneous approach in a meta-analysis of 5224 cases of RFA for liver malignancies reported in the literature [13]. The role of surgical ablation is further supported by a study from the author’s group that showed that RFA by surgical approaches resulted in significantly better survival compared with the percutaneous approach in a meta-analysis of 5224 cases of RFA for liver malignancies. In a symposium in the Congress, several measures to expand the use of liver transplantation have been presented and discussed, including the use of marginal grafts (age > 65 years, macrosteatosis > 40%, cold ischemic time > 12 h, hepatitis B or C infection, etc.), non-heart-beating donor grafts, split liver grafts, and live donor grafts.

The use of marginal grafts is associated with increased risk of primary graft dysfunction but no significant effect on mortality or long-term survival provided that re-transplantation is a possible option [19]. Good outcome can be achieved with the use of split grafts; however, its application is limited by logistic restrictions in many centers [20]. The use of non-heart-beating donor grafts requires careful graft selection to ensure reasonable graft quality so as to reduce the risk of early graft failure or ischemic cholangiopathy associated with prolonged warm ischemia [21]. Liver donor transplantation provides good quality grafts and a much larger potential pool of donors compared with other types of grafts. However, the risk to the donor and the problem of small-for-size grafts limits its application. Nevertheless, there has been increasing use of live donor liver transplantation worldwide. A study of 1709 patients with liver donor liver transplantation performed in 64 European centers presented in the Congress reported favorable results with a donor mortality rate of 0.23%, 5-year graft survival of 70%, and 5-year recipient survival of 76% [22].

The availability of graft also affects the role of re-transplantation, which was another topic discussed in the Congress. Technical advances have reduced the need for re-transplantation for vascular or biliary complications, and improved immunosuppression has decreased re-transplantation for graft rejection. On the other hand, increased use of marginal grafts has led to increased requirement for re-transplantation, and the problem of recurrent viral disease, in particular hepatitis C viral infection, remains a common indication for re-transplantation in the long term [23].
Recent trends in management of colorectal liver metastasis

The management of colorectal liver metastasis was the theme of one of the symposia in the Congress. Recent availability of more effective chemotherapy regimens for colorectal cancer has resulted in more patients with initially unresectable colorectal liver metastasis being downsized to become resectable. With chemotherapy regimens based on oxaliplatin or irinotecan, it was estimated that 15–30% of patients with initially unresectable colorectal liver metastases have adequate reduction in tumor size or number to become resectable, and a 5-year survival rate of 30% after resection of such cases has been reported [24]. The role of neoadjuvant chemotherapy in patients with resectable colorectal liver metastasis is uncertain, with no data from prospective randomized clinical trials available in the literature.

While newer chemotherapeutic agents have led to increased tumor response and resectability of colorectal liver metastasis, the risk of liver resection associated with use of such agents is a concern discussed in the Congress. Recent studies have shown increased risk of liver resection in patients with preoperative chemotherapy due to the effects of vasculopathy, hepatocyte necrosis, and increased bleeding [24,25]. In one recent study, preoperative chemotherapy with an irinotecan-based regimen was associated with a five times higher risk of steatohepatitis compared with no chemotherapy (20.2% vs 4.4%), which in turn was associated with increased 90-day mortality (14.7% vs 1.6%) [26]. The impact of preoperative chemotherapy on morbidity and mortality of liver resection and strategies to reduce such adverse effects of chemotherapy for colorectal liver metastasis deserve further studies, as liver surgeons are faced with more and more patients treated with chemotherapy.

Another issue discussed in the Congress was the role of simultaneous resection of colorectal primary cancer and liver resection for synchronous liver metastasis. Recent studies have shown that simultaneous colorectal and liver resection is safe for most patients [27,28]. However, the selection criteria for simultaneous or staged resection remain uncertain. Patients with more aggressive tumor biology may benefit from chemotherapy after resection of colorectal primary tumors before proceeding to liver resection for metastasis, but this requires further studies.

Controversies in management of hepatocellular carcinoma

A few areas of controversies in the surgical management of HCC were addressed in the Congress. In addition to the issue of whether RFA can replace resection for small HCC, the issue of resection or transplantation for early HCC in Child-Pugh class A cirrhotic patients is also a controversial issue. While some authors suggested primary liver transplantation as the first-line treatment for early HCC even for patients with preserved liver function [29], others advocated resection as the first-line treatment, with transplantation as a possible salvage treatment for recurrent HCC [30,31]. A study presented as a free paper in the Congress supported the latter strategy by showing that the overall survival after resection was comparable to that after liver transplantation in patients with HCC fulfilling the Milan criteria [32].

Whether bridge therapy is required and the optimum bridge therapy before transplantation of HCC was another subject of debate in the Congress. TACE and RFA are the frequently used bridge therapies prior to liver transplantation for HCC, but there are insufficient data to indicate that these bridge therapies improve patients' outcomes [33,34]. Others have advocated resection as a bridge therapy, with the advantage of histologic examination of the tumor, but the survival benefit of such an approach remains to be demonstrated [30]. Bridge therapy may not be necessary when the waiting time for liver transplantation is shorter than 6 months.

Conclusions

There has been significant progress in liver surgery in recent years. Technical advances in liver resection and ablation therapies, together with increasing application of liver transplantation, have benefited more patients with benign or malignant liver diseases. However, there are a number of controversial issues that need to be resolved. The paucity of randomized controlled trials in the literature has hindered progress in these areas. Such trials are important in guiding evidence-based surgical management of liver diseases and should be the major focus of future research in liver surgery.

References


