

## ABLATION VS. RESECTION FOR HEPATIC COLORECTAL METASTASIS: THERAPEUTICALLY EQUIVALENT?

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**Introduction.** Surgical excision remains the optimal first line in surgical therapy of hepatic colorectal metastases (HCM). The role of ablation for HCM metastases continues to evolve as ablation technology changes and systemic chemotherapy improves. There are conflicting reports regarding the efficacy of ablation compared to resection. The aim of this study was to evaluate the therapeutic efficacy of hepatic ablation compared to surgical resection.

**Methods.** A review of our 1105 patient prospective hepato-pancreatobiliary database from 8/1993 to 12/2007 identified 194 patients with a hepatic resection or ablation for HCM, 116 patients who had both therapies were excluded from the analysis. Statistical Analysis was done using SPSS.

**Results.** Seventy patients had an ablation vs. 124 patients who underwent resection. Patients who underwent ablation had more favorable disease evidenced by a lower Pong score (1.8 vs. 2.1  $p=0.05$ ), smaller largest hepatic tumor (3.5 vs. 5.3 cm,  $p<0.001$ ), and less frequent nodal involvement of the primary tumor (49% vs. 64%  $p=0.04$ ). There were no differences in the presence of extrahepatic disease (14% vs. 10%  $p=0.33$ ) or mean number of hepatic lesions (2.1 vs. 3.2  $p=0.18$ ). Ablated patients received chemotherapy prior to surgical management of HCM more often than resection patients (65.7% vs. 59.7% ( $p=0.003$ ). There was no difference in the frequency of chemotherapy after ablation/resection of HCM (10.0% vs. 14.5%,  $p=0.36$ ). Median time to recurrence was shorter with ablation than resection 12.8 mo (95% CI: 6.5-18.2) vs. 34.7 mo (95% CI: 30.0-40.4). Recurrence at the ablation/resection site was more common with ablation than resection occurring 22.5% vs. 3.6% ( $p=0.003$ ) of the time respectively. Distant recurrence in the liver was also more common with ablation occurring in 51.0% of patients vs. 25.5% for resection ( $p=0.007$ ). Extrahepatic recurrence was not dependent on technique of treating hepatic disease occurring in 33.5% vs. 33.9% ( $p=0.94$ ) with ablation vs. resection respectively. Estimated Kaplan-Meier mean survival was shorter with ablation (32.5 mo, 95% CI: 25.7-39.3) than resection (51.3 mo, 95% CI: 39.4-63.1).

**Conclusions.** Surgical resection should remain as the optimal first line surgical therapy in HCM, and hepatic ablation should be used in conjunction with surgical resection or in patients not fit for resection.

**Introduction.** Accuracy, precision and reproducibility of the resection of colorectal metastases. Previously identified prognostic predictors such as node status of the primary tumor, disease free interval (DFI), preoperative CEA value, tumor size or number may not apply to patients who have received preoperative chemotherapy.

**Methods.** A retrospective chart analysis of a prospectively collected single-institution database between March 1993 and August 2006 was performed. Disease-free survival (DFS) and overall survival (OS) were compared according to primary lymph node status, DFI ( $< 1$  yr vs.  $\geq 1$  yr), preoperative CEA value ( $\geq 100$  ng/ml vs.  $< 100$  ng/ml), maximal tumor size ( $\geq 5$  cm vs.  $< 5$  cm), and multiplicity. Survival was compared by log-rank test. Factors with a P value  $< 0.1$  were selected for multivariate analysis, which was performed using the Cox-regression hazard model.

**Results.** A total of 236 patients underwent hepatic resection for colorectal metastases following preoperative chemotherapy with irinotecan or oxaliplatin based regimens. The median age was 58 years (range 23-81), and 61% were male. With median follow up of 24 months, 1-, 3-, and 5-year DFS and OS were 59%, 28%, 23% and 66%, 67%, 43% respectively. Univariate analysis of DFS revealed positive lymph nodes as the only predictor ( $P=0.01$ ). In addition, the difference in DFS according to DFI ( $P=0.059$ ), tumor size ( $P=0.056$ ), and multiplicity ( $P=0.061$ ) were marginal. On the other hand, high CEA ( $P=0.006$ ) and large tumor size ( $P=0.013$ ) revealed significantly worse OS. Multivariate analysis revealed only lymph node metastasis ( $P=0.03$ ); relative risk, 1.56; 95% C.I., 1.07-2.32) as an independent predictor of DFS and only two factors, high CEA ( $P=0.034$ ; relative risk, 3.47; 95% C.I., 1.85-15.1) and large tumor size ( $P=0.040$ ; relative risk, 1.86; 95% C.I., 1.03-3.30) remained as independent predictors of OS.

**Conclusions.** Previously identified prognostic indicators do not accurately predict outcome in patients who have received preoperative chemotherapy. Further studies are necessary to define predictors of outcomes of hepatic resection for colorectal metastases in the era of modern chemotherapy.

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### IMPROVING GLYCOGEN LIVER CONTENT IMPROVES POST-OPERATIVE LIVER FUNCTION IN PATIENTS UNDERGOING MAJOR LIVER RESECTIONS

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**Purpose.** To prevent liver dysfunction after major hepatectomy.

**Design.** Open-label clinical trial of 60 patients undergoing major hepatectomy (3 or more segments) for the treatment of malignancy randomized to preoperative carbohydrate (CHO) load vs. standard care.

**Method.** Patients in the study-group ( $n=21$ ) received high calorie, CHO rich meals the day before the operation (35 kcal/kg, 60% CHO) followed by intravenous dextrose 10% (2 mg/kg/h) for 16 hours until arrival to the operating theater. Intra-operatively a hypotonic/dilute normo-saline cholangy of 2 mg/kg/h was infused. At the end of the procedure the clamp was decreased to 1 mg/kg/h and continued until 16 hours postoperatively. Dextrose 20%, supplemented with 30 mmol/L potassium-phosphate was titrated to maintain blood glucose between 4-6 mmol/L. The control group underwent management during the 16 hours after the operation. Blood glucose level above 10 mmol/L was treated with intravenous insulin as per standard sliding scale. The preoperative preparation, intra and postoperative management, including pain control were standardized. Glycogen content in liver tissue was measured on exposure of the liver and prior to closure of the fascia. Postoperative liver function was compared using the Schindl functional score (lactic acid, total bilirubin, INR, and encephalo-

hepatic resection. Objective clinical variables if obtained using a Cox proportional hazard reg. **Results.** The mean MELD score and tumor at resection group were 18.7 vs. 9 and 3.2 cm vs. 5 survival for the TACE group was 1.2 years and vs 1.9 years. In a multivariate analysis, both were significant predictors of survival in both groups. MELD scores, tumor size, portal vein invasion, each allocated points for incorporation into subgroups were then derived from the MOSS. Table 1 demonstrated the median survival for 1 patients treated with TACE and hepatic resecti **Conclusions.** MOSS, a scoring system of tumor characteristics, accurately stratifies patients with HCC treated with TACE or hepatectomy in MOSS are objective, non invasive and validated, this scoring system would be important, optimizing resource utilization as treatments.