unresectable cholangiocarcinoma. This study aims to compare pooled survival outcomes in patients undergoing ERFA and PRFA with biliary stenting compared with stenting alone.

METHODS: A comprehensive literature review was conducted querying the PubMed database for published manuscripts and abstracts comparing survival outcomes of patients undergoing either PRFA or ERFA and stenting with stenting alone. Only studies that included CCA-specific survival data for unresected, unresectable disease were analyzed. Pooled data was used to generate a Kaplan-Meier survival curve with log-rank test performed to compare differences in survival.

RESULTS: There were 4 studies comparing patients undergoing ERFA and stenting (106 patients) with stenting alone (101 patients), and 2 studies comparing patients undergoing PRFA and stenting (60 patients) with stenting alone (50 patients). One study compared patients undergoing either PRFA or ERFA (30 patients) with stenting alone (35 patients). The mean survival of the ERFA group with stenting (11.7 ± 1.0 months) was significantly longer than mean survival of the biliary stent control group (7.5 ± 1.8 months, P < 0.001). There was no significant difference when comparing mean survival of the PRFA with stenting group (7.7 ± 3.6 months) and biliary stent control group (7.5 ± 1.8 months, P = 0.7). Cumulative mean survival of all patients undergoing biliary RFA (10.6 ± 6.2 months) was significantly longer than that of the biliary stent control group (7.5 ± 1.8 months, P < 0.001). Similarly, median survival of the ERFA with stent group (13 months, log-rank test z = 5.7, P < 0.001) and the median survival of all patients undergoing biliary RFA (10.1 months, log rank test z = 4.0, P < 0.001) were statistically superior to the median cumulative survival of biliary stent control patients (8.1 months). However, the median survival of patients in the PRFA with stent group (5.2 months, log-rank test z = 1.3, P = 0.2) was not significantly different from the cumulative biliary stent group.

CONCLUSION: Biliary RFA with concomitant biliary stenting, overall, seems a promising palliative option for those with previously untreated unresectable cholangiocarcinoma with evidence of increased mean survival.

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Palliative Endoscopic Biliary Radiofrequency Ablation With Stenting Compared to Percutaneous Biliary Radiofrequency Ablation With Stenting: A Meta-Analysis on Survival Outcomes
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INTRODUCTION: Unresectable cholangiocarcinoma (CCA) carries an extremely poor prognosis with median patient survival between 3 and 6 months. A mainstay of palliative treatment is endoscopic or percutaneous biliary stenting which offers little survival improvement. Endoscopic radiofrequency ablation (ERFA) and percutaneous radiofrequency ablation (PRFA) are newer therapies and in conjunction to stent placement, may offer improved survival. This meta-analysis aims to compare survival data of patients undergoing ERFA and stent with those undergoing PRFA and stent for palliation of unresectable CCA.

METHODS: Using the PubMed database, a comprehensive literature review was conducted for manuscripts and abstracts comparing survival outcomes in patients undergoing ERFA with stenting and PRFA with stenting. Studies included provided a contingency of data allowing for extrapolation of survival outcomes related to CCA.

RESULTS: A total of 6 studies of ERFA with stenting and 2 studies of PRFA with stenting were included in our meta-analysis. The ERFA group had a longer mean survival time (11.7 ± 1.0 months) when compared to pooled stent control groups (6.5 ± 1.7, P < 0.0001). Similarly, the mean survival of the PRFA with stenting group (7.7 ± 3.6 months) compared to the mean survival of the biliary stent control groups also differed significantly (P = 0.004, respectively). Of note, the mean survival difference between the cumulative survival of ERFA with stent cohort compared to the PRFA with stent cohort differed significantly, favoring ERFA with stenting (difference = 4.0 ± 0.4 months, 95% CI 3.3 to 4.7, P < 0.0001). Median survival of the ERFA with stenting group (13.0 months) was also statistically superior to the biliary stent control group (7.0 months, log-rank test z = 5.7, P < 0.0001), while the median survival of the PRFA with stenting group (5.2 months) did not demonstrate superiority (log-rank test z = 1.3, P = 0.2). ERFA demonstrated statistical superiority when comparing median survival with that of PRFA (log-rank test z = 3.5, P < 0.0001).

CONCLUSION: While there is a published literature directly comparing outcomes of ERFA with biliary stenting and PRFA with biliary stenting, our meta-analysis of published studies analyzing each modality demonstrated superiority of ERFA as compared to PRFA in both mean and median survival and as compared to biliary stenting alone. Comparative studies are needed to derive meaningful differences in survival outcomes.