

Supplementary Tables and Figures

Supplementary Table 1 Advanced Pubmed Search Protocol for Included ERFA vs PRFA vs Biliary Stenting Alone Studies

| Search number | Query | Filters | Search Details | Results |
|---------------|--|---|-------------------------------|---------|
| 15 | endoscopic radiofrequency ablation AND cholangiocarcinoma NOT photodynamic therapy | Review, from 2011 - 2020 | ((("endoscope s"[All Fields] | 11 |
| 14 | endoscopic radiofrequency ablation AND cholangiocarcinoma NOT photodynamic therapy | Clinical Trial, Randomized Controlled Trial | ((("endoscope s"[All Fields] | 16 |
| 13 | endoscopic radiofrequency ablation AND cholangiocarcinoma NOT photodynamic therapy | Clinical Trial, Review, from 2011 - 2020 | ((("endoscope s"[All Fields] | 16 |
| 12 | endoscopic radiofrequency ablation AND cholangiocarcinoma NOT photodynamic therapy | from 2011 - 2020 | ((("endoscope s"[All Fields] | 43 |
| 11 | endoscopic radiofrequency ablation AND cholangiocarcinoma NOT photodynamic therapy | from 2011 - 2022 | ((("endoscope s"[All Fields] | 52 |
| 10 | endoscopic radiofrequency ablation AND cholangiocarcinoma NOT photodynamic therapy | | ((("endoscope s"[All Fields] | 60 |
| 9 | percutaneous radiofrequency ablation AND cholangiocarcinoma NOT photodynamic therapy | from 2011 - 2020 | ((("percutaneous"[All Fields] | 56 |
| 8 | percutaneous radiofrequency ablation AND cholangiocarcinoma NOT photodynamic therapy | from 2011 - 2022 | ((("percutaneous"[All Fields] | 62 |
| 7 | percutaneous radiofrequency ablation AND cholangiocarcinoma NOT photodynamic therapy | | ((("percutaneous"[All Fields] | 87 |
| 6 | percutaneous radiofrequency ablation AND cholangiocarcinoma | from 2011 - 2020 | ((("percutaneous"[All Fields] | 62 |
| 5 | percutaneous radiofrequency ablation AND cholangiocarcinoma | from 2011 - 2022 | ((("percutaneous"[All Fields] | 69 |
| 4 | percutaneous radiofrequency ablation AND cholangiocarcinoma | | ((("percutaneous"[All Fields] | 94 |
| 3 | endoscopic radiofrequency ablation AND cholangiocarcinoma | from 2011 - 2020 | ((("endoscope s"[All Fields] | 60 |
| 2 | endoscopic radiofrequency ablation AND cholangiocarcinoma | from 2011 - 2022 | ((("endoscope s"[All Fields] | 73 |
| 1 | endoscopic radiofrequency ablation AND cholangiocarcinoma | | ((("endoscope s"[All Fields] | 83 |

Supplementary Table 2 Advanced Pubmed Search Protocol for Included endoscopic radiofrequency ablation vs photodynamic therapy

| Search number | Query | Filters | Search Details | Results |
|---------------|---|---|------------------------------|---------|
| 12 | cholangiocarcinoma AND endoscopic radiofrequency ablation | Clinical Trial, Randomized Controlled Trial | ((("cholangiocarcinoma | 6 |
| 11 | endoscopic radiofrequency ablation AND photodynamic therapy AND | Clinical Trial, Randomized Controlled Trial | ((("endoscope s"[All Fields] | 13 |
| 10 | endoscopic radiofrequency ablation AND photodynamic therapy AND | Randomized Controlled Trial, Review | ((("endoscope s"[All Fields] | 13 |
| 9 | endoscopic radiofrequency ablation AND photodynamic therapy AND | Review, from 2011 - 2020 | ((("endoscope s"[All Fields] | 13 |
| 8 | endoscopic radiofrequency ablation AND photodynamic therapy AND | Review, from 2011 - 2022 | ((("endoscope s"[All Fields] | 16 |
| 7 | endoscopic radiofrequency ablation AND photodynamic therapy AND | Review | ((("endoscope s"[All Fields] | 18 |
| 6 | endoscopic radiofrequency ablation AND photodynamic therapy | Review, from 2011 - 2020 | ((("endoscope s"[All Fields] | 66 |
| 5 | cholangiocarcinoma AND endoscopic radiofrequency ablation | from 2011 - 2022 | ((("cholangiocarcinoma | 73 |
| 4 | cholangiocarcinoma AND endoscopic radiofrequency ablation | | ((("cholangiocarcinoma | 83 |
| 3 | endoscopic radiofrequency ablation AND photodynamic therapy | from 2011 - 2020 | ((("endoscope s"[All Fields] | 100 |
| 2 | endoscopic radiofrequency ablation AND photodynamic therapy | from 2011 - 2022 | ((("endoscope s"[All Fields] | 107 |
| 1 | endoscopic radiofrequency ablation AND photodynamic therapy | | ((("endoscope s"[All Fields] | 164 |

Supplementary Table 3 Newcastle-Ottawa Scale Scores for Retrospective Case-control Studies

| Study | Selection | | | | Comparability | Exposure | | | Total Score of Quality |
|------------------------|------------------------------|-----------------------------|-----------------------|------------------------|---------------|-------------------------------------|---------------------------|---|------------------------|
| | Is Case Definition Adequate? | Representativeness of Cases | Selection of Controls | Definition of Controls | | Comparability of Cases and Controls | Ascertainment of Exposure | Same method of ascertainment for Cases and Controls | |
| Strand et al. 2014 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 9 |
| Schmidt et al. 2016 | 1 | 1 | 0 | 1 | 2 | 1 | 1 | 1 | 8 |
| Wu et al. 2017 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 7 |
| Cui et al. 2017 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 7 |
| Bokeymayer et al. 2019 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 9 |

| | | | | | | | |
|-----------|---|---|---|---|--|--------------------------------------|------------|
| Yang 2018 | + | + | - | + | + | | |
| | Random sequence generation (selection bias) | Allocation concealment (selection bias) | Blinding of participants and personnel (performance bias) | Blinding of outcome assessment (detection bias) | Incomplete outcome data (attrition bias) | Selective reporting (reporting bias) | Other bias |

Supplementary Figure 1 Cochrane Risk of Bias Assessment for Randomized Controlled Trials.