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Irreversible electroporation and the pancreas: What we know and where we are going?

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Abstract

Pancreatic adenocarcinoma continues to have a poor prognosis with 1 and 5 year survival rates of 27% and 6% respectively. The gold standard of treatment is resection, however, only approximately 10% of patients present with resectable disease. Approximately 40% of patients present with disease that is too locally advanced to resect. There is great interest in improving outcomes in this patient population and ablation techniques have been investigated as a potential solution. Unfortunately early investigations into thermal ablation techniques, particularly radiofrequency ablation (RFA), resulted in unacceptably high morbidity rates. Irreversible electroporation (IRE) has been introduced and is promising as it does not rely on thermal energy and has shown an ability to leave structural cells such as blood vessels and bile ducts intact during animal studies. IRE also does not suffer from heat sink effect, a concern given the large number of blood vessels surrounding the pancreas. IRE showed significant promise during preclinical animal trials and as such has moved on to clinical testing. There are as of yet only a few studies which look at the applications of IRE within

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