

Table 4**Local and ablative therapies****Procedure**

Percutaneous ethanol injection (PEI)	PEI was the first ablative technique described. Following an injection of ethanol into the tumour, dehydration and protein denaturation are induced leading to a coagulative necrosis. PEI can successfully ablate most small tumours, but recurrence rates are high (43%). ⁵⁰ Five-year survival following PEI is 47-53% ^{51, 52}
Radiofrequency ablation (RFA)	RFA uses high energy radiowaves to induce a coagulative necrosis. When compared with PEI, RFA is equally successful at ablating small HCCs but is associated with a much lower recurrence rate (2-18%). ^{53, 54} This treatment has been approved by NICE. ⁵⁵ In hilar and distal CC, RFA has been used in combination with self-expanding metal stents (SEMS) to improve biliary drainage and prolong stent patency ⁵⁶
Microwave ablation	This therapy, approved by NICE, uses microwaves to ablate small HCC tumours. ⁵⁷ When the treatment was compared with RFA it was found to be inferior. However, it may be preferable in tumours adjacent to large vessels ⁵⁸
Cryoablation	The injection of liquid nitrogen into the tumour causes the destruction of tumour cells through freezing. Its use has been limited by the infrequent but serious complication of cryoshock which results in multiorgan failure following the procedure ⁵⁹
Photodynamic therapy (PDT)	Light-activated laser therapies have been used successfully to ablate small HCCs. Phase III studies to evaluate this therapy are in progress ⁶⁰
High-intensity focused ultrasound (HIFU)	HIFU is a novel ablative technique that has been used to treat small HCC in a few centres. ⁶¹ Larger studies are needed to evaluate this treatment
Transarterial embolisation (TAE)	The procedure involves the embolisation of the feeding artery of the tumour through the transcatheter delivery of lipodol or gel beads
Transarterial chemoembolisation (TACE)	This treatment involves the transcatheter delivery of embolic and cytotoxic agents (e.g. doxorubicin) which causes local tumour ischaemia and targeted chemotherapy. It is the most commonly used treatment for unresectable HCC. Although a partial response is seen in up to half of patients and tumour progression halted in many, an overall improvement in survival has not been observed. ⁶² A recent Cochrane review of TACE and TAE stated there was currently insufficient evidence to recommend or refute either treatment ⁶²
Radioembolisation/Selective internal radiation therapy (SIRT)	Cohort studies have reported the use of yttrium-90 containing beads, to embolise the feeding tumour artery and provide local radiation therapy. A tumour response was seen in 35-50% but a fifth developed liver toxicity ⁶³⁻⁶⁵