Tumor cell

The rapid proliferation of tumor cells in a neoplastic microenvironment is largely due to hypoxia.

Tumor cell seeding in the needle track during percutaneous needle biopsies has been reported for various types of cancers. The mechanical force of the biopsy both directly displaces the malignant cells and causes bleeding and fluid movement that can further disseminate cells. To prevent the risk of tumor cell seeding during biopsy, Bai et al. developed a gelatin stick loaded with chemotherapeutics such as doxorubicin (DXR) that was inserted into the biopsy canal. The gelatin-doxorubicin sticks (GDSs) were created by passively loading precut gelatin foam strips (Gelfoam) with doxorubicin solution. The dried GDSs were inserted into the needle track through the sheath during the needle biopsy and eventually self-absorbed. We showed that this procedure prevented iatrogenic tumor seeding during needle biopsies in two subcutaneous tumor models. In an alternative application, using GDSs in intracranial brain tumor implantation avoided the outgrowth of tumor from the rodent brain, which could otherwise potentially fuse the tumor with the meninges and distort the results in therapeutic studies in rodent brain tumor models [1].

1)
Bai RY, Staedtke V, Xia X, Riggins GJ. Prevention of tumor seeding during needle biopsy by chemotherapeutic-releasing gelatin sticks. Oncotarget. 2017 Feb 16. doi: 10.18632/oncotarget.15427. [Epub ahead of print] PubMed PMID: 28412733.