Small Cell Lung Cancer (SCLC) is a deadly and highly metastatic disease. Approximately 70% of patients are found with distant metastasis at diagnosis. The development of patient-derived xenografts (PDXs) has significantly advanced the study of human SCLC. The PDXs are genetically and functionally faithful to their original tumors including their responses to therapy. Most of the PDXs are grown in the subcutaneous flank of immunocompromised mice. To date, SCLC PDX metastasis have yet to be reported – despite that most of PDXs are derived from biopsies of metastatic sites or circulating tumor cells. Here, we report on a model of orthotopic SCLC PDXs that consistently metastasize to distant organs. We adapted an orthotopic transplantation method in which dissociated SCLC PDXs are directly injected into the left lung of immunocompromised NSG mice. Three PDX lines have been tested – one treatment naïve, and two drug-resistant lines. In addition to the primary left lung tumor, all three lines generate metastases to distant organs including the contralateral right lung, mediastinal lymph nodes, liver, adrenal glands, ovaries and brain. Rates of metastases range from 55 – 92% of injected mice, depending on the PDX line. Mice bearing one particular SCLC PDX line consistently develop hydrocephalus and brain metastases. The metastases express the neuroendocrine markers, synaptophysin and NCAM-1. Brain metastases were identified through their expression of TTF-1, a marker of SCLC and lung adenocarcinoma. In conclusion, we have adapted an orthotopic transplantation method to SCLC PDXs that consistently generates metastases and faithfully mirrors the pattern of human SCLC. Our model can be utilized to elucidate the biology of SCLC metastasis and as a platform for therapeutic strategies against metastatic SCLC.