OBJECTIVE: Most of primary human cancer tissues show effective engraftment and proliferation after transplantation onto Scid mice. However xenotransplantation of vital specimens of cervical carcinoma has not been successful in the past, also the generation of cell lines from primary cervical cancer has hardly ever been possible. The lack of appropriate xenograft models impedes the search for improved specific therapeutic agents. METHODS: We explored the efficiency of different techniques for tumor transplantation and describe the first protocol to enable reliable and efficient engraftment of human cervical cancer in Scid beige mice. To demonstrate the value of this tumor model, we explored the therapeutic potency of a novel immunotoxin (SA2E). SA2E is a chimeric protein constructed by fusing the human epidermal growth factor and the plant protein toxin saporin. RESULTS: About 70% of transplanted tumors exhibited potent proliferation, and multiple retransplantation was possible in 40%. Local treatment with the immunotoxin SA2E had a dose dependent therapeutic effect and achieved a tumor volume reduction of up to 60%. CONCLUSIONS: Reliable engraftment and high reproducibility make this novel xenograft model an attractive test system to identify new therapeutic agents for cervical cancer.