Autoamputated ovary with mature cystic teratoma is a rarely reported gynecologic entity with an unknown prevalence. A 41-year-old woman referred to our clinic for presumed left ovarian tumor. Pelvic examination, ultrasonography and CT scan revealed a 7-cm, cystic ovarian mass with calcification and fat component, and her serum CA125 was elevated to 68.3 U/mL. Laparoscopy was performed. The mass was identified in the cul-de-sac completely enveloped in the retroperitoneum without any ligamentous or direct connection with the pelvic organs. The right ovary was normal. However, the left ovary and tube could not be identified in its proper anatomical location. There was coffee bean sized mass attached to left infundibulopelvic ligament. Both adnexa had been normal on cesarean section 7 years ago at local clinic. The mass was successfully removed with sharp dissection from retroperitoneum and mesosigmoid colon by cooperation of general surgeon. Histopathologic study revealed a mature cystic teratoma. We present a rare case of an autoamputated ovary with mature cystic teratoma enveloped in retroperitoneum.