Vascularized composite allografts contain multiple components of tissues with unique immunologic characteristics such as skin, fat, muscle, nerves, lymph nodes, bone, cartilage, ligaments, and bone marrow. Different experimental models are therefore needed to investigate the mechanisms of rejection and to explore strategies to induce functional tolerance across the major histocompatibility complex barrier. The face is a unique organ containing a distinct amount of skin, fat, muscles, nerves, vessels, bones, cartilage and lymph nodes. The full face transplantation model which was introduced by our lab is technically demanding and associated with high morbidity for the recipients; therefore we introduced the hemifacial allograft transplant model. Here we describe the technical and immunological aspects of hemiface allotransplantation in a rat model.