abstract We have examined the ROSAT PSPC X-ray properties of a sample of 15 Abell clusters containing 23 narrow-angle tailed (NAT) radio galaxies. We find that clusters with NATs show a significantly higher level of substructure than a similar sample of radio-quiet clusters, indicating that NAT radio sources are preferentially located in dynamically complex systems. Also, the velocity distribution of the NAT galaxies is similar to that of other cluster members; these velocities are inadequate for producing the ram pressure necessary to bend the radio jets. We therefore propose a new model for NAT formation, in which NATs are associated with dynamically complex clusters undergoing merger events. The U-shaped NAT morphology is produced in part by the merger-induced bulk motion of the ICM bending the jets.