We study the energy lost by an accelerating quark probe in the quark-gluon plasma produced in the heavy ion collisions in an approximate setting where the acceleration of the probe is due to uniform circular motion. The energy loss rate of the rotating probe is calculated at strong coupling in the confining SU(N) gauge theory based on N D4 branes on a circle, using the rotating string solutions in the dual gravitational background. The system is known to exhibit a confinement-deconfinement transition at a finite temperature T_c. We investigate energy loss both in the low and the high T phases. The high T phase is similar to the previously studied case of the conformal plasma, yet we find qualitative differences due to non-conformality of the underlying theory. The low T phase, on the other hand exhibits novel interesting behavior: We find a dual gravitational mechanism that yields a lower bound on the emitted energy of the rotating quark, proportional to the mass gap in the glueball spectrum. The low T energy loss is argued to be completely due to glueball brehmstrahlung, hence the energy loss rate calculated here determines the Lienard potential for syncrotron radiation in this confining gauge theory at strong coupling.