



**Supplementary Figure S1.** The instruments (perforator and ligators) for spaying in cattle. (A) Unassembled parts of stainless-steel instrument. The T bar shafts are about 45 cm long and the sockets are about 5-10 mm inner diameter; the values vary for different age and size of animals. The bars can be assembled with a spear head or socket for a perforator or ligator, respectively. (B) Assembled perforator (top) and ligators. At the end of the socket in the ligators, the silicon ring can be fitted at the outer margin.