Euthanasia of cattle presents special challenges for veterinarians and producers. Currently recommended landmarks for captive bolt euthanasia often result in failure to penetrate the brainstem. The purpose of this study was to evaluate the ability to disrupt the brainstem by placing the shot at a higher position on the head. Intact heads from euthanized animals or natural mortalities were grouped as adult (>2y), young (6-24m) and neonate (<1m) and randomly assigned to either the LOW group (traditional landmarks at the intersection of two lines drawn from the medial canthus to the top of the opposite ear) or the HIGH group (midline halfway between the top of the poll and an imaginary line connecting each lateral canthus). Each head received a single shot from a CASH penetrating captive bolt pistol with bolt length and power load selected based on manufacturer's recommendations. Computed tomography was used to generate sagittal and transverse scans of each head which were evaluated independently by two veterinary radiologists. Brainstem disruption occurred if the bolt passed caudal to the presphenoid bone and deep to the third ventricle (sagittal scans) and was within 1.5 cm of midline (transverse scans). Data were evaluated using Fisher's exact test. Brainstem disruption occurred in 16/18 adult HIGH and 7/14 adult LOW heads (p=0.0225), 13/16 young HIGH and 11/19 young LOW heads (p=0.1667), and 11/11 neonate HIGH and 14/14 neonate LOW heads (p=1.0). The results of this study indicate that a higher shot location increases the probability of disrupting the brainstem in adult animals.