

TELLING TOOTH TRACES FROM FORAMEN: A CASE OF
TAPHONOMIC DETECTIVE WORK ON A JUVENILE CERATOPSID
SURANGULAR FROM THE LANCE FORMATION (MAASTRICHTIAN),
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One small (14.7cm long), left surangular from a juvenile ceratopsid was found in an Upper Cretaceous (Maastrichtian) hadrosaur-dominated bonebed within the Lance Formation of eastern Wyoming. The surangular has perforations on the exterior (rostral) surface of the bone. These perforations are unique to this specimen when compared to the other 48 hadrosaur surangulars found in the same bonebed. There are six aligned perforations that are conical and evenly spaced. The two anteriormost perforations have flaked bone edges and the other four perforations have smooth bone edges. Other smaller perforations are also observed below the major ones. Initial observations suggested the perforations were tooth traces, specifically pits and punctures, which are circular to oval in shape. Pits are shallow tooth traces, whereas punctures penetrate the thickness of the cortical bone. The spacing and alignment of the perforations compared well with the maxillary of a crocodile, which suggested that the traces were probably due to a crocodile bite. Shed crocodylian teeth from *Borealosuchus sternbergii* have been found in the same bonebed. However, a CT scan of the surangular indicated deep perforations into the bone with connecting channels, which is more indicative of foramen. Also, when the surangular was compared to several surangulars from skeletally immature and mature ceratopsids (cf. *Triceratops* or *Torosaurus*), nearly identical perforations were present. These findings indicate that although the perforations greatly resembled crocodylian tooth traces, the perforations on the bone are actually foramen possibly diagnostic of a particular taxon within Triceratopsini.

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