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Incomplete ossification of the atlas in a dog: surgical stabilisation using a SOP plate

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A six-month-old entire male dogue de Bordeaux weighing 39.5 kg was referred for evaluation of intermittent neck pain and an abnormal “clicking” noise at the cranio-cervical junction at three weeks after being kicked in the head by a horse. Clinical and neurological examination only identified hyperaesthesia on palpation and manipulation of the neck. CT of the head and neck identified two areas of incomplete ossification of the atlas (IOA): one at the level of the midline suture between the neural arches, and a second ventrolaterally between the right neural arch and the intercentrum of C1 (Fig 1A to C). The clinical findings were considered most likely to have arisen through trauma, destabilising a pre-existing incompletely ossified atlas. The atlas was stabilised ventrally using a 2.7 “String-of-Pearls” (SOP) plate and cancellous bone grafting (collected from the left humerus). Contouring of the SOP plate allowed for a snug fit of the plate to the ventral surface of the atlas (Fig 1D to F). A postoperative CT (eight weeks) was supportive of bone healing of the dorsal and ventrolateral fracture sites. The two-year postoperative follow-up reports the dog to be clinically sound with no further pain or “clicking” noise.

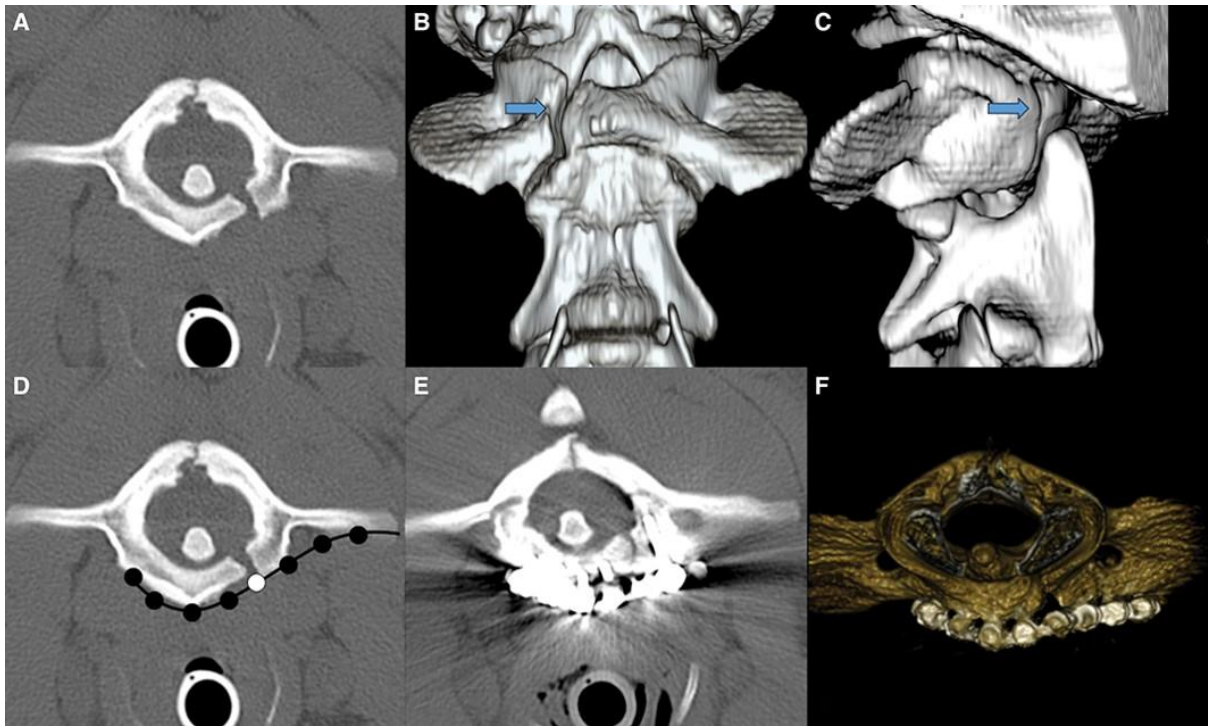


Figure 1- (A to C) Transverse CT image of the atlas (A) and CT 3-D volume reconstructions of the craniocervical junction (B to C). (A), transverse view showing the two sites of IOA, dorsally and ventrally; (B), ventral projection demonstrating the ventrolateral IOA between the right neural arch and the intercentrum of C1 (arrow) and (C) left lateral oblique projection demonstrating IOA at the level of the midline suture between the neural arches (arrow). (D) Transverse preoperative CT image, showing a schematic representation of the presurgical planning with SOP plate. Black rounds represent where screws were placed, white round: no screw placed (D). (E to F) Postoperative CT transverse (E) and CT 3-D volume reconstruction (F) showing placement of the SOP plate along the ventral aspect of C1.