

## The Incidence of Maxillary Canine Ankylosis: A Single-Centre Analysis of 206 Canines Following Surgical Exposure and Orthodontic Alignment

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**Abstract :** Maxillary canines play a crucial role in occlusion and aesthetics. Successful management of impacted canines requires early identification and intervention to prevent complications such as resorption of adjacent teeth and cystic changes. Although removal of the deciduous canine can encourage normal eruption of its successor, this is not always successful. Some patients may require surgical exposure and bonding of a gold chain to mobilise and align the canine, which can take up to 3 years. As this procedure has various risks, patients need to be appropriately consented to. Failure of such treatment commonly occurs due to inadequate anchorage or failure of the gold chain attachment, but in some cases, this is due to ankylosis. Aim: The aim of this study was to determine the incidence of ankylosis of unerupted maxillary ectopic canines following surgical exposure and orthodontic alignment at the Maxillofacial and Orthodontic Department, Royal Stoke University Hospital (RSUH), United Kingdom. Methodology: Patients treated from January 1, 2017, to December 31, 2019, were retrospectively studied. Electronic records with post-treatment follow-up at 3-6 months and 12-15 months were extracted and analysed. Patients were excluded based on three criteria, non-compliance with orthodontic treatment post-surgery, presence of canine transposition, and external orthodontic treatment. Sample: Overall, 159 suitable patients were selected from the 171 patients identified. Surgical exposure and gold chain bonding was carried out for a total of 206 maxillary canines, with the pattern of impaction being 159 (77.2 %) palatal, 46 (22.3%) buccal, and 1 (0.49%) in line of the arch. The sample consisted of 57 (35.8%) males and 102 (64.2%) females between the age range of 10 to 32 years, with the mean age being 15 years. The procedures were carried out under general anaesthesia for all but three patients, with two cases being repeats. Closed exposure was carried out for 189 (91.7%) canines. Results: The incidence of ankylosis from this study was 0.97%. In total, two patients had upper left canine ankylosis, which was identified at their 12-15 months orthodontic follow-up. Both patients were males, one having closed exposure at age 15 and the other having open exposure at age 19. Conclusions: Although this data shows that there is a low risk of ankylosis (0.97%), it highlights the difficulty in predicting which patients may be affected, and thus, a thorough pre-treatment assessment and careful observation during treatment is necessary. Future studies involving larger cohorts are warranted to further analyse factors affecting outcomes.

**Keywords :** ankylosis, ectopic, maxillary canines, orthodontics

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