



## CLINICAL PROBLEM

- The prevalence of crowding of permanent incisors is 33.3%-50% (1).
- Crowding is associated with aesthetic concerns, possible difficulties with plaque control and other malocclusions (1).
- One intervention to correct crowding, e.g., surgical extraction of primary canines (Cs), is believed to induce spontaneous alignment of incisors (2).
- These extractions of Cs are controversial due to concerns about short-term effects on arch space.



## CLINICAL QUESTION

Among children with permanent incisor crowding, to what extent does primary canine extraction alter the permanent incisor crowding compared to no extraction?



## EVIDENCE SEARCH

Search date: January 31st, 2023  
 Key words: primary canine extraction, tooth extraction, dental arch, incisor, incisor crowding, treatment outcome, malocclusion therapy.  
 PubMed yield: 683 evidence sources  
 Additional databases: Cochrane, Scopus, Web of Science, Clinical Trials, OpenGrey, and Google Scholar.  
 Article selected: Espinosa D, et al., 2020, Systematic Review, 3 primary studies (2 RCTs and 1 non-RCT)

- REFERENCES:** (1) Espinosa, D, et al. "The effect of extraction of lower primary canines on the morphology of dental arch: A systematic review and meta-analysis." International journal of paediatric dentistry vol. 31,5 (2021): 583-597. doi:10.1111/ipd.12726  
 (2) Kau CH, Durning P, Richmond S, Miotti FA, Harzer W. Extractions of primary canines to create space for permanent incisors in the developing dentition: a randomized controlled trial. J Orthod. 2004;31(1):1-10.

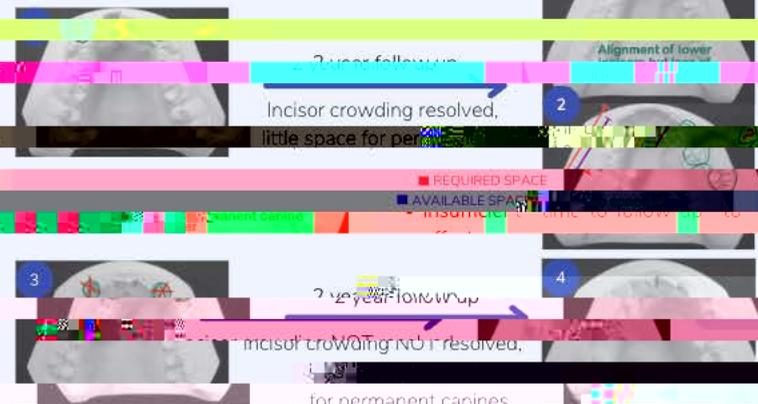
Overall, there is limited evidence to support the extraction of lower primary canines to reduce permanent incisor irregularity. More RCTs are needed, notably, to evaluate the effect on the alignment of incisors.



- MD (incisor irregularity) = -2.83mm (95% CI: -3.56, -2.09)
- MD (Arch length) = 2.26mm (-1.58, 0.94) I2=90%
- MD (Incisor crowding) = 0.43mm (0.10, 0.76) I2=0%

## INTERPRETATION

- The results for incisor irregularity are **CLINICALLY MEANINGFUL** and **CLINICALLY DECISIVE** (threshold: 2 mm).
- Extraction of primary canines reduces the available space for permanent incisors.
- Within 5 years, there is **NO EVIDENCE** on the extraction of the canines on long-term incisor crowding.



databases; No language limits.

PRISMA 2020 flow diagram of evidence synthesis

## LIMITATIONS

- Statistical heterogeneity related to incisor irregularity.
- Space analysis limited to the anterior crowding and arch length.
- Only 3 studies only, including a non-RCT, one RCT only examined effects on the lower arch.
- Follow-up less than 5 years.
- No assessment of publication bias.
- Research effectiveness not properly investigated.
- Authors incorrectly concluded that treatment length associated for exo of Cs and serial extractions (Cs, Ds and 4s).

## KEY POINTS

- Children in mixed dentition population of interest.
- No information about the cost, socioeconomic status of the study population and health insurance.
- Quebec covers tooth extraction for children under 12.
- Sufficient time to follow up to see short-term effects.
- Effects: permanent canines may cause long-term effects: permanent canines may create lifelong reluctance regarding dental treatment in young children.

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