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Father of Forensic Odontology

TOOTH CORONAL INDEX & PULP – TOOTH RATIO – A KEY FOR AGE ESTIMATION

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INTRODUCTION

- Teeth can be preserved for a long time indeed after death without gross changes.
- The correlation between the reduction of the coronal pulp cavity and the chronological age can be assessed through panoramic radiography.¹

Biochemical

Radiological

Morphological

Spectroscopic^{3,4}

- The most reliable and simplest method to calculate age is through teeth, whether living or dead, rather than skeletal remains²
- Panoramic radiography is superior to intraoral radiographs; all teeth in one film suitable for comparison
- Secondary dentin deposition is influenced by race, ethnicity, diet, and lifestyle.

AIMS AND OBJECTIVES

To conduct a systematic review assessing the age estimation by tooth coronal index (TCI) and pulp tooth ratio (PTR) through panoramic radiographs and its results in an Indian population

MATERIALS AND METHODS

Review focused on articles with age estimation by TCI and PTR in panoramic radiographs, purely studied in Indian population (until 2018) and extracted by PRISMA. A total of four manuscripts were included in the review and the results were analysed

RESULTS AND DISCUSSION

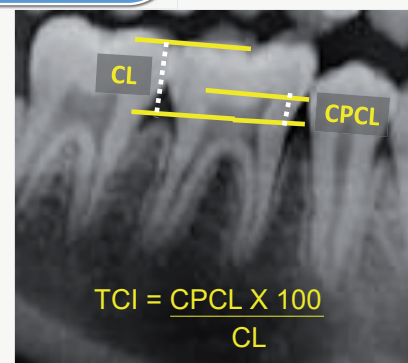
BODECKER et al (1925)

Apposition of secondary dentin and correlated it with age

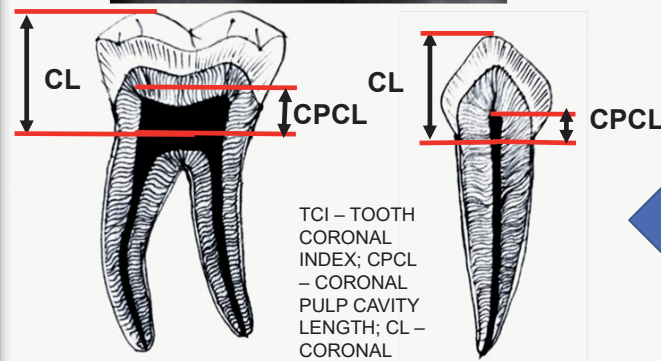
GUSTAFSON G (1950)

First to introduce secondary dentin measurement method for age estimation

IKEDA et al, 1985



$$TCI = \frac{CPCL \times 100}{CL}$$



Studies in an Indian population

Author	Correlation between Age and TCI
Koranne et al. 2017 ⁵	Highly negative
Nagi et al. 2018 ²	Highly negative for mandibular second premolar than first molar

Age ↑

Secondary dentin deposition

↓ in Pulp volume

TOOTH CORONAL INDEX



PULP-TOOTH RATIO

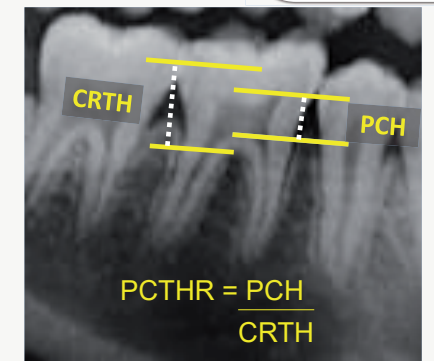
ADVANTAGES

- High reproducibility, digitization
- Less time-consuming, need no extraction, can be applied to both living and dead, and there is no use of specialized equipment
- Cost effective
- Easy to calculate

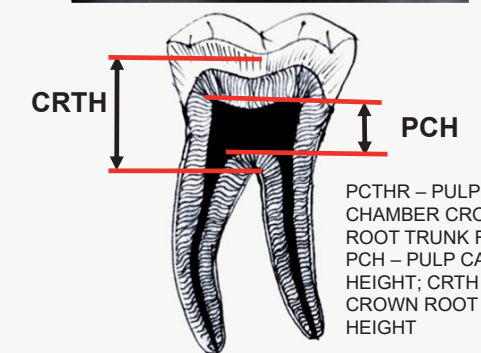
DISADVANTAGES

- Cannot be used in cases of 1. Missing selected teeth
2. Carious, attrited and restored teeth
3. Age <24 years

MATHEW et al, 2013



$$PCTHR = \frac{PCH}{CRTH}$$



Studies in Indian population

Author	Correlation between Age and pulp-tooth volume
Shah et al, 2016 ⁶	No statistical difference between chronological age and calculated age
Jain et al, 2017 ⁷	Negative correlation, Better than TCI

CONCLUSION

This review suggests that both TCI and PTR shows strong negative correlation as age advances, in an Indian Population. This simple, non-invasive, cost-effective technique can be applied to both living and dead individuals through simple dental panoramic radiographs.

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