PPD

Priority to Prevention Dentistry

Should NOCTP/NRCT be the preferred Treatment of Choice?

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May 2021

Reviewd by Lina Jasulaityte together with René Gruythuysen
April 2022

What about NRCC*?

- NOCTP and NRCT are **etiological** TREATMENTS controling the process of the disease
  Patients and care providers can learn from it how to decrease the caries activity.

- Restorative approches are **symptomatic** TREATMENTS
  They mask the potential caries activity.

*Non-Restorative Caries Control

Innes et al, Managing Carious Lesions: Consensus Recommendations on Terminology. Advances in Dental Research 2016, Vol. 28(2) 49–57.

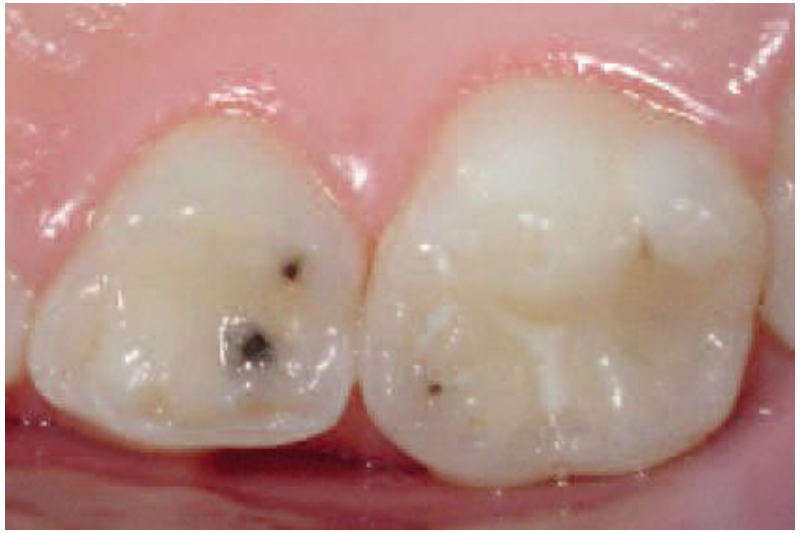
NRCT 5-steps protocol

*The method was originally described in 2010 by Gruythuysen [2010, 2019] as a 5-step protocol: *(1) written informed consent; (2) making the cavity accessible for plaque removal; (3) treating carious dentine with anticariogenic agents and/or applying a protectivelayer to the carious dentine; (4) monitoring the caries process;(5) effective communication about dental health education*. As yet, no prospective clinical study has followed the original 5-step NRCT concept. After over 10 years of experience with NRCT, a paper was published stressing the benefits of this aetiological treatment as first option, refuting prejudgements and explaining the crucial role of motivational communication [Gruythuysen, 2019]. It was also pointed out that poor home oral health care for a childmay be a sign of child neglect. Therefore, in the same paper it was recommended that general and oral health providers should work together to prevent the risk of neglect.

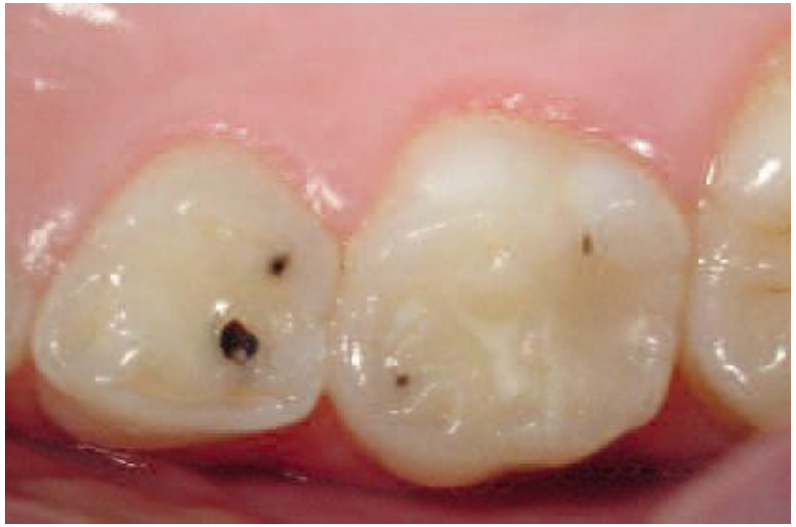
*NOCTP and NRCT Are Not Complete without Tailored Motivational Communication.Gruythuysen RJM, van Loveren C, Burgersdijk RCW.Caries Res. 2021;55(2):162-163. doi: 10.1159/000514022. Epub 2021 Feb 25.

Case 1: NOCTP/NRCT (No SDF!)

- Dec 2005

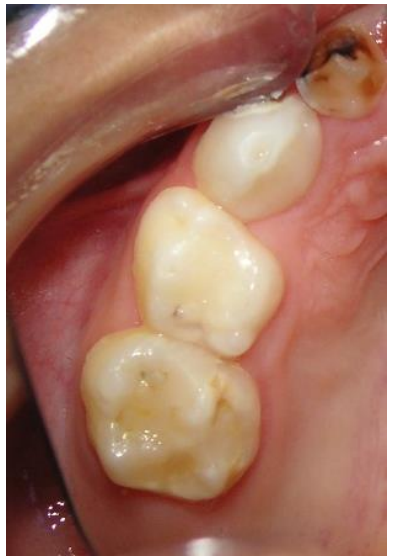


- Dec 2007
  Why a sealant in tooth 55?
  NOCTP will do!



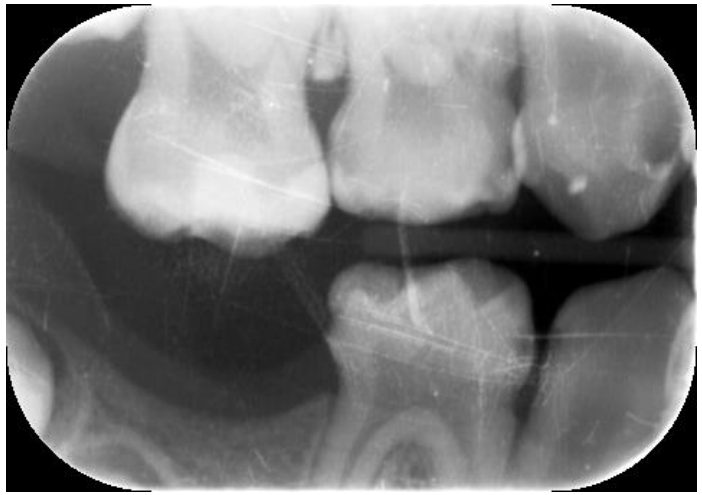
Case 2: September 2008

- Clinical:
  Plaque present;
  HSPM is restored, no caries visible in tooth 55



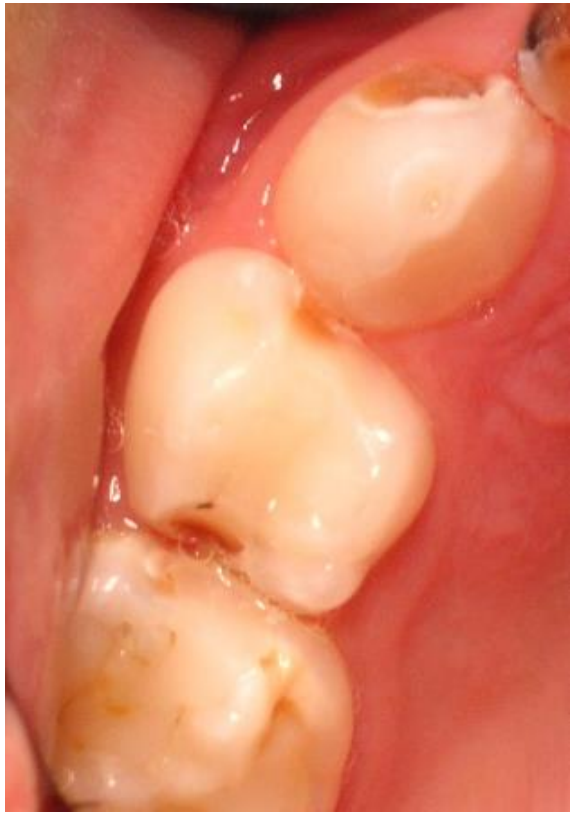
- Bitewing (unfortunately many artefacts):
  diagnosis tooth 55: no caries mesially
  diagnosis tooth 54: caries lesion distally

and mesially



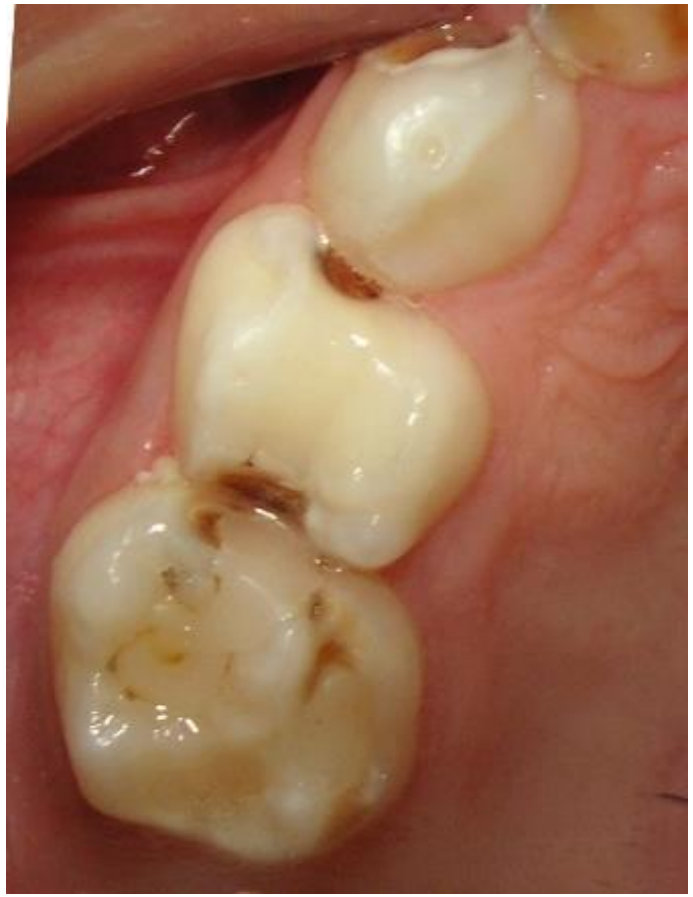
Case 2 continued: November 2008

- Less plaque
- Slicing tooth 54 mesially and distally: well accepted
- Diagnosis tooth 55 after slicing tooth 54 distally: cariës on mesial surface of 55 direct visible clinically, but not noticeable on bitewing! (Is it secundary or primary caries?)
- Slicing tooth 55



Case 2 continued: March 2009

- Plaque still present
- But the lesions are arrested (No SDF)

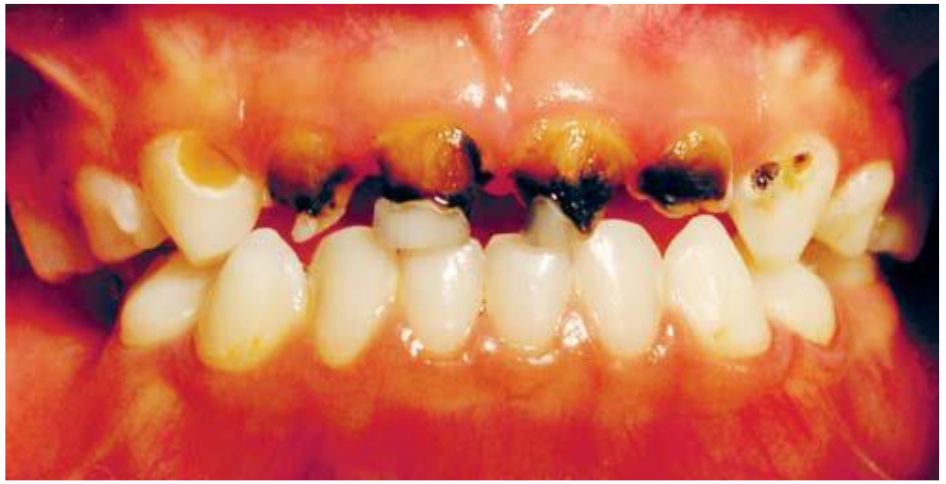


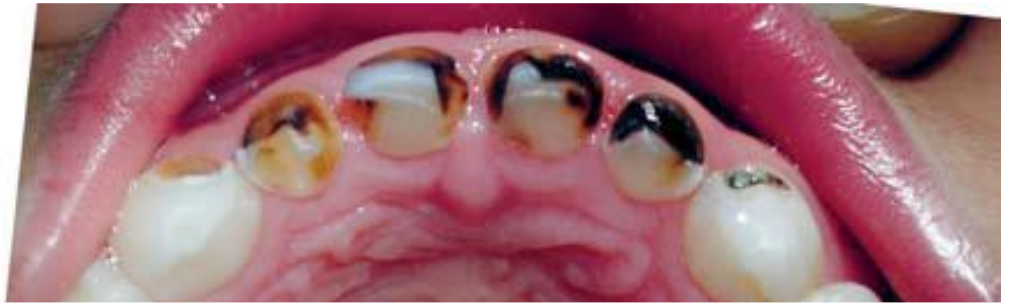
Case 3: No request for esthetics

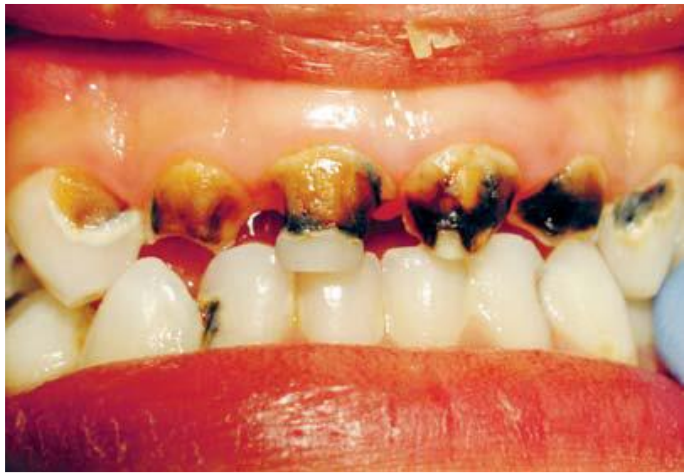
- Intake (a boy, age almost 5)
  February 2008

- November 2008
  OH improved

- March 2009
  OH worse again
  Motivational Interviewing continued





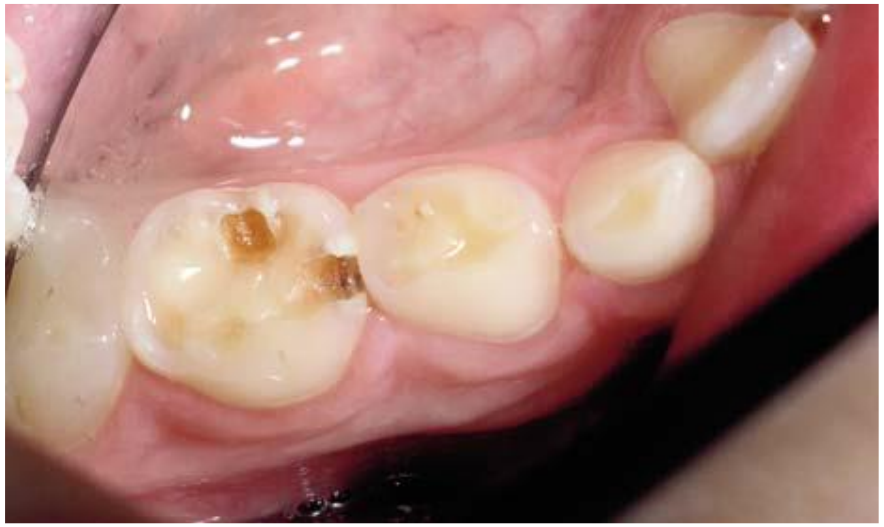


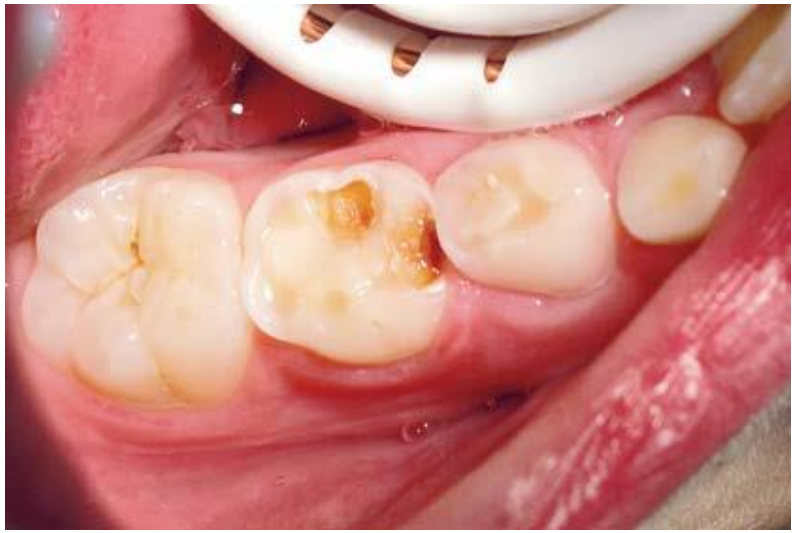
Criteria for esthetic treatment in primary teeth

- When request comes from the child (not the parent)
  My experience: very few children ask for esthetic treatment
- When OH is sufficient

- Only when both criteria are being met esthetical restoration is being indicated in the primary and the permanent teeth

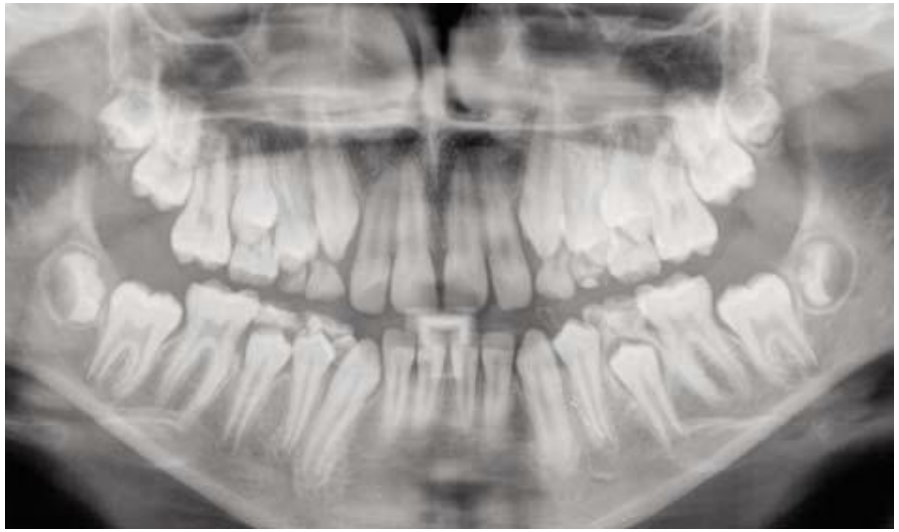
Case 4: September 2005 NRCT in deep caries lesion in the 85

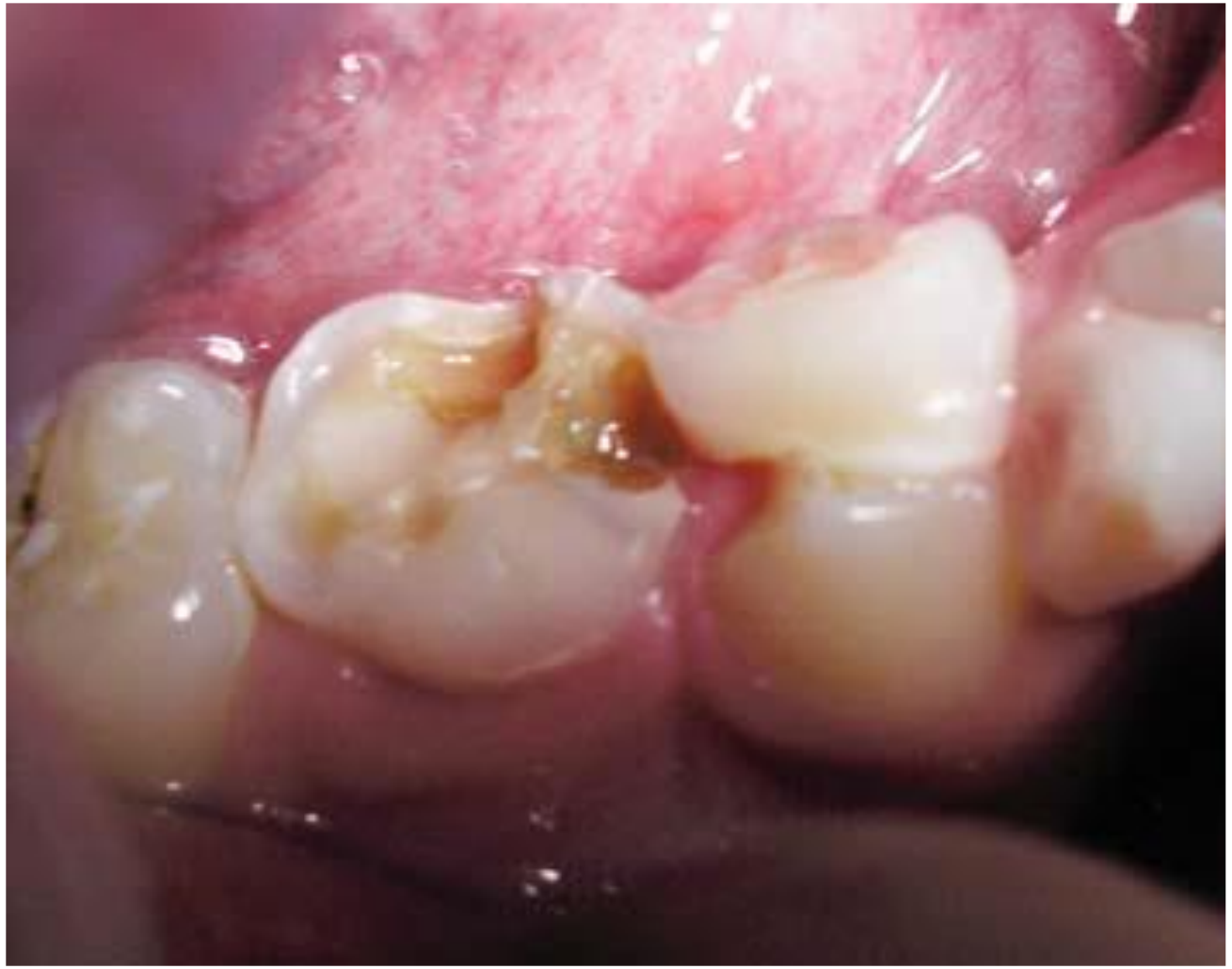




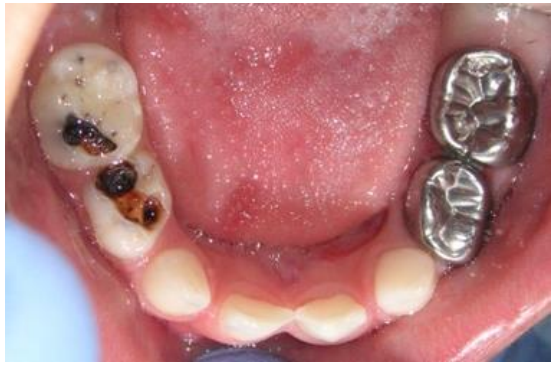
Case 4 continued: April 2007

Unfortunately the Oral Health was not improved. Still, after 19 months NRCT (only FV, without SDF) **deep carious** active 85 was almost shedding without pain/sepsis.



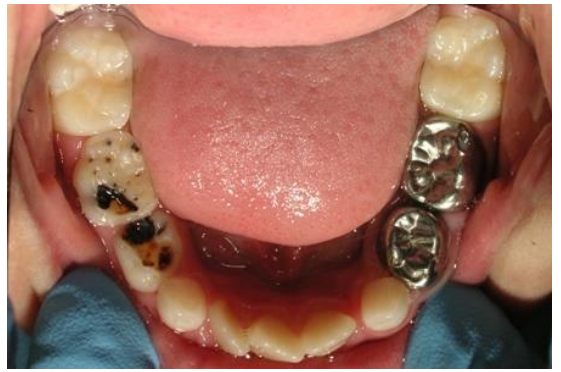


Case 5: Overtreatment in university setting



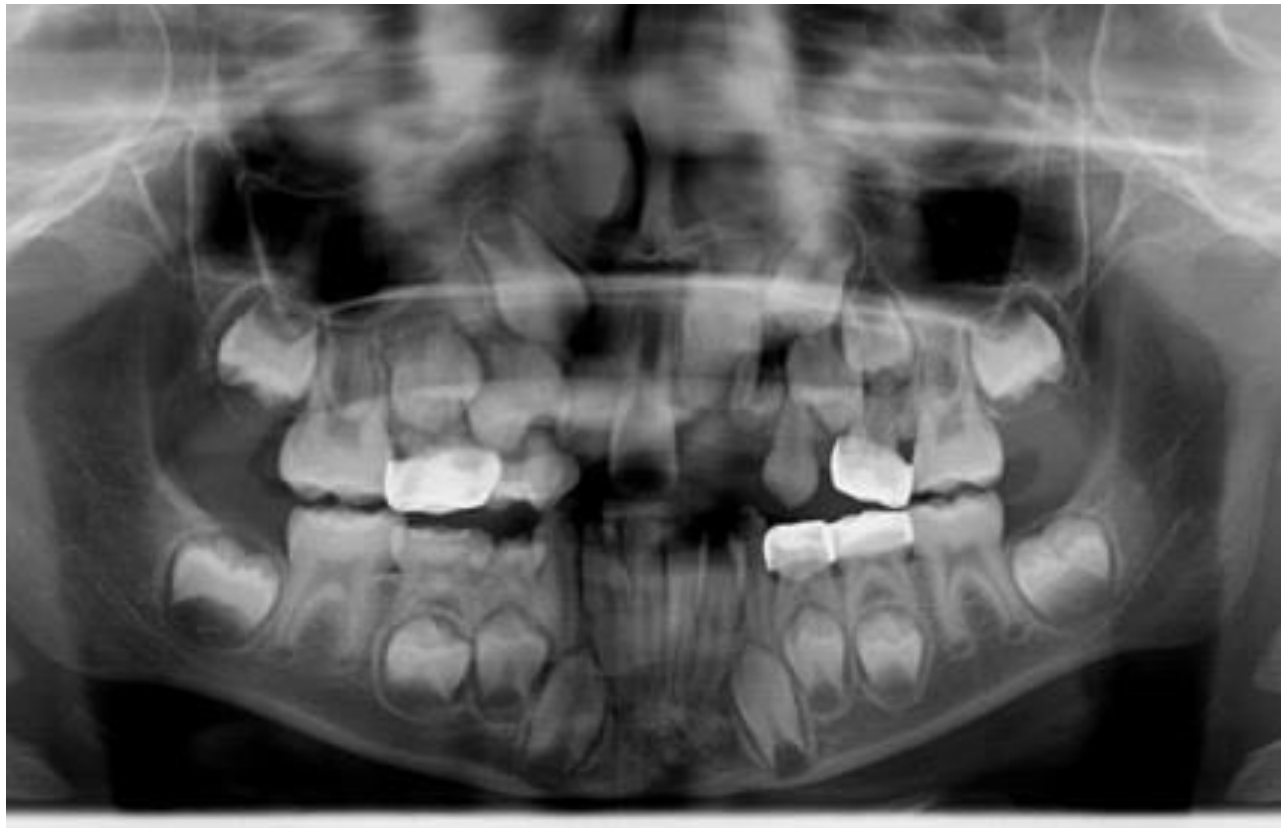
- First was NRCT incompletely applied, without sufficient guidance and no SDF
- Plaque was still present and crowns were used for 74, 75
- The next dentist changed the approach to to efficient NRCT, appropriate guidance and caries stopped.
- The third dentist by slight presence of plaque, without any sign of irreversible inflammation decided to place crowns on 55 and 65 including pulpotomy, instead of guiding the self care

23 m



Underestimating risk of overtreatment (Hartshorne en Hasegawa, 2003).

View after 42 months



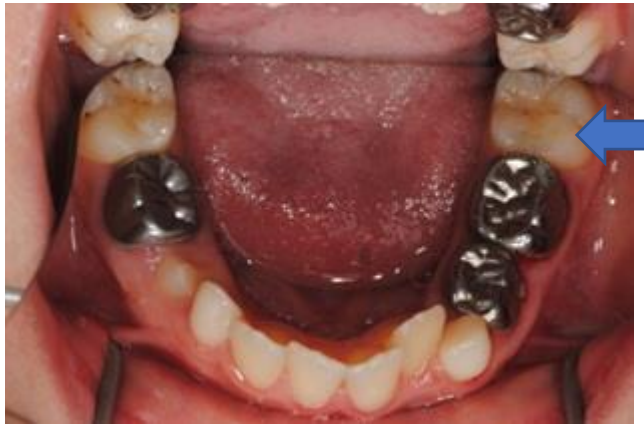
After 50 months: active lesions in 84 and 85

The third dentist makes a decision:

- Pulpotomy + crown 84
- Pulpotomy + crown 85
  Despite no risk for pain/sepsis

Why?

- About 18 months later permanent teeth break through.

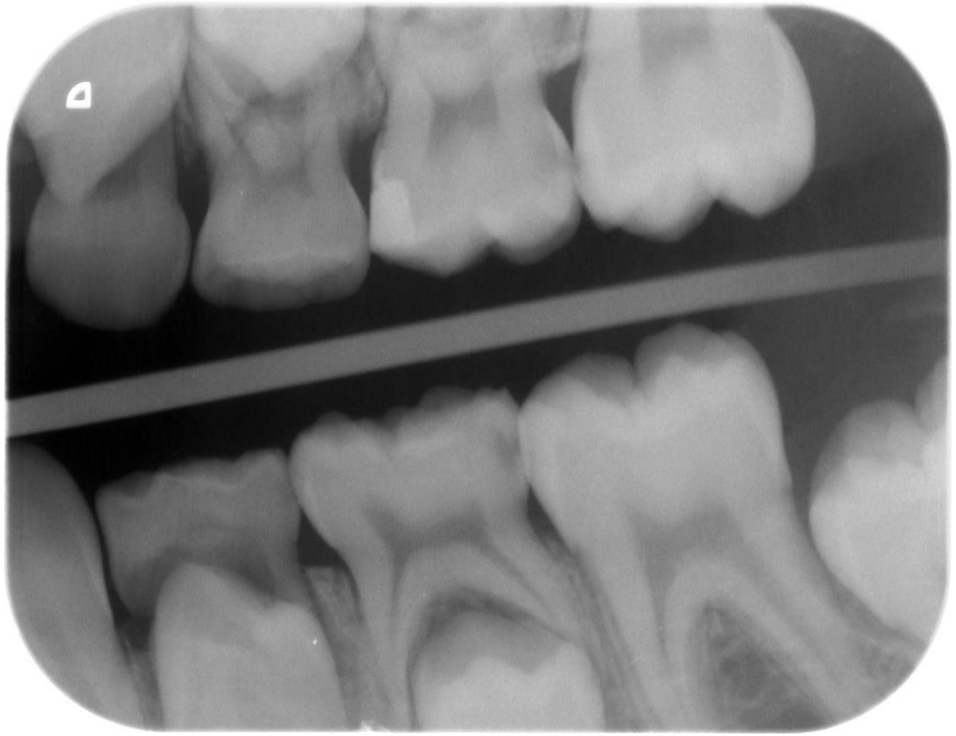


No active lesion, no sealant first perm. molars !

The mesial surface of the first permanent molar is the most caries-susceptible proximal surface of the permanent dentition in children under the age of 12

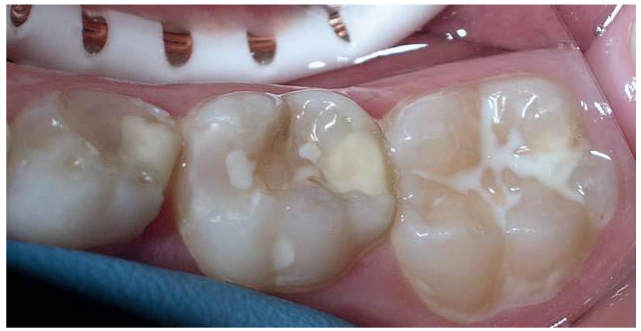
How to prevent caries in the mesial surface of FPM?

- Caries lesions in 65 and 75 distally



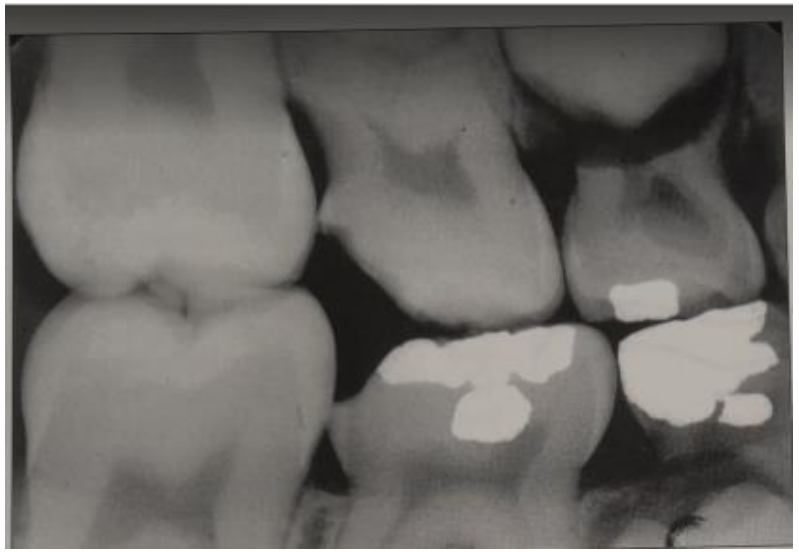
Arrestment potential GIC approximal

- Tamara Kerber Tedesco[1], Clarissa Calil Bonifácio[2], Ana Flávia Bissoto Calvo[1], Thais Gimenez[1], Mariana Minatel Braga[1], Daniela Prócida Raggio[1] **lesion prevention and arrestment in approximal surfaces in contact with glass ionomer cement restorations - A systematic review and meta-analysis.** Int J Paediatr Dent . 2016 May;26(3):161-72.



- **Conclusions:** In laboratory studies, GIC shows better **ability to arrest caries** lesion in approximal adjacent surfaces, but this ability **was not confirmed in longitudinal clinical trials.**

Ek and Forsberg 1994



NRCT: Slicing of distal surfaces of carieus second primary molar to make the lesion and mesial surface of the FPM accessible to brushing with fluoride toothpaste

https://drive.google.com/file/d/1u7W0tGJScBUBLH-oByV10aL-j99LbWDg/view

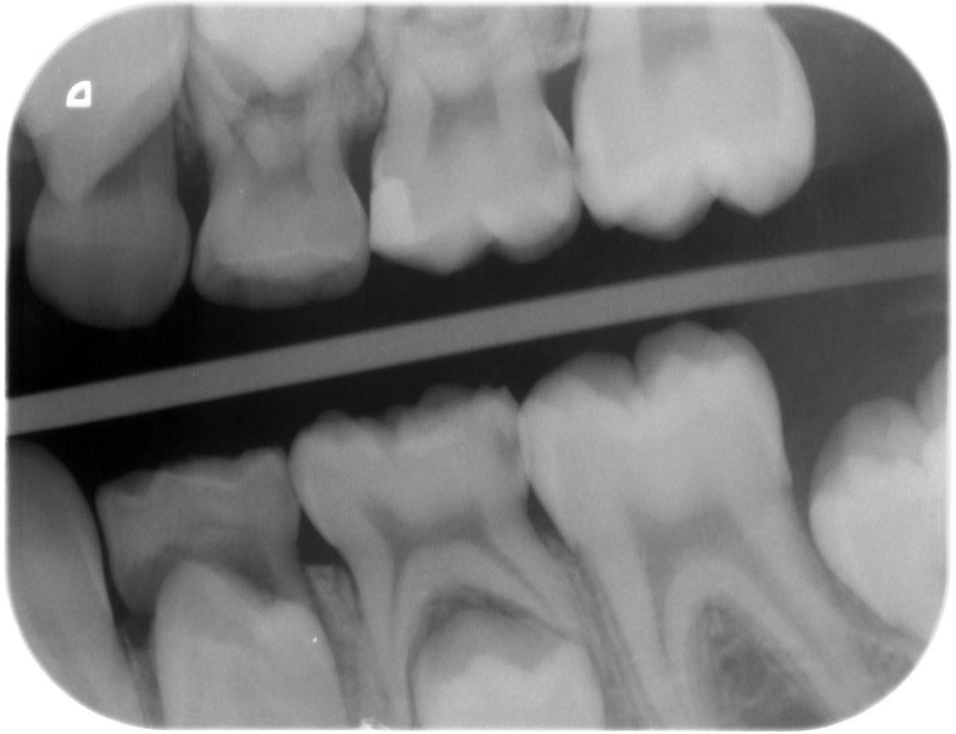
Etiological approach?

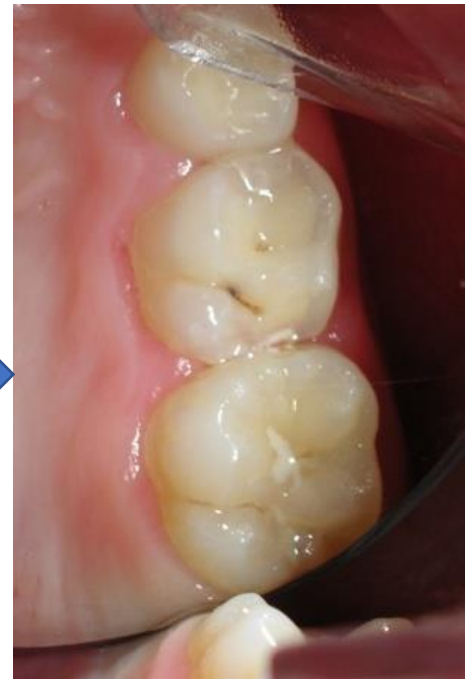
In conclusion, the caries rate for 6m was very low if the neighbouring 05d was sound as judged radiographically, while the rate was 15 times higher if 05d had enamel/enamel-dentin border caries (states 2–3). Deeper lesions in 05d did not increase the caries rate risk for 6m compared with the presence of enamel/enamel-dentin border caries in 05d and no advantage could be demonstrated from restoring 05d with amalgam for preventing caries in 6m. The caries rate risk for 6m increased 3.4 times in the presence of dentin caries/restorations in 04d and/or 05m at the time of eruption of 6m. The corresponding increase in risk for 05d was 2.7.

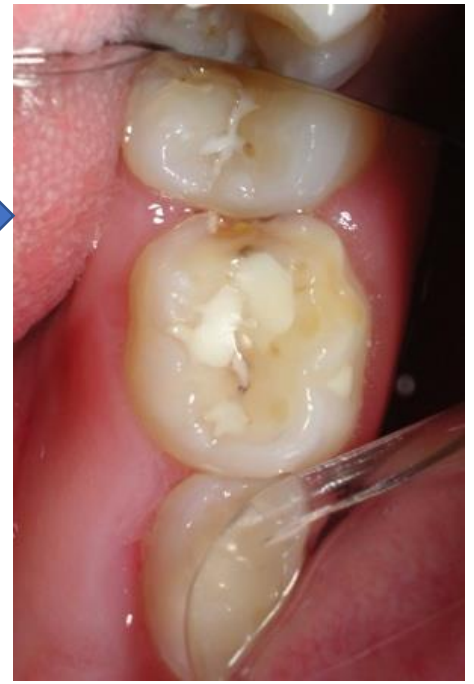
(Mejàre et al, 2001)

Restoration (5Dist) will not prevent caries at the mesial surface of the permanent first molar.

Case 6: Prevention mesial surface First Permanent Molar





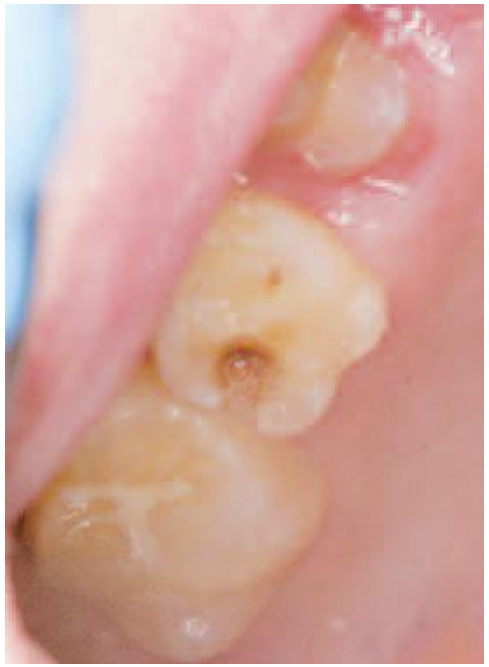


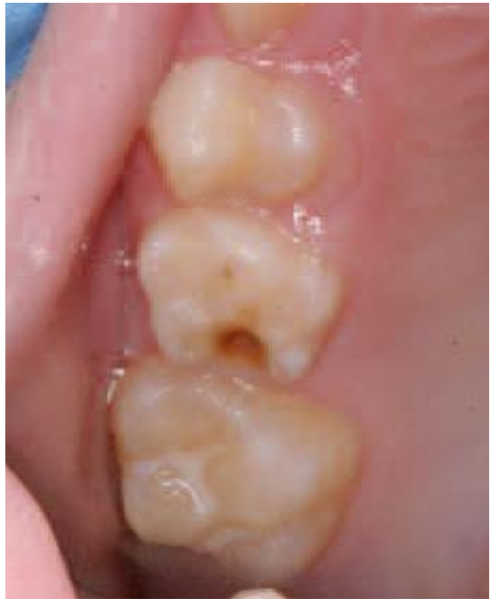
NRCT: Slicing of distal surfaces of carieus second primary molar to make the lesion and mesial surface of the FPM accessible to brushing with fluoride toothpaste

Case 7: NRCT instead of restoration

- Fracture distal crista/ lost occl. filling

- Therapy: NRCT
  Note: small white lesion mesial surface FPM





Courtesy to R.Kuitert

Recent study

- Baseline caries presence on t5D and T6O were highly significantly associated with follow-up caries presence on T6M ($P < .001$). The adjusted odds ratios corresponding to t5D and T6O were 3.94 (95% CI: [1.78, 8.71]) and 3.26 (95% CI: [1.46, 7.31]), respectively.
- These findings highlight the need for prevention and (etiological?) management of caries on T6O and t5D.

Longitudinal assessment on the impact of caries status of nearby surfaces on caries progression on the mesial surface of first molars. Lim LZ, Preisser J, Benecha HK, Zandona AF.Int J Paediatr Dent. 2020 Nov;30(6):775-781. doi: 10.1111/ipd.12650. Epub 2020 May 1

Innes NP, Manton DJ. Minimum intervention children's dentistry − the starting point for a lifetime of oral health. *Br Dent J* 2017; **223**: 205−213.*

Some* want to move from the traditional 'drill and fill' towards a more 'child friendly' approach, highlighting sealants and sealing in demineralized dentine. Interestingly, these rather more symptomatic than biological concepts still involve the oral health professional providing a technical solution. When can we expect the huge step forward to a biological (= plaque removal) approach in paediatric dentistry?

R. Gruythuysen (Dental Update, 2019)

Dutch Guidelines 2021

- NRCT and restoration may both be effective. There is no evidence that either option is more effective in children with a cavitated dentinal lesion. The most appropriate treatment for a cavitated dentinal lesion depends on the child 's treatability, location, stage of dental development and the depth* of the caries lesion. NRCT is preferred because it is less invasive and **it is also likely to have a motivational and learning effect .**

***Activity of the lesion is a more important criterium than the cavity depth**

There are two kinds of Iatrogenic Neglect

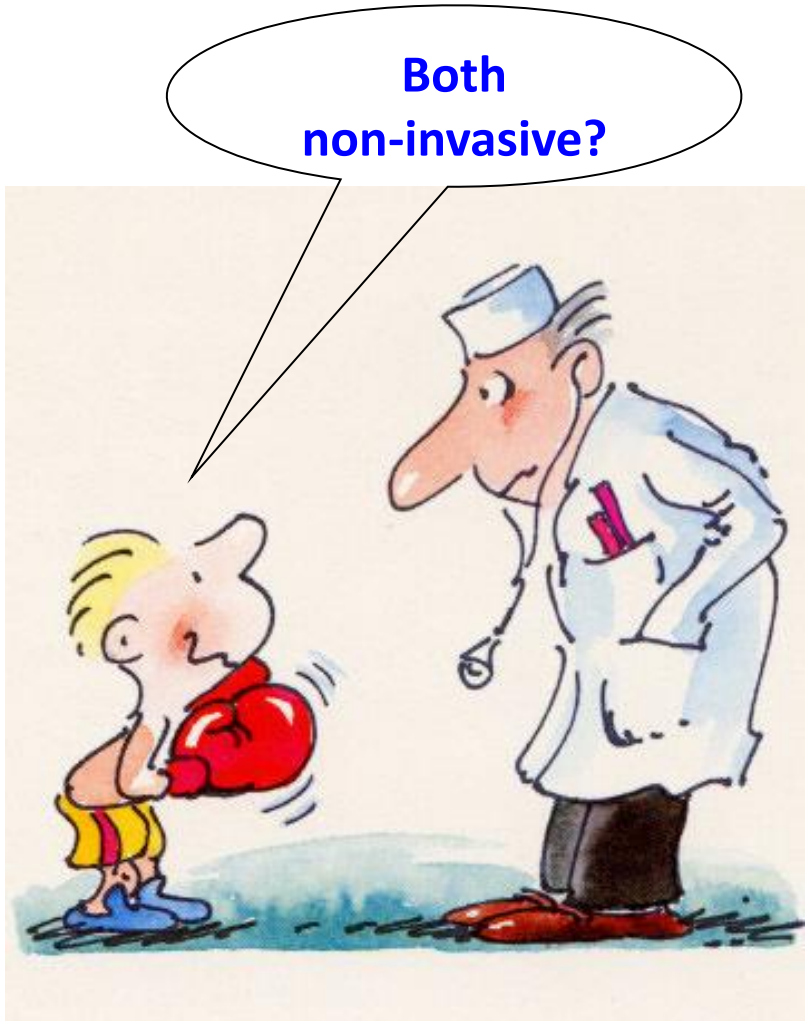
1. Neglect of preventive treatment: insufficient use of the available forms of effective preventive (etiological) treatment.
2. Neglect of curative treatment: when curation is not applied (symptom control) in cases where this is necessary.

In all cases the child needs to be safe

MID versus PPD

- MID (Mininmal Intervention Dentistry) is a response to the ‘old school’ repair focus
- PPD (Priority to Prevention Dentistry) directly focuses on the improvement of oral health as the prefered choice

What is in the best interest of the child?


Both
non-invasive?