Clinical Evaluation of Non-Restorative Cavity Treatment (NRCT)

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Aim

The present retrospective study aims to investigate extending lifetime of cavitated primary teeth by Non-Restorative Cavity Treatment (NRCT). NCRT focuses on caries management in progressed lesions comparable to the Non-Operative Caries Treatment Program (NOCTP; Ekstrand & Christiansen, 2005) for the prevention of caries progression of early lesions. This study evaluates clinical results of: 1) making the caries lesions accessible (fig. 1) for the toothbrush 2) improving self care by motivational interviewing 3) application of fluoride varnish and/or if needed for protection of the pulp, application of a RMGI lining cement (Vitrebond® 3MEspe)(fig. 2).

Methods

Teeth selection: 35 primary molars with cavities in the proximal surfaces (including six restored molars with new cavities) of 18 anxious/non-cooperative children (mean age: 78.1 months, s.d. 27.9), referred for dental treatment to ACTA. At the start, 24 of 35 teeth showed 1/3 or less remaining dentin thickness (table 1).

Intervention:
During follow-up (median:12 months, range: 4-42 months,) NRCT's took place at recall visits of which the frequency was based on the caries activity. Radiographs were made when needed for clinical purposes. Criterion for restorative treatment was: reflexive hypersensibility. When caries was arrested and the cooperation was good, restorations were performed if needed for the comfort of the patient.

Activity assessment:
Criteria for caries activity are presented in table 1. The information was recorded on the dental charts and clinical colour pictures were made (assessed by two observers).

Outcome measurement
Criterion for failure was: the presence of irreversible pulp pathology (table 1).

Table 1. *Diagnostic factors and risk criteria in cavitated primary teeth (N=35) with carious dentin lesions*

				Number of teeth	
Criteria	Score	Risk	Circumscription	At the start	At the end
Activity	a	no	No or disturbed plaque/dentin: leathery to hard (remineralised) / gum pink and/or tight	0	14
	b	not sure	between a and c	0	10
	c	yes	Not disturbed plaque /dentin: soft to leathery (demineralised)/ gum red and/or swollen	35	11
Accessibility	a	complete	Plaque is accessible for cleaning	2	35
	b	partial	Not all plaque accessible for cleaning	0	0
	c	no	Plaque is not accessible for cleaning	33	0
Shallowness	a	superficial	2/3 remaining dentin thickness	1	1
	b	media	Between 2/3 and 1/3 remaining dentin thickness	10	10
	c	profunda*	1/3 or less remaining dentin thickness	24	24
State pulp	a	healthy	No clinical and/or radiological symptoms	32	31
	b	not sure	Clinical and/or radiological symptoms referring to reversible pulpitis	3	2
	c	ill	Clinical and/or radiological symptoms referring to irreversible pulpitis	0	2

(*) RMGI lining cement was applied in 5 deep carious teeth (if needed renewed, max. 2 times).

Findings

The inter- and intra-examiner agreement for 'caries activity' was 100% and for the shallowness of the caries lesions, 75% and 80% respectively.
NRCT failed in two teeth: one after 12 months (pain combined with intradicular bone resorption) and another after 22 months (pulp polyp). After 8 months in two hypersensitive teeth a well accepted pulpotomy was performed. At the end of the follow-up time 14 caries lesions were inactive and the remaining 17 showed still activity but without pain or discomfort. NRCT was well accepted by all children.

Fig. 1. Making the lesions accessible for the toothbrush by slicing

Fig. 2. RMGI lining cement after 5 months performance

Conclusion

Non-Restorative Caries Treatment seems to be a feasible child friendly (temporary) alternative for restorative treatment of primary teeth in anxious/non-cooperative children.

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