

BACKGROUND

Dental caries is a chronic oral disease that affects people of all ages. The period of highest risk for caries lesion development in permanent teeth is during the first years of tooth eruption.¹ One of the best noninvasive methods for treating deep, retentive pits and fissures in high caries risk children is the application of pit and fissure sealants.^{2,3} Numerous studies have shown that using a bonding agent increases retention rates and lessens the impact of salivary contamination on microleakage.^{5,6} However, there is a lack of high quality randomized controlled trials, with acceptable levels of reporting, that support the statement that curing bonding agents before sealant placement increase the efficacy of resin based sealants.^{5, 6, 7, 8}

PURPOSE

The primary objective in this prospective randomized control trial is to test the longevity of pit and fissure resin sealants placed with cured bonding agent compared to uncured bonding agent over a two-year period. Secondary goals include a comparison of sealant longevity in hypomineralized molars, stained molars, occurrence of recurrent caries, and acceptance of dental isolation systems to provide recommendations for future pediatric dentists regarding sealant procedures.

METHODS

A split mouth single single-blinded study was performed in pediatric dental patients.

Patients eligible for the study include:

- ASA I and ASA II children, aged 5 to 14 years with adequate eruption of permanent first or second molars for placement of sealants
- These teeth will not have previous restorations, interproximal lesions, pathology, or occlusal lesions.
- Behavior of the children should be within a Frankl 3 or 4 category
- Patient must have contralateral molars in the same arch in which sealants can be placed. For example, a child with #30 and #19 present will qualify for the study.

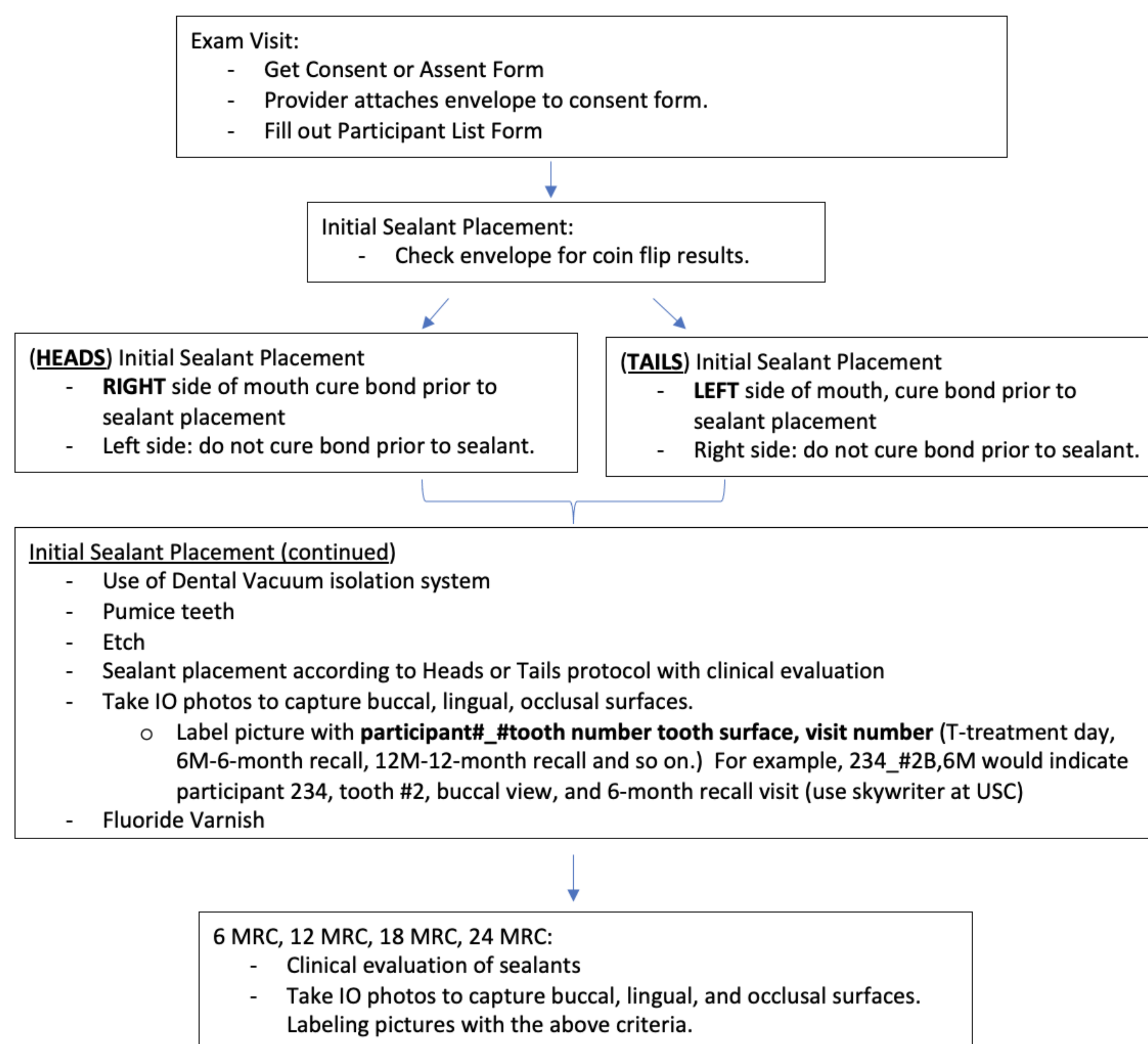


Figure 1. Basic Treatment Flow of the COES study

Hydrophobic resin based sealants were placed with a total etch bonding system under a dental suction isolation system, and intraoral photos (Figures 2-5) obtained to evaluate the overall retention of the sealant placement. Blinded practitioners will evaluate intraoral photos and grade sealant retention at 6 month time stamps using Simonsen's Criteria (Table 1). Data analysis will be performed by a statistician to determine if there is significant difference between groups.



Figure 2. #19-O Sealant of Subject U2.



Figure 3. #19-B Sealant of Subject U2



Figure 4. #30-O Sealant of Subject U2



Figure 5. #30-O of Sealant Subject U2

RESULTS

Ten resin based sealants were placed with a cured bonding agent and ten resin based sealants were placed using an uncured bonding system (Figure 1). Dry shield acceptance was the same for both groups and there was no evidence of sealant loss at the time of two week follow-up.

Simonsen's Criteria	
Complete Sealant Retention	All grooves sealed
Partial Sealant Retention	50%- 70% sealant intact
Sealant Lost	<50% sealant, recurrent caries

Table 1. Modified Simonsen's Criteria that will be utilized to grade sealant retention.

CONCLUSIONS

The treatment protocol appears appropriate to accomplish the ultimate purpose of this study. At this point in the study we feel there will be no difference in retention of sealants between curing and noncuring of bond before sealant placement.

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