

Washcloths Versus Toothbrushing In Plaque Removal For Young Children

Douglas Tse, DMD, Rebekah Tannen, DDS, Paul Chu, DDS, Dara Rosenberg, DDS, and Christopher Lane, DDS
St. Barnabas Hospital/SBH Health System, Bronx, NY



Introduction

The aim of this study is to explore washcloths as an alternative option for oral hygiene in an effort to assist parents who report difficulty brushing their child’s teeth at home. Washcloths are recommended by American Dental Association (ADA) guidelines for use in infants to clean their gums and oral mucosa as part of a daily home regimen. This study will evaluate the efficacy of washcloths in the removal of plaque compared to that of a conventional toothbrush.

In a study by Santos AP on “Caries prevalence and risk factors among children aged 0 to 36 months”, it was determined that no significant associations were found between the prevalence of caries and socioeconomic status, frequency of oral hygiene, nocturnal bottle- and breast- feeding or cariogenic food and beverage intake during the day. The association between caries and oral hygiene quality (dental biofilm) however, was determined to be statistically significant. The results of his study suggest that the presence of a thick biofilm was the most important factor for the occurrence of early childhood caries in the evaluated sample (1). The first step towards minimizing early childhood caries is focusing oral hygiene instructions to help parents understand the connection and providing them with home care instructions on plaque biofilm removal.

According to Duijster D study on “Establishing oral health promoting behaviors in children - parents' views on barriers, facilitators and professional support: a qualitative study”, parents express a common barrier to home care is difficult child behavior and non-compliance in response to tooth brushing. Some parents stated that it is sometimes a struggle to brush their child’s teeth due to resistant behavior, tantrums, pain during teething or tiredness of the child. As a result, a few parents described that they sometimes rather avoid conflict in those situations, than to persist on tooth brushing(2). Given these challenges, dentists need to do more than just educate parents on plaque removal.

Conducting this study is of interest because dentists should provide parents with more home options in order to allow parents to try different techniques and explore what works for them and their children. Evaluating the effectiveness of washcloths vs toothbrushes in this study will provide data on the two methods for parents to understand and incorporate into their child’s daily care.

Study Objectives

The goal of this study is to show that washcloths are just as effective in plaque removal as toothbrushes in preschool age children when performed by a parent/guardian.

Methods

Patient Selection

Inclusion Criteria: Patients aged 2-5 years old who are cooperative and healthy will be included in the study. Criteria for inclusion include the need for child cleaning, patients cooperative enough to open on their own for visual exam and stay open to allow parents/guardian to brush and wipe for data collection.

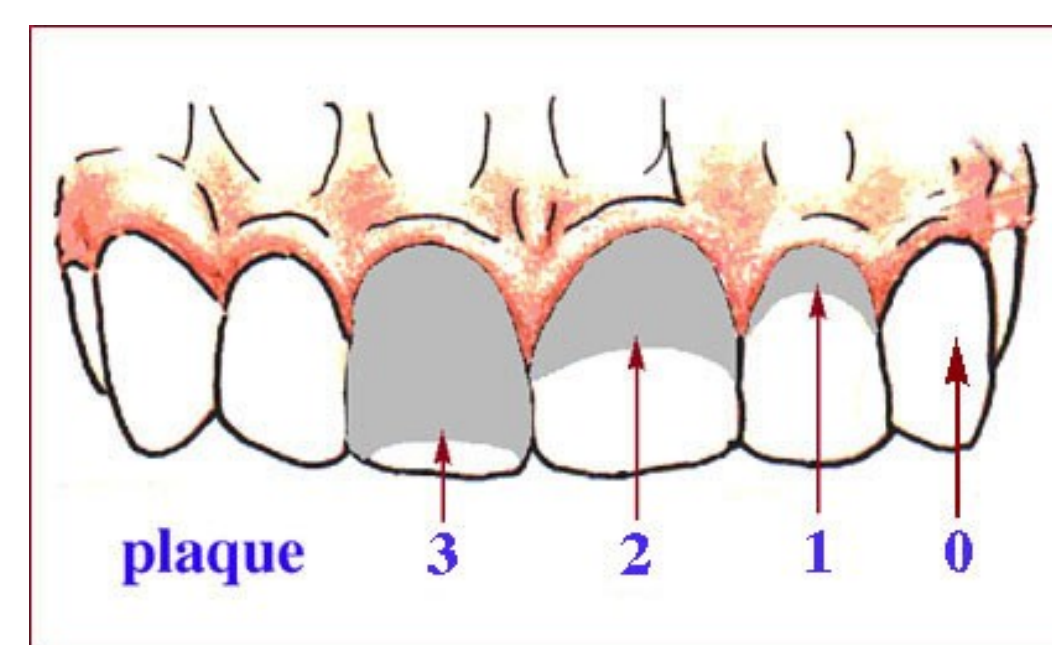
Exclusion Criteria:Exclusion criteria include patients younger than 2, or older than 5 years old.

Control group: This clinical research is a split mouth design. The side that is being cleaned by a toothbrush will serve as the control group.

Data Collection

Patient ages 2-5 years old who are cooperative, healthy, and due for child cleaning as part of their dental exam will be asked to participate in data collection for this study. Using a split mouth design in which one side will be randomly selected to be cleaned by a toothbrush (control) and the other side cleaned by a washcloth (experimental) by the parent. The dentist will educate the parent or guardian on oral hygiene technique prior to treatment. A timer will be used to ensure both sides are given an equal amount of treatment time by the parent/guardian. After treatment, plaque disclosing solution will be used to reveal remaining plaque.

To record results, the Simplified Oral Hygiene Index will be used. Plaque will be scored from 0 to 3 to measure the amount of plaque left on the clinical crown surfaces of eight teeth. One molar and one anterior tooth from each quadrant will be scored to compare the control side versus the experimental side. The scores for each tooth are summed, then divided by the maximum possible score to obtain a numerical value from 0 to 3. The criteria for the Simplified Oral Hygiene Index is:



0 No debris or stain present

1 Soft debris covering not more than one third of the tooth surface, or presence of extrinsic stains without other debris regardless of surface area covered

2 Soft debris covering more than one third, but not more than two thirds, of the exposed tooth surface.

3 Soft debris covering more than two thirds of the exposed tooth surface.

Results

Patient Initials and DOB	Toothbrush Molar Plaque Index	Toothbrush Anterior Plaque Index	Washcloth Molar Plaque Index	Washcloth Anterior Plaque Index	Washcloth Molar Index Difference from Toothbrush Molar Index	Washcloth Anterior Index Difference from Toothbrush Anterior Index
G,A (6/14/2015)	0.5	0	0.5	0	0	0
M,J (12/07/2015)	0	0	0	0	0	0
C,P (2/05/2016)	0.25	0	0.25	0	0	0
R,G (01/05/2017)	0	0	0	0	0	0
S,R (6/08/2016)	0.25	0	0.25	0	0	0
W,D (7/31/2015)	0	0	0.5	0	0	0.5
R,I (10/26/2018)	0	0	0	0	0	0
C,G (2/06/2016)	0	0	0	0	0	0
G,K (4/28/2016)	0	0	0	0	0	0
S,G (10/11/2016)	0	0	0	0	0	0
R,R (1/31/2017)	0	0	0	0	0	0
S,B (9/28/2016)	0.5	0.5	0.5	0.5	0	0
I,S (8/15/2016)	0.25	0.75	0.25	0.75	0	0
G,B (5/16/2017)	0	0	0	0	0	0
N,S (4/18/2018)	0	0	0	0	0	0
M,K (2/16/2018)	0	0.25	0	0.25	0	0
F,E (12/24/2017)	0.25	0	0.25	0	0	0
B,O (1/6/2016)	0	0	0.25	0	0	0.25
V,A (8/24/2017)	0	0.5	0	0.5	0	0
J,E (1/27/2017)	0	0	0	0	0	0
J,A (4/9/2017)	0.25	0	0.25	0	0	0
F,H (11/22/2017)	0.25	0.25	0.25	0.25	0	0
R,S (8/02/2017)	0	0	0	0	0	0
K,R (2/26/2016)	0	0	0	0	0	0
C,L (12/07/2016)	0.25	0	0.25	0	0	0
R,L (10/13/2014)	1	1	1	1	0	0
G,K (4/22/2016)	0	0.5	0	0.5	0	0
M,K (5/17/2019)	0	0	0	0	0	0
G,D (12/06/2015)	0.25	0	0.25	0	0	0
C,K (9/20/2018)	0	0	0	0	0	0
R,A (1/31/2016)	0	0	0	0	0	0
V,C (10/10/2018)	0	0	0	0	0	0
G,Y (8/28/2016)	0	0	0	0	0	0
D,L (12/5/2019)	0	0	0	0	0	0
S,J (6/6/2018)	0	1.25	0	1.25	0	0
E,A (6/6/2019)	0	0.5	0	0.5	0	0
F,M (8/4/2016)	0	0.5	0	0.5	0	0
C,O (4/25/2017)	1	1	1	1.25	0	0.25
B,D (6/23/2017)	0	0	0.5	0	0	0.5
F,M (6/25/2018)	1	1.5	1	1.5	0	0
Totals	6	8.5	7.25	8.75	1.25	0.25

Total sum for Washcloth Plaque Index was **16.0**
(Washcloth Molar Plaque Index total 7.25 + Washcloth Anterior Plaque Index total 8.75 = 16)

Total sum for Toothbrush Plaque index was **14.5**
(Toothbrush Molar Plaque Index total 6 + Toothbrush Anterior Plaque Index 8.5 = 14.5)

Plaque Index Difference from Washcloth and Toothbrush totals was **1.5**
(16.0 - 14.5 = 1.5)

Washcloths had **10.3%** difference compared to Toothbrushes
(Plaque Index Difference 1.5 ÷ Toothbrush control Group 14.5)

Discussion

- In this study washcloths and toothbrushing performed the same in plaque removal 36 times out of 40 subjects.
- The gold standard toothbrush (control group) had superior results in the 4 subjects that washcloths and toothbrushes performed differently
- There were no instances that the washcloth was superior in plaque removal compared to toothbrushing

Conclusions

- This study shows there is not a statistical significance in plaque removal between washcloths and toothbrushing in young children when performed by the patient’s primary caretaker.
- After treatment many parents/guardians expressed being comfortable with washcloths and felt the tactile feedback from washcloths gave them more control of plaque removal.
- The collected data shows washcloths only had a 10.3% difference in plaque removal compared to toothbrushes. This helps give parents/guardians confidence that they are achieving comparable results with washcloths to toothbrushing if their children are not able to tolerate a toothbrush yet and would prefer using washcloths.

Study Limitations

- Small sample size
- Risk of rater bias. Due to subjectivity of grading plaque scores under the Simplified Oral Hygiene Index, having multiple calibrated raters affects accuracy of results.
- Nonuniform preoperative plaque control prior to treatment. Some children had more plaque on teeth and gingiva prior to data collection than other subjects. The volume of plaque removed during data collection was variable across subjects.

References

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