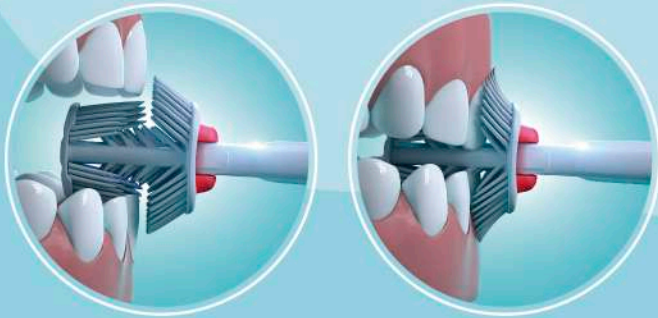


# balene<sup>®</sup>

Cleans all surfaces  
of teeth at the  
same time



HIGHER  
EFFICACY

---

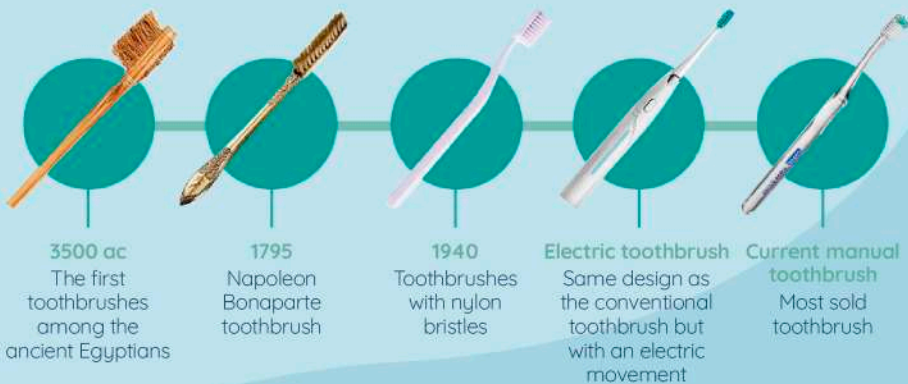
CLINICALLY  
TESTED



# LACK OF EVOLUTION IN THE TOOTHBRUSH CATEGORY

Over 5,500 years, the toothbrush category has seen minimal change despite its widespread use. Lack of innovation has led to all toothbrushes becoming similar in design and functionality.

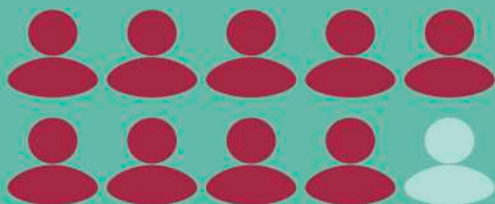
Current toothbrushes fail to effectively clean hard-to-reach areas such as the internal surface of teeth, where plaque buildup is most prevalent.



The rigid design of conventional toothbrushes, combined with people's inadequate brushing behavior, has adversely affected oral health, making tooth decay the most widespread disease worldwide.

# THE CHALLENGE

9 OUT OF 10 PEOPLE DON'T BRUSH THE  
INTERNAL SURFACE OF TEETH



---

INTERNAL SURFACE OF TEETH  
=  
THE AREA WHERE MORE  
PLAQUE BUILD-UP HAPPENS

---

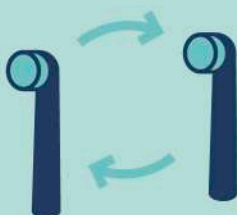
76% OF ADULTS BRUSH THEIR TEETH  
BETWEEN 40 AND 53 SECONDS



40-53

---

AVERAGE TIME FOR REPLACING  
TOOTHBRUSH = 9 MONTHS



# BALENE OFFERS A UNIQUE & EFFECTIVE SOLUTION

Balene cleans the internal and external surfaces of teeth simultaneously, addressing an unexplored insight by the category that can substantially improve daily oral hygiene.





You  
brush  
the  
outside,  
Balene  
brushes  
the  
inside





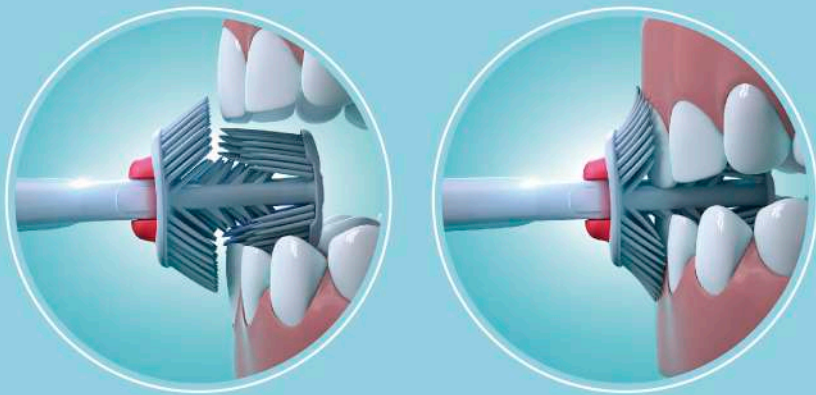
balene



# BALENE'S UNIQUENESS

## 1. INNOVATIVE DOUBLE SIDED TOOTHBRUSH THAT CLEANS ALL SURFACES OF TEETH SIMULTANEOUSLY

Designed to brush the internal, external and chewing surfaces of teeth at the same time. Its 45° angled bristles ensure a deep and effective clean in the gingival sulcus.



# 2.

## HEAD INDEPENDENT FROM THE HANDLE. 180° MOVEMENT



Balene has the head independent from the handle. Its 180° movement facilitates changes in brushing direction with a simple side-to-side movement.



# 3.

NEW GENERATION BRISTLES.  
LAST TWICE AS LONG &  
ARE ANTIBACTERIAL



NYLON BRISTLES



Must be replaced every  
3 months.



Nylon is hygroscopic and  
accumulates bacteria.



Poor effectiveness on the  
gum line.  
45° angled bristles  
depends on the user.

VS.



TYFLEX BRISTLES

x2

Last twice as long vs.  
nylon bristles.



Eliminates 99,9% of  
bacteria.



Guaranteed efficacy on  
the gum line.  
Due to its 45° angled  
bristles.

# SAY HELLO TO THE TOOTHBRUSH REVOLUTION





# BALENE DUOTECH

Advanced sonic technology



INNOVATIVE DOUBLE-SIDED HEAD BRUSH

NEW GENERATION TYFLEX  
BRISTLES WITH 45° ANGLE

BRISTLES THAT LAST TWICE AS  
LONG & ELIMINATE BACTERIA

ERGONOMIC HANDLE  
WITH SOFT TOUCH

38.000 MOVEMENTS  
PER MINUTE

3 MODES:  
- SOFT  
- COMFORT  
- CLEAN

30 DAYS OF USE ON A  
SINGLE BATTERY LOAD.  
USB CHARGER INCLUDED



# BALENE JUNIOR

Years 6+



INNOVATIVE DOUBLE  
SIDED HEAD BRUSH

NEW GENERATION  
TYFLEX BRISTLES  
WITH 45° ANGLE

BRISTLES LAST TWICE  
AS LONG & ELIMINATE  
BACTERIA

TONGUE CLEANER

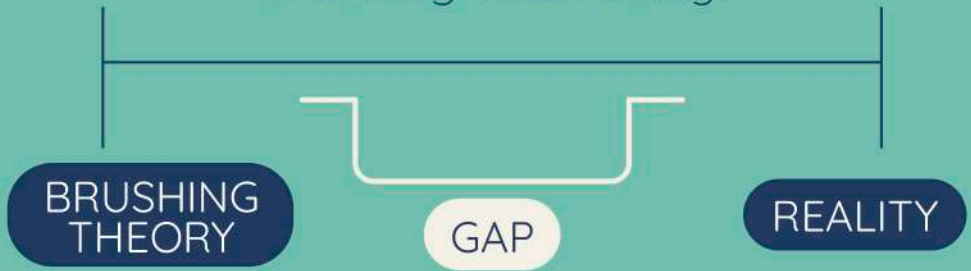
ERGONOMIC HANDLE;  
EASY TO GRAB

Balene cleans where  
children can't reach.  
Fun & easy to use.





For children, there is a giant gap between theory of brushing and reality.



Kids lack of fine motor skills

They consider brushing to be boring

Lack of willpower

## BALENE MANUAL



2 hardness: medium & soft  
3 colors: Coral, aquamarine & blue

## BALENE JUNIOR



1 hardness: soft  
4 colors: Blue, purple, fuchsia & green

# BALENE DUOTECH



2 colors: blue & aquamarine

## REPLACEMENT HEADS



Hardness: soft & medium



# CLINICAL EVIDENCE

## 2021- CLINICAL STUDY #1

Leadere**d** by Dr. David Herrera & Dr. Mariano Sanz, Universidad Complutense de Madrid  
Product: Balene's manual prototype.

Objective: Validate the functionality of the concept and its ability to remove plaque effectively.  
Product with unfinished geometries / material did not include antibacterial additive.  
Key results: Balene proved to be as safe and effective as the manual control toothbrush.  
Subjects rated satisfactorily efficiency and effectiveness of Balene.  
Results published in the International journal Antibiotics.

## 2022- CLINICAL STUDY # 2

Leadere**d** by Dr. Fabián Pérez, Universidad Complutense de Madrid  
Product: Balene's manual final product.

Objective: Demonstrate the superior effectiveness of Balene in plaque removal.  
Key results: Balene showcased a 74% greater plaque removal compared to conventional toothbrushes.  
Results published in the International Journal of Dental Hygiene.

## 2023- CLINICAL STUDY # 3

Leadere**d** by Dr. Pedro Diz, Universidad Santiago de Compostela  
Product: Balene's manual final product.

Objective: Evaluate Balene's usability for individuals with reduced mobility.  
Key results: Balene emerged as a more comfortable and easily manageable solution for individuals with reduced mobility and their caregivers during assisted brushing.  
Results published in the International Journal Springer Nature.

## 2023- CLINICAL STUDY # 4

Leadere**d** by Dra. Paloma Planells, Universidad Complutense de Madrid  
Product: Balene Junior.

Objective: Evaluate the effectiveness of Balene Junior in children aged 6-11.  
Key results: Balene Junior demonstrated its superiority over conventional toothbrushes in removing plaque across the eight measured areas. Both parents and participating children highly praised Balene Junior for its clean feeling, ease of use & enjoyable experience.



Key results: Balene proved to be as safe and effective as the manual control toothbrush. Subjects rated satisfactorily efficiency and effectiveness of Balene.

CLINICAL STUDY PUBLISHED IN MDPI SCIENTIFIC JOURNAL

## Dental Biofilm Removal and Bacterial Contamination of a New Doubled-Side Thermoplastic Polyurethane-Based Toothbrush: A Crossover Study in Healthy Volunteers

by  Ignacio Zúñiga <sup>1</sup> ,  Margarita Iniesta <sup>1,\*</sup>  Leire Virto <sup>1,2</sup> ,  Honorato Ribeiro-Vidal <sup>1,3</sup> ,  
 Andrea Alonso-Español <sup>1</sup> ,  Fernando Hernández <sup>1</sup> ,  John Jairo Cardona <sup>1</sup> ,  
 Anushiravan Maher-Lavandero <sup>1</sup> ,  Bettina Alonso <sup>1</sup> ,  Mariano Sanz <sup>1</sup>  and  David Herrera <sup>1</sup> 

<sup>1</sup> ETEP Research Group (Etiology and Therapy of Periodontal and Peri-implant Diseases), Faculty of Dentistry, Complutense University, 28040 Madrid, Spain

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Original submission received: 23 August 2022 / Revised: 19 September 2022 / Accepted: 19 September 2022 / Published: 22 September 2022

(This article belongs to the Special Issue **Antimicrobial Strategies against Oral Pathogenic Bacteria and Biofilm**)

### Abstract

Multiple toothbrush designs have been developed to enhance dental biofilm removal and decrease bacterial contamination and retention over time. Therefore, the aim of this clinical study was to compare the efficacy of a prototype of a new double-sided thermoplastic polyurethane-based toothbrush with that of a conventional nylon-bristle toothbrush. A crossover study was conducted in systemically healthy volunteers ( $n = 24$ ) for two one-week periods plus one washout week. As outcome variables, plaque and gingival indices, total bacterial contamination of the toothbrushes by quantitative polymerase chain reaction (qPCR), and patient-reported outcomes were measured. Clinical and microbiological variables were analysed using a general linear model and Friedman and Wilcoxon signed-rank tests. No statistically significant differences between toothbrushes were detected neither for full-mouth PII ( $p > 0.05$ ) nor for GI ( $p > 0.05$ ). Similarly, no statistically significant differences were detected for bacterial contamination after 40 seconds or 1 week of use, with results expressed either in CFU/mL or in CFU/mm<sup>2</sup> ( $p > 0.05$ ). In conclusion, the tested prototype toothbrush was as effective and safe as the control toothbrush, and the participating subjects did not experience any adverse effects from its use and rated its efficiency and effectiveness in cleaning their teeth as satisfactory.

Keywords: dental biofilm; toothbrush; bacterial contamination; plaque index

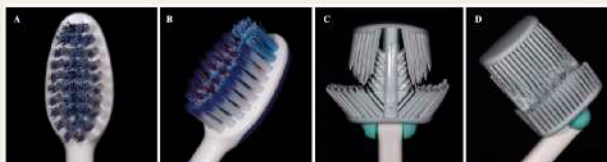


Figure 1. Photographs of control (A,B) and test (C,D) toothbrush heads.



Key result: Balene showcased a 74% greater plaque removal compared to conventional toothbrushes.

SCIENTIFIC ARTICLE PUBLISHED IN THE INTERNATIONAL JOURNAL OF DENTAL HYGIENE

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International Journal of  
Dental Hygiene  WILEY

## ORIGINAL ARTICLE

# Comparison of the effectiveness of two manual toothbrushes: Conventional design versus double-sided toothbrush design. A pilot study

Fabián Pérez-González  | Luis-Miguel Sáez-Alcaide  | Luis Sánchez-Labrador  | María-Victoria Mateos-Moreno  | María-Rosario Garcillán-Izquierdo  | Angel-Orión Salgado-Peralvo 

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### Abstract

**Objectives:** Dental hygiene is the most effective method in the prevention of oral diseases. However, most patients do not use the recommended teeth brushing techniques and/or time brushing is insufficient. With this objective, modifications in conventional toothbrushes have been developed to deal with these findings. The aim of this study was to compare plaque removal effectiveness of a manual toothbrush with a modified head (MTMH) with a wrap-around design versus a conventional manual toothbrush.

**Methods:** This pilot prospective clinical study was designed according to STROBE guidelines. The patients suspended oral hygiene habits for 24 h (baseline). Subsequently, the teeth were brushed for 60 s. Both toothbrushes followed the same study procedure, separated by 1 month. Plaque-removing effectiveness was measured before and after tooth brushing using the modified O'Leary Plaque Index (PI).

**Results:** Seven patients were included in this pilot study. The mean age was  $37.66 \pm 10.68$  years. PI mean differences between baseline and after brushing were  $51.99\% \pm 16.43$  for MTMH and  $27.93 \pm 6.85$ , for conventional toothbrush ( $p = 0.0013$ ). After brushing, mean PI values were  $18.36\% \pm 6.95\%$ , and  $37.61\% \pm 10.57\%$  respectively ( $p < 0.001$ ).

**Conclusion:** Within the limitations of the present study, it can be concluded that the effectiveness of plaque removal by using MTMH is significantly higher than the conventional manual toothbrush.

### KEYWORDS

dental plaque/therapy, dental plaque index, oral hygiene, tooth brushing



Key results: Balene emerged as a more comfortable and easily manageable solution for individuals with reduced mobility and their caregivers during assisted brushing.

CLINICAL STUDY PUBLISHED IN THE SPRINGER NATURE SCIENTIFIC JOURNAL

## Plaque removal efficacy of a new toothbrush with a double-sided head and rotating handle—a pilot randomized control trial in acquired brain injury patients

Eliane García Mato<sup>1</sup> · Lucía Sande López<sup>1</sup> · Marcio Diniz Freitas<sup>1</sup> · María Teresa Abeleira Pazos<sup>1</sup> · Jacobo Limeres Posse<sup>1,2</sup> · Pedro Diz Dios<sup>1</sup> · Berta Rivas Mundiña<sup>1</sup>

Received: 6 February 2023 / Accepted: 5 June 2023 / Published online: 30 June 2023  
© The Author(s) 2023

### Abstract

**Objectives** To assess the efficacy of a new toothbrush (Balene) for the mechanical removal of dental plaque in patients with acquired brain injury.

**Material and methods** The study group consisted of 25 adults with acquired brain injury. The participants underwent 2 sessions of toothbrushing lasting 1 min, one with a conventional toothbrush and the other with the Balene toothbrush. This new double-headed toothbrush has 6 active sides, which allows for the simultaneous toothbrushing of both alveolar arches, with elastomer bristles angled at 45°, as well as a handle that rotates up to 180°. Therefore, the user does not need to remove the toothbrush from the oral cavity during the toothbrushing process. Dental plaque accumulation was assessed using the simplified oral hygiene index of Greene and Vermillion.

**Results** The plaque index was significantly reduced both with the Balene toothbrush ( $p < 0.001$ ) and with the conventional toothbrush ( $p < 0.001$ ). The dental plaque removal efficacy was similar with the two toothbrushes. There were also no statistically significant differences in the removal of plaque with the Balene toothbrush between the autonomous and assisted toothbrushing modalities ( $p = 0.345$ ).

**Conclusions** For patients with acquired brain injury, the Balene toothbrush was as effective as a conventional toothbrush, regardless of whether the toothbrushing modality was autonomous or assisted.

**Clinical relevance** The Balene® toothbrush's efficacy in removing dental plaque is similar to that of conventional toothbrushes, both with the autonomous and assisted toothbrushing modality. Given its particular ergonomics, this toothbrush could be indicated for certain select patients with acquired brain injury (i.e., those whose degree of cooperation allows for toothbrushing, with a sufficient mouth opening, with no substantial abnormalities in the intermaxillary relationship, and with no significant edentulous sections).

**Keywords** Toothbrush · Dental plaque · Ergonomics · Acquired brain injury

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## 2023- CLINICAL STUDY #4

Leadereed by Dra. Paloma Planells, Universidad Complutense de Madrid  
Product: Balene Junior.

Key results: Balene Junior demonstrated its superiority over conventional toothbrushes in removing plaque across the eight measured areas. Both parents and participating children highly praised Balene Junior for its clean feeling, ease of use, and enjoyable experience.

### Removal of dental biofilm from a new double-sided thermoplastic polyurethane toothbrush for children. A cross-sectional observational study with a prospective longitudinal design.

Dr. Paola Beltri Orta: Collaborating Researcher, Dr. Cristina López Arrastia: Collaborating Researcher, Dr. Alberto José López Jiménez: Collaborating Researcher, Dr. Lara Vivero Couto: Collaborating Researcher, Dr. Paloma Planells del Pozo: Principal Investigator.

## CONTEXT AND OBJECTIVE

The accumulation of bacteria on the teeth causes oral problems such as cavities. Brushing is essential to prevent this. In children, brushing is less effective due to limited dexterity and lack of prolonged attention. The choice between a manual brush and an electric brush with an oscillating-rotational movement affects the effectiveness of brushing. The main objective of this study is to compare the effectiveness of the Balene® toothbrush with the traditional manual toothbrush in children. The secondary objective is to evaluate patient and caregiver satisfaction with the Balene® toothbrush and its ability to effectively remove plaque.

## METHOD

In order to compare the two study groups, an observational study with a prospective longitudinal design will be carried out, in which the reduction in the plaque index achieved by a population of pediatric patients between 6 and 11 years of age, with two different types of toothbrush, will be analyzed. The plaque index will be measured and recorded according to the Turesky modified Quigley-Hein plaque index (TMQHP) (9) after using a plaque developer (PlacControl).

## CONCLUSIONS AND RESULTS

Within the limitations of this study, the Balene® toothbrush shows superior plaque removal rates in all measurements and could be a valid alternative that allows for more comfortable and effective brushing.

## PLAQUE CONTROL

	INITIAL INDEX		Balene®		Manual	
	Media	DS	Media	DS	Media	DS
TOTAL	8,69	1,15	5,94	0,87	6,37	0,82
LOWER ARCH	7,22	1,09	5,54	0,88	5,99	0,87
UPER ARCH	10,16	1,4	6,35	0,97	6,76	0,84
QUADRANT 1	10,18	1,46	6,17	1,06	6,83	0,96
QUADRANT 2	10,15	1,37	6,53	0,94	6,68	0,77
QUADRANT 3	7,7	1,14	5,66	0,91	6,25	0,88
QUADRANT 4	6,75	1,14	5,42	0,89	5,74	0,93
ANTERIOR TEETH (1-3)	8,91	1,19	5,99	0,96	6,4	0,89
POSTERIOR TEETH (4-6)	8,47	1,15	5,9	0,86	6,35	0,87

## SATISFACTION SURVEY

Patient survey:

	MEDIA	DS	RANGO
MOTIVATION	4,43	0,79	3-5
EASE OF ATTACHMENT	4,29	0,76	3-5
EASE OF USE	4,43	0,79	3-5
AESTHETICS	4,43	0,53	4-5
WEIGHT	4,57	0,53	4-5
COMFORT	3,86	1,46	1-5
HYGIENE IN LESS ACCESSIBLE AREAS	4,43	0,98	3-5
FEELING OF CLEANLINESS	4,43	0,53	4-5
ABSENCE OF DISCOMFORT IN THE TEETH	5	0	5
ABSENCE OF DISCOMFORT IN THE GUMS	4,57	0,79	3-5
TOTAL	4,43	0,53	4-5

Chart 4: Patient satisfaction with the Balene® toothbrush.

Both participants and their parents reported high levels of satisfaction with the Balene® toothbrush, with overall scores of 4.14 out of 5 for parents and 4.43 for patients.



## MICROBIAL CONTAMINATION\*

- The nylon used in conventional toothbrushes is a hygroscopic material that retains moisture, making it an ideal medium for microbial growth from both the environment and the oral cavity itself.

### NEW GENERATION TYFLEX BRISTLES

Our new generation bristles are made of a hydrophobic elastomer (TPU-thermoplastic polyurethane) that does not retain moisture.

• They are soaked in a 99,9% effective antibacterial substance during the injection process<sup>28</sup>.

Table 1. Test result of Anti-microbial effect against Escherichia coli

Sample	Number of living bacteria		Antimicrobial activity value against Blank	Reduction %
	At beginning (Per cm <sup>2</sup> )	After 24 hours (Per cm <sup>2</sup> )		
1. Blank	1.6 x 10 <sup>4</sup>	1.1 x 10 <sup>4</sup>	---	---
2. 0.3%	1.6 x 10 <sup>4</sup>	1.1 x 10 <sup>4</sup>	2.0	99
3. 0.5%	1.6 x 10 <sup>4</sup>	50	4.3	99.99
4. 0.7%	1.6 x 10 <sup>4</sup>	<6.3	>5.2	>99.999
Control (Film only)	1.6 x 10 <sup>4</sup>	2.4 x 10 <sup>4</sup>		

Table 2. Test result of Anti-microbial effect against Staphylococcus aureus


Sample	Number of living bacteria		Antimicrobial activity value against Blank	Reduction %
	At beginning (Per cm <sup>2</sup> )	After 24 hours (Per cm <sup>2</sup> )		
1. Blank	1.3 x 10 <sup>4</sup>	7.5 x 10 <sup>4</sup>	---	---
2. 0.3%	1.3 x 10 <sup>4</sup>	1.0 x 10 <sup>4</sup>	1.8	98.7
3. 0.5%	1.3 x 10 <sup>4</sup>	25	3.4	99.9
4. 0.7%	1.3 x 10 <sup>4</sup>	94	2.9	99
Control (Film only)	1.3 x 10 <sup>4</sup>	1.6 x 10 <sup>5</sup>		

## TOOTHBRUSH LIFESPAN\*\*

-Toothbrushes should be renewed every 2-3 months due to bacterial colonisation and wear of current materials<sup>23,24</sup>. However, consumers use toothbrushes for much longer than recommended by manufacturers, and toothbrushes with extreme wear are less effective than those with no or mild wear<sup>25,26</sup>.

• Our bristles have a lifespan of 6 months while maintaining their physical and mechanical properties and doubling the lifetime of other nylon filament brushes.

• Although by the end of the test the internal bristles have a slight deformation, it is not enough to impact the cleaning efficacy. Besides the bristles, the rest of the toothbrush including the shaft is in perfect condition and has no reliability issues.

DAYS	PHOTO	NOTES	DAYS	NOTES	PHOTOS
0		Test start.	0	Test start.	
14		Internal bristles have a small deformation. It goes back to initial position after a few seconds.	14	Deformation appears right away after 2 weeks use.	
6 MONTHS		No variation compared to the previous check point.	2,9 MONTHS	Deformation remains similar to previous step. At this point, bristles are completely open and toothbrush needs to be replaced.	





OUR RANGE

BALENE  
ELECTRIC BRUSH

BALENE  
ADULT MANUAL

**Not Available  
in Singapore**



**CALL US FOR  
A SAMPLE!  
+65 9787 1379**

BALENE  
KIDS MANUAL

