Study flow chart

Enrolment	146 patients 173 tooth units	

40 teeth in 26 patients: did not meet inclusion criteria.

8 teeth from 6 patients declined participation.

Allocation

Randomization
(age & cavity location)

Treatment groups

Group A (n = 45) CH	Group B (n = 40) MTA	Group C (n = 40) BD

1 month follow-up

Clinical outcome Success (n = 39) Failure (n = 6)	Clinical outcome Success (n = 37) Failure (n = 3)	Clinical outcome Success (n = 38) Failure (n = 2)

3 months follow-up

Clinical outcome Success (n = 31) Failure (n = 14)	Clinical outcome Success (n = 32) Failure (n = 8)	Clinical outcome Success (n = 34) Failure (n = 6)

6 months follow-up

Clinical outcome Success (n = 27) Failure (n = 18)	Clinical outcome Success (n = 28) Failure (n = 12)	Clinical outcome Success (n = 30) Failure (n = 10)

Analysis of radiological outcome

Success (n = 27)	Success (n = 28)	Success (n = 30)

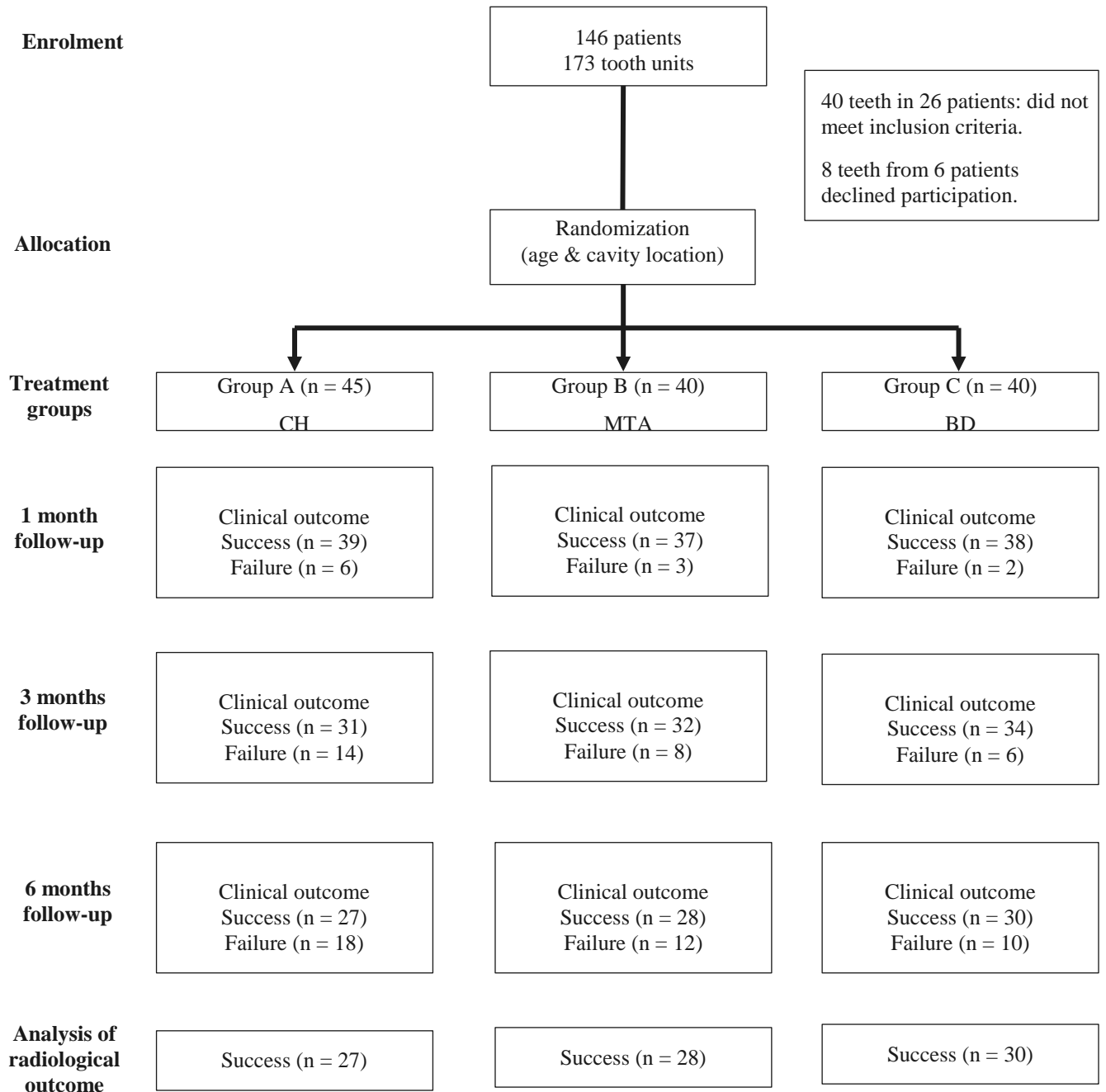**OUTCOME MEASURES**

Table 1. Comparisons of clinical outcomes (success rate) across treatment groups at 1 month, 3 and 6 months using complete case analysis and sensitivity analysis.

	% (95% CI)				
Follow-up Periods	**Group A (n = 45)**	**Group B (n = 40)**	**Group C (n = 40)**	**Effect size (Cramer's V)**	**χ2; *P*-value**
1 Month	86.7 (76.7 – 96.6)	92.5 (84.3 – 1.0)	95.0 (88.2 – 1.0)	0.13	1.95; 0.45[β]
3 Months	68.9 (55.4 – 82.4)	80.0 (67.6 -92.4)	85.0 (73.9 – 96.1)	0.16	3.36; 0.19
6 Months	60.0 (45.7 – 74.3)	70.0 (55.8 – 84.2)	75.0 (61.6 – 88.4)	0.14	2.29; 0.32

P-value obtained from [β]Fisher's exact test and Chi-squared test

Table 2. Effect of age and gender on clinical success (n = 125)

Variable	Treatment success, n	Success rate, % (95% CI)	Effect size (Cramer's V)	χ2; P-value[β]
Group A (n = 27)				
Age, years			0.02	0.01; 0.99
< 40	13	59.1 (38.5 – 79.6)		
≥ 40	14	60.9 (40.9 – 80.8)		
Gender			0.12	0.68; 0.49
Female	6	50.0 (21.7 – 78.3)		
Male	21	63.6 (47.2 – 80.0)		
Group B (n = 28)				
Age, years			0.28	3.17; 0.09
< 40	20	80.0 (64.3 – 95.7)		
≥ 40	8	53.3 (28.1 – 78.6)		
Gender			0.08	0.27; 0.63
Female	3	60.0 (17.1 – 100.0)		
Male	25	71.4 (56.5 – 86.4)		
Group C (n = 30)				

Age, years				0.03	0.04; 0.99
< 40	10	76.9 (54.0 – 99.8)			
≥ 40	20	74.1 (57.5 – 90.6)			
Gender				0.04	0.06; 0.99
Female	5	71.4 (37.9 – 100.0)			
Male	25	75.8 (61.1 – 90.4)			

P-value obtained from Chi-square test

Table 3. Effect of site of lesion on clinical success

Variable	Treatment success, n	Success rate % (95% CI)	Effect size (Cramer's V)	χ2; P-value[β]
Group A (n = 27)				
Site of lesion			0.06	0.16; 0.99
Class I	7	58.3 (30.4 – 86.2)		
Class II MO	11	57.9 (35.7 – 80.1)		
Class II DO	9	64.3 (39.2 – 89.4)		
Group B (n = 28)				
Site of lesion			0.14	0.75; 0.76
Class I	8	61.5 (35.1 – 87.9)		
Class II MO	10	76.9 (54.0 – 99.8)		
Class II DO	10	71.4 (47.8 – 95.1		
Group C (n = 30)				
Site of lesion			0.17	1.19; 0.65
Class I	10	71.4 (47.8 – 95.1)		
Class II MO	8	88.9 (68.4 – 100.0)		
Class II DO	12	70.6 (48.9 – 92.2)		

[β]P-value obtained from Fisher's exact test

Table 4. Inter-treatment and Intra-treatment group comparison of tertiary dentine dimensions in 85 teeth with treatment success.

Dentine bridge (mm)	Group A (n = 27)	Group B (n = 28)	Group C (n = 30)	Inter group P-value$^{\alpha}$
Preoperative (baseline)				0.69
Range	0.20 – 0.90	0.30 – 0.90	0.30 – 0.90	
Mean ± SD	0.57 ± 0.21	0.53 ± 0.19	0.57 ± 0.21	
Median (IQR)	0.60 (0.40 – 0.70)	0.45 (0.40 – 0.70)	0.50 (0.40 – 0.80)	
3 months follow-up				< 0.001
Range	0.10 – 0.20	0.20 – 0.40	0.10 – 0.30	
Mean ± SD	0.16 ± 0.05	0.25 ± 0.06	0.22 ± 0.06	
Median (IQR)	0.20 (0.10 – 0.20)	0.20 (0.20 – 0.30)	0.20 (0.20 – 0.30)	
Categories, n (%)				
0.1 – 0.25	27 (100)	15 (53.6)	22 (73.3)	
> 0.25	0	13 (46.4)	8 (26.7)	
6 months follow-up				< 0.001
Range	0.10 – 0.20	0.10 – 0.30	0.10 – 0.30	
Mean ± SD	0.11 ± 0.04	0.17 ± 0.05	0.16 ± 0.06	
Median (IQR)	0.10 (0.10 – 0.10)	0.20 (0.10 – 0.20)	0.20 (0.10 – 0.20)	
Categories, n (%)				
0.1 – 0.25	27 (100)	27 (96.4)	29 (96.7)	
> 0.25	0	1 (3.6)	1 (3.3)	

Intra-group comparison

(3 months – 6 month)

Mean difference	0.04 ± 0.05	0.08 ± 0.07	0.06 ± 0.06
95% CI	$0.02 - 0.06$	$0.05 - 0.11$	$0.04 - 0.09$
P-value[γ]	< 0.001	< 0.001	< 0.001

[α]*P-value obtained from Kruskal-Wallis test*

Table 5. Effect of age and gender on radiological outcomes

Variable	n	3 months		6 months	
		mean ± SD	median (IQR)	mean ± SD	median(IQR)
Group A (n = 27)					
Age, years					
< 40	13	0.16 ± 0.05	0.20 (0.10 – 0.20)	0.12 ± 0.04	0.10(0.10 – 0.10)
≥ 40	14	0.15 ± 0.05	0.15 (0.10 – 0.20)	0.11 ± 0.03	0.10 (0.10 – 0.10)
P-value¥		0.55		0.25	
Gender					
Female	6	0.15 ± 0.05	0.15 (0.10 – 0.20)	0.12 ± 0.04	0.10 (0.10 – 0.10)
Male	21	0.16 ± 0.05	0.20 (0.10 – 0.20)	0.11 ± 0.04	0.10 (0.10 – 0.10)
P-value¥		0.76		0.89	
Group B (n = 28)					
Age, years					
< 40	20	0.26 ± 0.06	0.30 (0.20 – 0.30)	0.18 ± 0.06	0.20 (0.10 – 0.20)
≥ 40	8	0.23 ± 0.05	0.20 (0.20 – 0.25)	0.16 ± 0.05	0.20 (0.10 – 0.20)
P-value¥		0.15		0.61	
Gender					
Female	3	0.23 ± 0.06	0.20 (0.20 – 0.30)	0.13 ± 0.06	0.10 (0.10 – 0.20)
Male	25	0.25 ± 0.06	0.20 (0.20 – 0.30)	0.18 ± 0.05	0.20 (0.10 – 0.20)

P-value[¥]		0.61		0.18	

Group C (n = 30)

Age, years

< 40	10	0.25 ± 0.05	0.25 (0.20 – 0.30)	0.17 ± 0.05	0.20 (0.10 – 0.20)
≥ 40	20	0.21 ± 0.05	0.20 (0.20 – 0.20)	0.15 ± 0.06	0.10 (0.10 – 0.20)
P-value[¥]		0.03		0.28	

Gender

Female	5	0.24 ± 0.05	0.20 (0.20 – 0.30)	0.18 ± 0.08	0.20 (0.10 – 0.20)
Male	25	0.22 ± 0.06	0.20 (0.20 – 0.20)	0.15 ± 0.05	0.20 (0.10 – 0.20)
P-value[¥]		0.38		0.47	

[¥]*P-value obtained from Mann-Whitney U test*

Table 6. Effect of site of lesion on radiological outcome

Variable	n	3 months mean ± SD	3 months median (IQR)	6 months mean ± SD	6 months median(IQR)
Group A (n = 27)					
Site of lesion					
Class I	7	0.16 ± 0.05	0.20 (0.10 – 0.20)	0.13 ± 0.05	0.10 (0.10 – 0.20)
Class II MO	11	0.15 ± 0.05	0.20 (0.10 – 0.20)	0.11 ± 0.03	0.10 (0.10 – 0.10)
Class II DO	9	0.16 ± 0.05	0.20 (0.10 – 0.20)	0.11 ± 0.03	0.10 (0.10 – 0.10)
P-value$^\alpha$		0.99		0.50	
Group B (n = 28)					
Site of lesion					
Class I	8	0.23 ± 0.05	0.20 (0.20 – 0.25)	0.18 ± 0.07	0.20 (0.10 – 0.20)
Class II MO	10	0.25 ± 0.05	0.25 (0.20 – 0.30)	0.18 ± 0.04	0.20 (0.20 – 0.20)
Class II DO	10	0.27 ± 0.07	0.30 (0.20 – 0.30)	0.16 ± 0.05	0.20 (0.10 – 0.20)
P-value$^\alpha$		0.29		0.68	
Group C (n = 30)					
Site of lesion					
Class I	10	0.25 ± 0.05	0.25 (0.20 – 0.30)	0.19 ± 0.06	0.20 (0.20 – 0.20)
Class II MO	8	0.21 ± 0.06	0.20 (0.20 – 0.25)	0.14 ± 0.05	0.10 (0.10 – 0.20)

Class II DO 12	0.20 ± 0.04	0.20 (0.20 – 0.20)	0.14 ± 0.05	0.10 (0.10 – 0.20)
P-value[α]		0.09		0.09

[α]*P-value obtained from Kruskal-Wallis test*

ADVERSE EFFECT

There were no reported adverse reaction on any participant throughout the duration of the study.

BASELINE CHARACTERISTICS

Table 1. Sociodemographic characteristics of the subjects in the three treatment groups

Variables	Group A (n = 45)	Group B (n = 40)	Group C (n = 40)	Total (n = 125)	χ^2; P-value
Gender					2.85; 0.24
Female	12 (26.7)	5 (12.5)	7 (17.7)	24 (19.2)	
Male	33 (73.3)	35 (87.5)	33 (82.5)	101 (80.8)	
Age (years)					7.23; 0.03
< 40	22 (48.9)	25 (62.5)	13 (32.5)	60 (48.0)	
≥ 40	23 (51.1)	15 (37.5)	27 (67.5)	65 (52.0)	
Mean ± SD	37.3 ± 9.8	35.4 ± 8.9	38.9 ± 9.2	37.2 ± 9.4	
Occupation					8.84; 0.39ᵞ
Civil servant	19 (42.2)	16 (40.0)	15 (37.5)	50 (40)	
Trader/Business	12 (26.7)	11 (27.5)	13 (32.5)	36 (28.8)	
Students	8 (17.8)	8 (20.0)	5 (12.5)	21 (16.8)	
Housewife	6 (13.3)	3 (7.5)	2 (5.0)	11 (8.8)	

Others	0	2 (5.0)	5 (12.5)	7 (5.6)	
Tribe					6.22; 0.89$^{\curlyvee}$
Hausa	36 (80.0)	29 (72.5)	31 (77.5)	96 (76.8)	
Fulani	7 (15.6)	8 (20.0)	5 (12.5)	20 (16.0)	
Igbo	0	1 (2.5)	0	1 (0.8)	
Yoruba	0	1 (2.5)	1 (2.5)	2 (1.6)	
Others	2 (4.4)	1 (2.5)	3 (7.5)	6 (4.8)	
Highest level of education					11.04; 0.10$^{\curlyvee}$
Primary	5 (11.1)	1 (2.5)	2 (5.0)	8 (6.4)	
Secondary	15 (33.3)	22 (55.0)	14 (35.0)	51 (40.8)	
First degree	19 (42.2)	14 (35.0)	23 (57.5)	56 (44.8)	
Post graduate	6 (13.3)	3 (7.5)	1 (2.5)	10(8.0)	

P-value obtained from Chi-squared test and $^{\curlyvee}$Fisher's exact test