

Table 1: Statistical comparisons between pre-operative, post-operative 1month, and post-operative 3 month as regards fundamental frequency (F0), jitter 1st, shimmer db, and harmonic noise ratio (HNR).

Parameter	Pre	Post 1	Post2	P value		
				Pre vs Post 1	Pre vs Post 2	Post 1 vs Post 2
F0						
Range	(219.4-431.8)	(226.5-365.6)	(220.8-377.7)	0.025*	<0.001*	0.018*
Mean± SD	293±47.1	284.2±40.7	279.9±39.7			
Median	281.8	278.8	274.6			
Jitter 1st						
Range	(0.5-76.7)	(0.3-21.4)	(0.5-10.3)	0.137	<0.001*	0.004*
Mean ±SD	5.7±11.2	4±4.6	2.3±2.4			
Median	2.7	2.4	1.4			
Shimmer						
Range	(0.3-4.5)	(0.3-3.6)	(0.3-3.2)	0.193	0.003*	0.142
Mean ±SD	1.5±0.8	1.3±0.8	1.1±0.5			
Median	1.4	1.1	1			
(⁶)HNR						
Range	(6-21.2)	(5.8-20.3)	(7.1-19.3)	0.513	0.557	0.965
Mean ±SD	14.1±3.2	13.8±3.2	13.8±3.1			
Median	14.2	14	14.3			

Wilcoxon signed rank test for non-parametric quantitative data; (\$) Paired sample t test for parametric quantitative data; *: Significant level at P< 0.05

Table 2: Comparison of pre-operative, post-operative 1month and post-operative 3 months results as regards auditory perceptual assessment of voice (APA of voice) and speech (APA of speech).

Variables	Pre	Post 1	Post 2	P value		
				Pre vs Post 1	Pre vs Post 2	Post 1 vs Post 2
APA of Voice						
No dysphonia	30(60%)	38(76%)	45(90%)	0.001*	<0.001*	0.008*
Mild dysphonia	16(32%)	12(24%)	5(10%)			
Moderate dysphonia	4(8%)	0(0%)	0(0%)			
APA of Speech						
No hypo-nasality	19(38%)	36(72%)	45(90%)	<0.001*	<0.001*	0.002*
Mild hypo-nasality	24(48%)	13(26%)	5(10%)			
Moderate hypo-nasality	7(14%)	1(2%)	0(0%)			

Wilcoxon signed rank test qualitative data; *: Significant level at P< 0.05

Table 3: Correlation of APA of voice, APA of speech with the acoustic parameters at 1 month post-operatively.

Parameter	APA of voice post 1		APA of speech post 1	
	R value	P value	R value	P value
FO post 1	-0.159	0.270	0.055	0.704
Jitter post 1	-0.029	0.840	0.211	0.142
Shimmer post 1	0.177	0.219	0.016	0.914
HNR post 1	-0.282	0.047*	-0.010	0.946

Non-parametric Spearman's rho correlation; *: Significant level at P< 0.05

Table 4: Correlation of APA of voice, APA of speech with the acoustic parameters at 3 months post operatively.

Parameter	APA of Voice post 2		APA of Speech post 2	
	R value	P value	R value	P value
FO post 2	0.058	0.690	0.159	0.269
Jitter post 2	-0.049	0.738	0.030	0.836
Shimmer post 2	-0.146	0.313	-0.136	0.345
HNR post 2	0.081	0.577	0.062	0.667

Non-parametric Spearman's rho correlation; *: Significant level at P< 0.05