

Study on Nasal Columellar Show with Photographic Technique

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Abstract

Aims: Thorough knowledge of an Indian nose is vital for performing corrective nasal surgeries. Hence the present study was taken up with the aim to determine nasal columellar show of Tamil ethnic group; and also to statistically analyse gender wise difference in findings. *Settings and Design:* The present cross-sectional study, approved by the Institutional Ethics Committee, was done on Tamil speaking medical students of Velammal Medical College, Madurai, Tamil Nadu. *Methods & Material:* 118 Tamil speaking medical students from Velammal Medical College Hospital & Research Institute, Madurai, Tamil Nadu, participated in the study. Consenting Tamil speaking medical students were included. Individuals with noticeable facial disfigurement and with history of previous facial surgery were excluded. *Statistical Analysis used:* Unpaired t test & Chi-square test. *Results:* The present study reports Normal Columellar Show as 2-5 mm for males; 1.5-4 mm for females; and 1.5-3.5 mm for the whole group. *Conclusion:* The present study reports significant difference in male and female columellar show; and Normal columellar show, Excess columellar show, and Insufficient columellar show as 1.5-3.5 mm, greater than 3.5 mm and lesser than 1.5 mm respectively for the study group.

Keywords: Otolaryngology; Nasal Columellar Show; Rhinoplasty; Photographic Technique.

Introduction

Columellar show (CS) is an assessment of how much of the inner nostril is visible when viewing the nose on a profile view. It is normal to see 2 to 4 mm of the columellar sidewall from profile view. A nose is said to have excess "columellar show" when more than this amount of nostril is visible [1,2,3]. Excess columellar show, is a result of alar rim retracted too high (*excessively arched*) and/or a columella that is too low (*hanging columella*). In either case, rhinoplasty should be planned to restore a more ideal configuration and shape [4]. Columellar show affects nostril configuration. Hence, it is important to understand individual,

racial and ethnic variations in columellar show [5,6]. The present study was taken up with the aim to determine nasal columellar show of Tamil ethnic group; and also to statistically analyse gender difference in findings.

Material & Method

The present cross-sectional study was done during January to April 2017. The study was approved by Institutional Ethics Committee. Written informed consent was taken from the participants before data collection. 118 (43 males and 75 females), Tamil speaking medical students from a medical college in Tamil Nadu participated in the

study. Consenting Tamil speaking medical students were included (*Inclusion Criteria*). Individuals with noticeable facial disfigurement and with history of previous facial surgery were excluded (*Exclusion Criteria*). Sample size was calculated using Sample Size Calculator presented as a public service of Creative Research Systems: Survey software, 'The Survey System'. Sample size was 118 (*Confidence Level at 95%, and Confidence Interval of 4*) of total 142 students (population).

Participants were positioned in anatomical posture with head positioned in *Frankfurt horizontal plane (FH)* as described by Uzun et al. [7]. *Photographic technique* was used to record data. *Lateral view* photograph of face of each participant was taken, which was later converted to *pencil sketch photograph (using Android software)* as in Fig. 1. Measurements were taken using *Marcus Bader-Ruler* software.

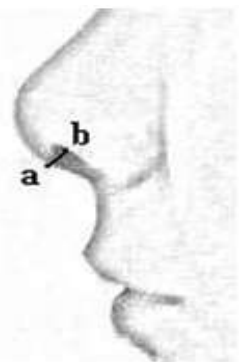


Fig. 1: Pencil sketch photograph indicating columellar show (ab)

Observations were recorded in millimeters (*mm*). Columellar show was further categorized into Excess columellar show ($CS > 4 \text{ mm}$), Insufficient columellar show ($CS < 2 \text{ mm}$) and Normal columellar show ($CS = 2-4 \text{ mm}$). The measurements were taken in millimeters. *Mean and standard deviations* were calculated. Statistical analysis was done by the application of *unpaired t test* using *Graphpad* software. Significance level was assessed with *p value* < 0.05 .

Results

Mean, Standard Deviation (SD), Standard Error of Mean (SEM), and 95% Confidence interval ($CI_{.95}$) of the difference in mean of male (m) and female (f) participants was estimated using unpaired t test. Intermediate values in calculation were t value, and standard error of difference (SED). Gender difference was significant at $p < 0.05$. Table 1 indicates Statistical findings on gender difference in Columellar show with unpaired t test & Table 2 indicates Chi square test result on Columellar show types.

CS-Columellar show, n (118)-total participants, m (43)-males, f (75)-females, M-Mean, SD-Standard Deviation, $CI_{.95}$ - 95% Confidence interval of the difference in mean of male (m) and female (f) participants, SE -Standard Error of Difference (Table 1).

ECS-Excess columellar show, NCS-Normal columellar show, ICS-Insufficient columellar show, m (43)-males, f (75)-females, n (118)-total participants (Table 2).

Discussion

A hanging columella can be natural (*some patients are born with a hanging columella*). It can be secondary to a long septum that pushes the columella downwards. It can be also due to orientation and positioning of the columellar cartilages (*medial and intermediate crura*). It can happen after a previous rhinoplasty too. A columella strut, caudal extension graft, plumping graft or shield graft can all push the columella too far downwards. Alar and nostril retraction, due to excessive cartilage resection after rhinoplasty, can also cause excess columella show. However, alar retraction could be a natural occurrence as a result of nasal tip cartilage orientation. Post rhinoplasty, patients can have a

Table 1: Statistical findings on gender difference in Columellar show with unpaired t test

	n (118)		m (43)		f (75)		CI.95	t value	SED	p value	Statistical Inference
	M	SD	M	SD	M	SD					
CS	2.67	0.9	3.56	1.7	2.85	1.2	0.18-1.23	2.66	0.265	0.0088	significant at $p < .05$

Table 2: Chi-square test result on Columellar show types

	ECS	NCS	ICS	chi-square statistic	p value	Statistical Inference
m (43)	11	28	4	8.6751	0.013068	significant at $p < .05$
f (75)	5	58	12			
n (118)	16	86	16			

hanging columella due to scar tissue that pushes medial crura downwards. Revision rhinoplasty surgery is required in such cases where excess scar tissue is excised and plunging intermediate crura repositioned to create a more balanced, natural tip. What's more important is to determine if the excess columella show is due to excess columella tissue or a retracted nostril rim [2,8,9].

A hanging columella can be corrected by trimming the end of the long nasal septum. The two nasal tip cartilages that sit within the columella, can also be moved upward and stitched to the septum (*tongue in groove setback technique*). This creates a very stable nasal tip. The tongue in groove setback technique includes trimming some excess septal cartilage (*depending on how long the septum is*). The technique mainly involves separating the two medial crural cartilages that make up the columella, advancing them in the proper upward position, and then overlapping the medial crura over the long septum which acts as a great columellar strut; followed by suturing that secures the columella cartilages in place. In mild alar retraction cases, an alar rim graft will often be sufficient. In severe alar retraction cases, lower lateral cartilage repositioning with a lower lateral cartilage strut graft is recommended [1].

There haven't been studies of similar kind before. Surgeons need to know the demarcation between Normal, Excess & insufficient columellar show for a particular gender, ethnic and geographical area; to plan an optimal approach for corrective nasal surgeries.

Conclusion

The present study reports significant difference in male and female columellar show. Considering mean and standard deviation of columellar show of the study group, it is concluded that Normal columellar show, Excess columellar show, and Insufficient columellar show are 1.5-3.5 mm, greater than 3.5 mm and lesser than 1.5 mm respectively. Demarcation between Normal columellar show, Excess columellar show & insufficient columellar show is different for a particular gender, ethnic and geographical area; which requires attention while planning corrective nasal surgeries. The present study results will help surgeons in planning an optimal approach for corrective nasal surgeries.

Key message

Surgeons need to know the demarcation between Normal, Excess & insufficient columellar show for a particular gender, ethnic and geographical area; to plan an optimal approach for corrective nasal surgeries.

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