

# Evaluation of Prevalence and Morphology of Dimple among Population of Sullia Taluk

Mahabaleshwara Chalathadka, Kiruba Shankar K, Vijaya Lakshmi G, Nithin VM, Sneha Kulkarni, Mulla Firdousbano

Department of OMFS, KVG Dental College and Hospital, Sullia, Karnataka, India

## Abstract

**Background:** Dimple is one of the special indentations in skin of the face, which is considered as a sign of beauty. Dimpleplasty/surgical creation of dimple is a cosmetic procedure done by surgeons. Determining accurate position of dimple to create maximum beauty is always challenging to surgeons. **Aims and Objectives:** This study aimed at evaluating the prevalence and morphology (position and size) of naturally occurring dimple among population of Sullia taluk. **Materials and Methods:** In total, 1462 people were screened for the occurrence of natural dimples in face. Among them, 121 were found to have natural dimples. Prevalence of dimple, position of the dimple, and the variation in distance from the Khoo Boo-Chai's (KBC) point to the naturally occurring dimple was assessed. **Results:** Among 121 patients with dimples, unilateral cheek dimples (72.88%) were more common than bilateral (27.11%). Ninety-one dimples (60.66%) were at KBC point and 59 dimples (39.33%) occurred anterior to KBC point at a mean distance of 9.86 mm. The mean size of dimple superoinferiorly on the right side was 8.29 mm and on the left side it was 8.96 mm. The mean size anteroposteriorly on the right side was 6.48 and on the left side it was 6.51 mm. **Conclusion:** The mean measurements in size and position of the dimple might help the surgeon in creating dimples resembling naturally occurring dimples.

**Keywords:** Cheek dimple, dimple depth, dimple position, Khoo Boo-Chai's point

## INTRODUCTION

Dimple is one such facial feature associated with beauty and dimple on face is also believed to be a sign of prosperity, good fortune, and luck. Dimple occur on different parts of the body such as shoulder, abdomen, back, and limbs, but when it occurs on face it acts as an important factor to express thoughts and expressions beyond words. Facial dimples are located on more mobile tissue.<sup>[1]</sup> They are mainly seen on the cheeks, followed by the regions of the angle of the mouth. They are categorized as those opposite the angle of the mouth (para-angle), those below (lower para-angle) the angle of the mouth, and those above (upper para-angle) the angle of the mouth. Lower para-angle dimple is the most common type of facial dimple.<sup>[2]</sup> Anatomically, dimples are thought to be caused by a double or bifid zygomaticus major muscle, whose facial strands insert into the dermis and cause a dermal tethering effect.<sup>[3,4]</sup> Cheek dimples are caused by the presence of dermocutaneous insertion of the fibers of the inferior bundle of the double or bifid zygomaticus major muscle.

The size and shape of dimples varies from one person to another and sometimes its shape can differ in the same individual with the change of his body weight or with the aging process, these variations can be because of the elasticity of the soft tissues, the facial muscle tone, and their cutaneous insertions.<sup>[5]</sup> There are not many studies in the literature available regarding the position and depth of the dimple to be created while planning for dimpleplasty. Since many years, Khoo Boo-Chai's (KBC) point, which lies at the intersection between a horizontal line drawn from the corner of the mouth and a vertical line dropped from the outer canthus of the eye, is being followed as a standard point in creating artificial dimples. The purpose of our study is to assess the prevalence, location, distribution pattern of dimple with sex, position, depth of the dimple,

**Address for correspondence:** Dr. Vijaya Lakshmi G, Postgraduate, Department of OMFS, KVG Dental College and Hospital, Sullia- 574327, Karnataka, India. E-mail: drvijaya247@gmail.com

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and also the variation in distance from standard KBC point to the naturally occurring dimple among population of Sullia taluk, Dakshina Kannada district, Karnataka, India. The data obtained in our study will help the maxillofacial surgeon's in decision-making while creating artificial dimple and determining its position and size. Moreover, our study aimed toward assessing the region wise prevalence, position, and size of the dimple.

## MATERIALS AND METHODS

Our study included a sampling of 1462 subjects among population of Sullia taluk. Informed consent and photo consent were obtained from all participants. The ages of the study population ranged from 15 to 35 years. Uncooperative patients, patients above 35 years of age, patients with any active infection of face and cheek, and patients with history of trauma/previous surgery of orofacial region are excluded from the study. The study was conducted from December 2017 to December 2018. They are randomly screened for dimple and the number of subjects found with dimple was calculated. Among the participants with dimple, the following parameters were assessed:

1. Sex distribution.
  2. Prevalence of dimple: chin dimple or cheek dimple, unilateral or bilateral dimple, is noted.
  3. Position of the dimple is measured by calculating the distance from two points.
    - i. From the corner of the mouth to the midpoint of the dimple.
    - ii. From the outer canthus of eye to midpoint of dimple using a measuring tape.
    - iii. Distance from intersecting point (KBC point) to the naturally occurring dimple was calculated.
- A horizontal line from the corner of the mouth and a vertical line from the outer canthi of the eye were marked. The distance between the KBC point (which is at the intersection of the two lines) and the deepest point of the naturally occurring dimples was calculated.
4. Size of the dimple is measured superiorinferiorly and anteroposteriorly using a divider and a scale.

## RESULTS

A total of 1462 people were screened for the occurrence of natural dimples in face. Among them, 121 were found to have natural dimples, 108 were women (89.25%), and 13 were men (10.75%). In total, 112 people had only cheek dimples, 6 had cheek dimples along with dimples in other regions of the face such as chin [Figure 2A] or malar region [Figure 2B], and 3 had only chin dimple [Figure 1 and Table 1]. Unilateral cheek dimples (72.88% [86]) were more common than bilateral (27.11% [32]). Occurrence of cheek dimples was more on the right cheek (52) than on the left cheek (34) [Table 2]. Among 150 cheek dimples in 118 people, 91

dimples (60.66%) were at the point of intersection of the midpoint of the vertical line from outer canthus of eye to horizontal line from corner of the mouth, which is referred as Kho Bhoo-Chai's point (KBC point) [Figure 2C] and 59 dimples (39.33%) [Figure 2D] did not lie on it. Among this 59 dimples, the mean distance from the KBC point to the midpoint of naturally occurring dimple was about 9.86mm anteriorly from the KBC point [Table 3].

The mean distance from corner of mouth to midpoint of dimple on the right side was 2.61 cm and on the left side was 2.78 cm. The mean distance from outer canthus of eye to the midpoint of dimple on the right side was 5.70 cm and on the left side it was 5.87 cm [Table 4]. The average size of dimple superoinferiorly on the right side was 8.29 mm and on the left side it was 8.96 mm. The mean size anteroposteriorly on the right side was 6.48 and on the left side it was 6.51 mm [Table 5].

## DISCUSSION

Cosmetic surgery in India is a developing field because concern of people about aesthetics is increasing day by day. Surgical creation of dimple/dimpleplasty is one of the cosmetic procedures that are preferred by young individuals. Dimples occurring on both cheeks are more common than that occurring only one cheek.<sup>[6]</sup> However in our study, unilateral dimple is more common than bilateral. Studies also showed that among unilateral dimple the left-sided dimple is more common than that of right sided.<sup>[7]</sup> However in our study, the right-sided dimple is most common. Occurrence of dimple is equal between men and women and are genetically inherited as an autosomal dominant trait. However in our study, women are more in number with dimples. In a study by Kumar *et al.*,<sup>[8]</sup> it was observed that 152 dimples lay on the KBC point (45.2%) and 184 lay elsewhere on the face (54.8%). However in our study among 150 dimples, 91 dimples (60.66%) were on the KBC point and 59 dimples (39.33%) were not on

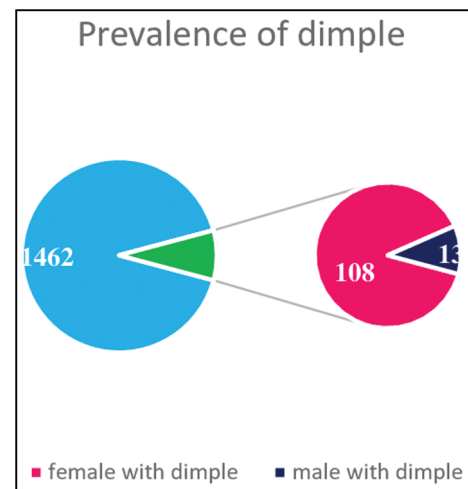


Figure 1: Prevalence of dimple



**Figure 2:** Variations in dimple: (A) chin dimple, (B) malar dimple, (c) dimple coinciding with KBC point, and (D) dimple not coinciding with KBC point

**Table 1: Occurrence of facial dimples in population of DK (of 1462 people screened)**

	Sex		Total
	Female (89.25%)	Male (10.75%)	
Cheek dimple only	100	12	112
Chin dimple only	2	1	3
Coexisting cheek and other facial dimples	6	0	6

**Table 2: Type of cheek dimples**

Bilateral (27.11%)	Unilateral (72.88%)	
	Right cheek	Left cheek
32	52	34

the KBC point. Khoo Boo-Chai<sup>[7]</sup> studied the dimples of about 500 female individuals aged between 1 and 50 years and concluded that the majority of dimples are located at a point of intersection between a perpendicular line dropped from the outer canthi of the eye and a horizontal line drawn out from the angle of the mouth. Almost every clinician

**Table 3: Occurrence of dimples in relation to the Khoo Boo-Chai's (KBC) point**

At KBC point (60.66%)	Not at KBC point (39.33%)	Mean variation in distance from the KBC point to the midpoint of naturally occurring dimple
91	59	9.86 mm anteriorly from the KBC point.

**Table 4: Mean distance from the landmarks to midpoint of the dimple**

Mean distance	Right cheek (cm)	Left cheek (cm)
Corner of mouth to midpoint of dimple	2.61	2.78
Outer canthus of eye to midpoint of dimple	5.70	5.87

prefers creating artificial dimples on KBC point only. Different landmarks were preferred by various surgeons for creating dimples, such as Lari,<sup>[9]</sup> suggested two methods for determining the site of dimple creation:

**Table 5: Average size of dimple**

Average size of dimple	Right cheek (mm)	Left cheek (mm)
Size of dimple superoinferiorly	8.29	8.96
Size anteroposteriorly	6.48	6.51

1. Using the point of intersection of a perpendicular line dropped from the external canthus and a horizontal line drawn from the highest point of the Cupid's bow.
2. Asking patients to suck in their cheeks and then marking the site of maximum depression as the location for the dimple.

Shaker<sup>[10]</sup> created a dimple by asking the patient to smile and then marking the dimple site 2–2.5 cm lateral to the nasolabial fold at the same level or slightly above the angle of the mouth. El-Sabbagh<sup>[11]</sup> suggested creating a dimple at a point in level with or above the angle of mouth, according to the vector of smile. Not all patients prefer/happy getting their dimples on KBC point and there exists confusion among the surgeons while creating artificial dimples regarding the position and size of the dimple to be created. Even though there are various positions of the dimple described in the literature, there are not many studies regarding the mean measurements of the position and size of the dimple to be created. Hence in our study, we had assessed the position of the dimple (mean distance) from two standard reference points (corner of mouth and from outer canthus of eye to midpoint of dimple), distance from KBC point to the naturally occurring dimple, which will help to determine the average position of the dimple which is to be created. The size of the dimple and the mean measurements was calculated, which will help the surgeons regarding the size of the dimple to be created.

## CONCLUSION

Dimple is one of the special indentations in facial skin which is considered as a sign of beauty. In our study, we assessed the variation in size and position of naturally occurring dimple. Our study features that not all the

dimples coincide with the KBC point and the mean variation is 9.86mm anterior to KBC point. Our study anticipates helping the surgeon in better creation of dimples resembling naturally occurring dimples.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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