Review Article

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Significance and Methods for Evaluation of Breast Size among Women

Bhawna Sharma Dubey*, M.M.A. Faridi**

*Professor, Department of Pediatrics, Lady Harding Medical College, New Delhi. **Professor & Head, Division of Neonatology, Department of Pediatrics, University College of Medical Sciences, Delhi.

Abstract

Breastfeeding is one of the important aspects of a woman's life. Asymmetry and/or small size of the breast(s) have important psychological consequences for the mother about her capacity for milk production and ability to breastfeed her baby. Adequate counseling in these cases helps allay anxiety of mothers regarding adequate milk production. Most authors have studied breast size for aesthetic purposes and most studies are on small number of subjects including few adolescents to 125 women and age ranging from 16 to 83 years. 'Aesthetically pleasing breast' have been studied by many authors and defined as size and fullness proportional to the body, have minimal ptosis and no axillary tail, be conical to teardrop in shape, and have the nipple at the anterior most position [12]. Results from aesthetically perfect breasts as well as breast size of the adolescent nulliparous women cannot be extrapolated to the lactating women, hence the requirement of developing nomograms for use during lactation councelling. Breast measurements can be used for counseling mothers for successful breastfeeding and for aesthetic and plastic surgery for re-shaping of the breast. Lactation promotion clinics require such data for adequate counseling of breastfeeding mothers and this decreases the likelihood of discontinuation of lactation. Breast measurements can be used for counseling and aesthetic and plastic surgery for shaping of the breast. Developing nomograms of breast measurements & breast mass/volume estimations can help to counsel lactating mothers regarding adequacy of breast volume.

Keywords: Breast size; Lactation; Lactation counseling.

Introduction

Breastfeeding is fundamental to the growth and development, and survival of the newborn infant as well as wellbeing and health of the mother. Breastfeeding is one of the important aspects of a woman's life. Shape, size, position and asymmetry of the breast(s) have various important psychological consequences on the mother regarding her capacity of milk production and the ability to breastfeed her baby.

The macroanatomy of the female breast comprises of nipple, areola and stroma. The lactating system of the breast consists of alveoli, lactiferous ducts, lactiferous sinuses and lactiferous ductules. The alveoli are made of very small milk secreting cells. Lactiferous ducts carry milk from the alveoli towards the areola. Beneath the areola, many lactiferous ducts coalesce, become wider and form lactiferous sinuses. About 10-20 fine lactiferous ductules transport milk from the lactiferous sinuses to the nipple. The lactating system is surrounded by connective tissue and fat. It is the fat and connective tissue which gives the breast its shape and size [1]. However, the number of milk producing cells in the breasts of all women are almost similar.

The breast(s) attains its hemispherical shape at puberty. Variations in size and position are affected by age of the woman and activity of the gland. During

Corresponding Author: Bhawna, A-3/81, Paschim Vihar, Delhi-110063.
E-mail: bhawnasd@yahoo.com

pregnancy and lactation, the breasts increase two to three times in size. Following cessation of lactation, breast size decreases and at times become more pendulous.

Shape, size, position, asymmetry, and hypoplasia of the breast(s) has many psychological consequences on the mother making her doubt her capacity of milk production, and the ability to breastfeed the baby, and loosing self confidence due appearance of the breasts [2]. Some women are highly distressed by the shape and size of their breasts and need counseling and adequate treatment. Perceived changes in the appearance of the breast also influence a woman's decision to breastfeed [3]. Breast hypoplasia may be due to imperfect formation of primitive breast tissue during development. It is also seen in ovarian hypofunction and this is amenable to hormonal treatment.

Asymmetry between the sizes of the breasts is often seen during the normal stage of breast development [4] and when breastfeeding is done predominantly from one breast [5]. The breast bud frequently begins to develop on one side before it does on the other. During adolescence one of the breasts may respond better to the circulating hormone and grow bigger than the other breast but eventually both breasts attain same shape and size.

Adequate counseling in these cases helps allay anxiety of mothers regarding adequate milk production. Successful breastfeeding can be done even in deformed breast condition by proper education, counseling and empowerment of the mother and family [6]. Significant difference between the two sides or persistence of difference between the two sides in a growing adolescent, suggestive of asymmetry can be considered for cosmetic correction, after all other underlying pathologies are ruled out.

Most authors have studied breast size for aesthetic purposes and most studies are on small number of subjects including few adolescents [7] to 125 women [8] and age ranging from 16 to 83 years [8,9,10,11]. Aygun et al [7] studied diameter of the nipples and areola of 498 pubertal girls. Kalbhen et al measured breast size on mastectomy samples only [11].

'Aesthetically pleasing breast' have been studied by many authors and defined as size and fullness proportional to the body, have minimal ptosis and no axillary tail, be conical to teardrop in shape, and have the nipple at the anterior most position [12]. Results from aesthetically perfect breasts as well as breast size of the adolescent nulliparous women cannot be extrapolated to the lactating women, hence the requirement of developing nomograms for use during lactation councelling.

Breast measurements can be used for counseling mothers for successful breastfeeding and for aesthetic and plastic surgery for re-shaping of the breast. A simple technique of breast measurement was described by Capraro and Dewhurst in 1975 [2]. It does not require sophisticated equipments and uses only anthropometric measurements to evaluate the breast size and assess the asymmetry between the breasts.

In Capraro and Dewhurst study, the measure 'breast unit' shows an increase in value (indicating an increase in size of breasts) as the adolescent grows. Measurements of breast unit on a normal adolescent girl- Right breast unit at 11,12,14,15 & 16 years was 24.75, 180, 247, 357 & 396 and Left breast unit values at corresponding years were 13.5, 170.5, 252, 340 & 378 respectively, showing a progressive increase with age [2].

Breast size of mothers having even the lowest breast unit- 255 have been found to have measurements similar to those found in the adolescent age group and yet are able to breastfeed the babies well & have sufficient milk output.

Various other methods employed for breast measurements use complex measurements such as mammography [11], torso measurements [12], 3-D imaging [13,23,24,25], casting techniques [14], ultrasound imaging of the breast [11,19,22], water displacement techniques [21], and Grossman disk [20,21]. The wide range of techniques available yield varied results and are sometimes difficult to interpret.

The methods considered most accurate are the direct volume measurement techniques such as plaster casts, paraffin models and water displacement techniques [19]. However, these are time consuming and cumbersome.

Casting methods are conducive to deformation of the breast and may alter the volume measurements. Water displacement techniques are useful for biopsy, pathology, post-surgical and post-mortem samples. Patient stated brassiere cup-sizes have been found to be a poor proxy for the actual measurements of the breast and cannot be used for surgical procedures as it requires accurate measurements. Hence, the constant need to develop accurate and simple measurement techniques.

Breast volumes have been found to be positively correlated to body weight, and chest, lumbar and buttock circumference, and negatively correlated to height [13]. Symmetrical breast has been defined as < 5.6% [9] or < 50 cc difference in the breast volume between the right and left breasts [15].

Breast volume varies during the menstrual cycle and pregnancy. Breast volume is an indicator of whole organ change reflecting responses to the pathologic, physiologic, pharmacologic and environmental factors. It has been reported that breast volume increases by 145±19 ml during pregnancy to 211±16 ml by 1 month of lactation [16,17]. Breast volume also increases in cancer/ tumors due to increase in underlying tissue. Pregnancy and lactation associated breast enlargement is related to hormonal influence on the breast tissue and is independent of maternal age, parity status and frequency of breastfeeding.

The areolar diameter makes up about 25-30% of the breast hemi-circumference. Hauben et al [18] have shown that nipple-areola-breast proportion is 1:3:3 in non-lactating women. The nipple is generally longer in multiparous mothers. Mothers with small nipple projection length are also able to feed the babies well and small nipple does not pose any difficulty in breastfeeding [6].

Lactation and IYCF (Infant and Young Child Feeding) clinics focus on the benefits of breastfeeding, anatomy and physiology of the breast, techniques of breastfeeding, care of the breast(s) and common problems likely to be encountered during lactation and their remedies in order to help resolve maternal apprehensions regarding breast size, and adequacy of breastfeeding. These antenatal/IYCF/lactation promotion clinics can help resolve maternal apprehensions regarding adequacy of breast size during lactation and breastfeeding of the baby.

Lactation promotion clinics require such data for adequate counseling of breastfeeding mothers and this decreases the likelihood of discontinuation of lactation. Breast measurements can be used for counseling and aesthetic and plastic surgery for shaping of the breast. Developing nomograms of breast measurements & breast mass/volume estimations can help to counsel lactating mothers regarding adequacy of breast volume. Studies may be conducted for various ethnic groups/populations for determining their anthropometric parameters and volume nomograms of the breast.

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