

Review

ANATOMICAL SKIN DIMPLES

M.D. Rengin Kosif

Department of Anatomy, Faculty of Medicine, Abant Izzet Baysal University, Bolu, Turkey



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Corresponding Author:

M.D. Rengin Kosif

Assistant Prof.

Department of Anatomy, Faculty of
Medicine, Abant Izzet Baysal
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ABSTRACT

Dimples are visible indentations of the skin and a dominant trait. Anatomically, dimples may be caused by variations in the structure of the some body tissue for example muscles, connective tissues, skin and subcutaneous tissue. Dimples types of the human body: Fovea buccalis (dimple of cheek), fovea mentalis (dimple of chin), zygomatic dimples, fossa supraspinosus (bi-acromial dimple=dimple of shoulder), elbow dimples, fossa lumbales laterales (dimple of back), gluteal dimples and sacral-coocyegeal dimples (pilonidal dimple). Sometimes, dimples are permanently present, but sometimes not permanent. They vanish away when the excessive fat goes away. Dimples are not indicators good health.

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INTRODUCTION

A dimple (also known as a gelasin) is a small natural indentation in the flesh on a part of the human body. Dimples may appear and disappear over an extended period. They may be genetically inherited and have been called a simple dominant trait. Dimples is the word given to any natural indentation or dent on the body, but usually refers to the face. Most notably in the cheek or on the chin (1). They are most commonly visible when someone smiles.

They are a genetic trait following an autosomal dominant pattern of inheritance. Dimples are one of the most dominant facial traits. Dimples are a dominant trait, which means that it only takes one gene to inherit dimples. If neither of your parents have dimples, you shouldn't have them either, unless you experience a spontaneous mutation. If one of your parents have dimples, you have a 25-50% chance of inheriting the gene, since it means that parent inherited the gene from one or both parents. If both of your parents have dimples, you have a 50-100% chance of inheriting the gene, depending on how they inherited their dimple genes. The dominant genes responsible for the inheritance of facial dimples have been suggested to be located on chromosome 5 for cheek dimple gene and chromosome 16 for chin dimple gene. It could therefore be inferred that both dominant genes reside in people who express these dominant traits. From this survey, it was observed that 25% of the subjects inherited the two forms of facial dimples from either one or both of their parents who also expressed both phenotypes; a rate higher in females than males (2).

Dimples could be transient or permanent, depending on the cause or factor responsible for their occurrence. The process of growth and development could contribute to this. Excessive fat deposition, which

disappears with the aging process, causes transient dimples, so also is the stretching or lengthening of muscles during growth, leading to gradual obliteration of the defect. This explains why some dimples are commoner and more conspicuous in the younger age groups (3).

There are different types of dimples on the human body. Fovea buccalis (dimple of cheek), fovea mentalis (dimple of chin), zygomatic dimples, fossa supraspinosus (bi-acromial dimple=dimple of shoulder), elbow dimples, fossa lumbales laterales (dimple of back), gluteal dimples and sacral-coocyegeal dimples (pilonidal dimple).

Fovea Buccalis (Cheek Dimple): Dimple on cheeks (also known as smiling dimple) enhance facial beauty and expression. They occur in both sexes with no particular preponderance, may express unilaterally or bilaterally and are genetically inherited as a dominant trait. Anatomically dimples are thought to be caused by a double or bifid zygomaticus major muscle, whose facial strands insert into the dermis and cause dermal tethering effect. There are people excited in plastic surgery who had made cheek dimple after for beauty purposes (4).

Figure 1



Daponte was reported that male and female greek children and adolescents ranging in age between 7-15 the

presence of cheek dimples. It is naturally present in 35% of adult females and 33% of adult males. Neither sex nor side differences when expressed unilaterally were observed (5).

The truth is that dimples are actually genetic defects that are caused by shortened facial muscles. Dimples are caused by a fault in the subcutaneous connective tissue that develops in course of the embryonic development. A variation in the structure of the facial muscle may also cause dimples. It must be interesting to note that dimples are inherited facial traits that are passed from one generation to the next. Dimples often occur on both the cheeks. A single dimple on one cheek is a rare phenomenon. Transfer of dimples from parents to children occurs due to just one gene. The dimple creating genes are present in the sex cells prior to the process of reproduction. Each parent provides one of these genes to the child. So, if both the parents have dimples, the children have 50-100% chances of inheriting dimple genes.

If, however, only one parent has dimple genes, the chances of the children inheriting the genes are 50%. If neither of the parents has the dimple genes, their children will not have dimples (6).

Fovea Mentalis (Chin Dimple): The terms cleft chin, chin cleft, dimple chin or chin dimple refer to a dimple on the chin. It is a Y-shaped fissure on the chin with an underlying bony peculiarity. Specifically, the chin fissure follows the fissure in the lower jaw bone that resulted from the incomplete fusion of the left and right halves of the jaw bone, or muscle, during the embryonal and fetal development. For other individuals, it can develop over time, often because one half of the jaw is longer than the other, leading to facial asymmetry.

This is an inherited trait in humans, where the dominant gene causes the cleft chin, while the recessive genotype presents without a cleft. However, it is also a classic example for variable penetrance with environmental factors or a modifier gene possibly affecting the phenotypical expression of the actual genotype. Cleft chins are common among people originating from Europe (7).

It has been reported that the chin dimple results from incomplete fusion of the two halves of the jaw during foetal development, forming a notch in an otherwise well-united mandibular symphysis. It can also be caused by a dehiscence or failure of the paired mentalis muscle over the chin to come together during development (8).

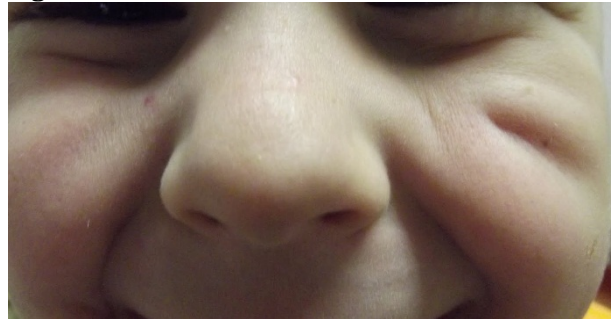
Figure 2



Zygomatic Dimple (Higher up Dimples): A unique case of a congenital skin fossa in the zygomatic region in a 3-year-old girl is reported by Hanawa (9). Little has been written about congenital fossae, or dimples. They are thought to develop in the wound resulting from the fetal tissue being compressed between a sharp bony point and the uterine wall. The skin and subcutaneous tissue become

compressed and adherent, and when the pressure is released, surrounding parts can stand up, while the attached part remains tied down, forming small dimples or fossae, what have been called "pressure dimples" (9).

Figure 3



Fossa Supraspinosus (Bi-Acromial Dimple): Bi-acromial dimples (shoulder dimples), also known as supraspinous fossae are an anatomical peculiarity that should be considered an anatomic variation (10). They seem to have an autosomal dominant inheritance pattern. Review of the literature suggests that, these dimples arise due to the entrapment of skin between the shoulder bones and wall of the uterus. These dimples are found infrequently, and are a solitary finding in most cases. However, bi-acromial dimples have been reported as part of malformation syndromes such as 18q deletion syndrome, and skeletal dysplasias such as Apert's syndrome (11).

Figure 4



Elbow Dimple: Upon the lateral part of the posterior aspects of the extended elbow is a distinct dimple, which overlies the radio-humeral articulation; this dimple along with the hollows on each side of the olecranon. It becomes effaced in synovial thickenings and effusions in to the joint (12).

Figure 5

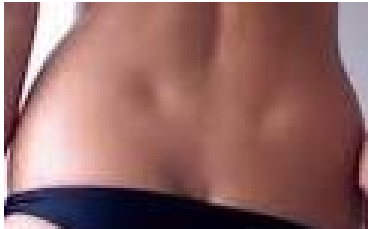


This appears to be the first case of a child presenting congenital, symmetric dimples in three different areas. We report on a male premature child who was seen at the age of 2 months for the evaluation of cutaneous depressions symmetrically located on the shoulders, elbows and in the sacral region (13). Some patients had subacromial dimples and elbow dimples during infancy in Apert Syndrome (14).

Back Dimples: The dimples of Venus (also known as back dimples, butt dimples or Venusian dimples)

are sagittally symmetrical indentations sometimes visible on the human lower back, just superior to the gluteal cleft. They are directly superficial to the two sacroiliac joints, the sites where the sacrum attaches to the ilium of the pelvis. The term "dimples of Venus", while informal, is a historically accepted name within the medical profession for the superficial topography of the sacroiliac joints. The Latin name is fossae lumbales laterales ("lateral lumbar indentations"). These indentations are created by a short ligament stretching between the posterior superior iliac spine and the skin. They are thought to be genetic. There are other deep-to-superficial skin ligaments, such as "Cooper's ligaments", which are present in the breast and are found between the pectoralis major fascia and the skin. There is another use for the term "Dimples of Venus" in surgical anatomy. These are two symmetrical indentations on the posterior aspect of the sacrum which also contain a venous channel. They are used as a landmark for finding the superior articular facets of the sacrum as a guide to place sacral pedicle screws in spine surgery.

Figure 6



They are sometimes believed to be a mark of beauty, alluding to the origin of their name (Venus was the Roman goddess of beauty) (15).

Gluteal Dimples (Dimple on Butt Cheek: Above Gluteal Region): Dimple on butt cheek present during childhood may disappear after due to excessive weight. Butt dimples caused by cellulite, or fat deposits right beneath the skin's surface can make you feel embarrassed about your appearance. The presence of cellulite on your derriere can run in the family, or be caused by hormones or lifestyle (16).

Figure 7



Pathologic Dimples

Sacral and coccygeal dimples are pathologic dimples. Sacral dimples, also known as sacrococcygeal or coccygeal dimples or pits, are the commonest cutaneous anomaly detected at neonatal spinal examination. They are defined as shallow or deep depressions occurring at the lower sacral region close to or within the natal cleft (17).

Figure 8



Kriss and Desai examined 160 neonates who had midline sacral dimples less than 5 mm in size and situated within 2.5 cm of the anus. None had any signs of spinal dysraphism on ultrasonography (18). On the other hand, eight of the 20 neonates with "atypical" dimples (larger than 5 mm in size, situated farther from the anus, or occurring with other cutaneous markers) were found to have occult neural tube defects. The authors thus concluded that dimples that were bigger in size, located at a higher spinal level, or associated with other cutaneous stigmata should be investigated. Their findings form the basis of recommendation for investigation of atypical sacral dimples in a recent review (19). Cutaneous sinuses, dimples and patches along the spine should be routinely searched in the examination of newborn as clues to an underlying occult spinal defect (20).

Gomi evaluated 142 patients with sacrococcygeal dimples. Although Gomi et al identified spinal malformations such as spinal lipomas, filum cysts, and thickened fila terminalia in only 17 % of infants with type 1 dimples, they observed them in 45 % with type 2 and 55 % with type 3. Thus, in terms of the rate of spinal malformations, there are significant differences between types 1 and 2 and between types 1 and 3 (21).

Clinical significance of medically important dimples, especially sacral dimples, its association with occult spinal dysraphism, and a cost-effective diagnostic strategy (22).

Skin dimples have sometimes been considered a benign autosomal dominant trait. However, several authors have reported these cutaneous defects in a variety of conditions like congenital syndromes, infections, inborn errors of metabolism and mechanical trauma. In our case, the aetiology is unknown, even though maternal drug or infective exposure can reasonably be excluded as well as traumatic events (13).

Dimples could be transient or permanent, depending on the cause or factor responsible for their occurrence. The process of growth and development could contribute to this. Excessive fat deposition, which disappears with the aging process, causes transient dimples, so also is the stretching or lengthening of muscles during growth, leading to gradual obliteration of the defect (2).

Sometimes, dimples are also caused due to the presence of excessive fat on your face. These dimples are not permanent. They vanish away when the excessive fat goes away. Such dimples are not indicators of good health. These dimples can be eliminated through proper diet and exercise.

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