

Editorial

Gynoid lipodystrophy – clinical and management issues

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Gynoid lipodystrophy (GLD), or female cellulite, is characterized by the skin protrusions and depressions, with a “padded” or “orange peel” skin surface, mainly localized in the buttocks, lower limbs, pelvic region, and abdomen, affecting 80–90% of women after puberty.

GLD is a multifactorial condition. It may result from structural, biochemical, metabolic, inflammatory, and morphological alterations of the subcutaneous tissue resulting in changes in the morphology of the skin. It is considered as a chronic disorder involving structural modifications in the fibrous septa of adipose tissue and changes in the dermal connective tissue. Associated local lymphatic congestion, edema, adipocyte dysfunction, hypoxia, and microvascular damage, with secondary fibrosis and vascular reaction, also play its role.

A cross-sectional study on adolescent girls from São Paulo, Brazil, screened for GLD and associated factors (published in *Int J Dermatol* 2022;61:861-866.) in total included 184 girls aged from 12 to 18 years in this study. The overall prevalence of GLD was 77.7%; moderate and severe categories of GLD occurred in 56.5% of the sample. About 39.7% of the girls identified an impact on the quality of life. GLD was associated with higher body mass index, early menarche, higher carbohydrate intake, lower water consumption, menstrual irregularity, familial report of GLD, and less exercise practice.

The familial aggregation of GLD in adolescent girls suggests a genetic background. As GLD is almost exclusively a female disorder, sexual hormones are thought to play a critical role in its development. In addition, earlier menarche is associated with obesity and lower adiponectin levels, leading to the hypothesis that the prevalence of GLD will increase as adolescents become more obese. Their menarche occurs earlier in the developed world.

Diet, water intake, and physical exercise are well-known modifiable risk factors that contribute to developing GLD and obesity in adolescent girls. Thus, athletes rarely present GLD. A high-glycemic diet is associated with GLD development in teenage girls and is strongly associated with obesity, affective disorders, and metabolic syndrome. The substitution of water for milky or soft drinks increases glycemia, sodium intake, and insulin-related hormones, contributing to obesity.

GLD considerably affects the patient's quality of life. Thus, the main reason to look for a treatment for GLD is its esthetic appearance. A frequent reason for repeated consultations is ineffective medication.

Magnetic resonance imaging (MRI) has established morphological alterations and clinical appearance of GLD beyond doubt. A major finding is a significant increase in the thickness of the subcutaneous fibrous septa corresponding to the cutaneous depressions observed in GLD pulling down the skin. At the same time, the protruded areas are the projection of adipose tissue through the fibrous septa. Using MRI, it has been determined that 96.7% of the gluteal

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regions with depressions caused by GLD present fibrous septa perpendicular to the skin's surface, most of which are branched. The thickness of these areas is twice that of GLD-free regions, on average.

Anthropometric measures (weight and body circumference), clinical examination (in standing position, tightening and pinching the skin increases defects), digital photographs, 2D magnetic resonance image, ultrasound (to examine thickness, quality of the connective tissue, and edematous component), Doppler laser flow meter (to assess microcirculation), thermography, and infra-red thermal camera (to detect low blood flow and low temperatures) are the methods used for evaluation.

Hexsel's and Dal'forno's alphanumeric classification Cellulite Severity scale (CSS) based on the number of evident depressions, depth of depressions, morphological appearance of skin alterations, and grade of laxity, flaccidity, or sagging skin, classify GLD into grade severity of mild, moderate, or severe type and CSS simplified classification based on scores of the number of evident depressions and the average depth of depressions also classify GLD into mild, moderate, and severe. These tools may be used for assessment.

Standard recommendation for the management of GLD is change of lifestyle to reduce GLD; that is, to modify diet and exercise regularly.

The available therapeutic options for GLD are numerous and range from conventional modalities (1. topical applications – caffeine, retinol, extracts of *Ginkgo biloba*, or botanical derivatives-inducing lipolysis, lymphatic drainage, increasing microcirculation, reducing edema, and stimulation of collagen production and 2. massages – inducing lymphatic drainage and increasing microcirculation, 3. oral nutritional supplements – *Vitis vinifera* (grape), *G. biloba*, *Centella asiatica*, fish oil, borage oil, and many others, 4. intense pulsed light and infrared light – heat generated by device increase microcirculation, lymphatic drainage, and collagen

synthesis, 5. light emitting diode combined with topical phosphatidylcholine, 6. shockwave therapy/acoustic waves – used to treat nephrolithiasis, promote lipolysis, improve blood flow and lymphatic drainage, and stimulate collagen and elastin production, 7. ultrasound – acts by inducing volumetric heating and secondarily, lipolysis, and disruption of adipocyte cellular walls, 8. cryolipolysis, and 9. radiofrequency-unipolar and bipolar – acts by heating the dermis and, potentially, the subcutaneous tissue-induce collagen production, tissue restructuring, and adipocyte lysis) to minimally invasive approaches such as 1. carboxytherapy – carbon dioxide is administered intradermally, used to fight excess fat, body, and facial aging, flaccidity, varicose microveins, and to reduce scars and stretch marks, 2. mesotherapy – subcutaneous injections of several compounds such as collagenases, caffeine, hyaluronidase, carnitine, aminophylline, phosphatidylcholine (banned in Brazil), lipase, amylase, catalase, cathepsin, and recent one 3. dermal filling with biodegradable injections of calcium hydroxyapatite, 4. subcision – to divide bands or subcutaneous septa, 5. subcision system – accurate release of fibrous septa by a suction system and microblades, 6. Use of Bioceramic Neoprene Shorts – to promote occlusion with topicals facilitating the cream's absorption and penetration and enhance its efficacy, and 7. laser therapy – ND: YAG laser and injections. Epidermologie is a mechanical method of mobilizing subcutaneous fat through negative suction of the skin. The technique combines lymphatic drainage and ultrasound massage. The objectives of these therapies are to improve the aesthetic appearance of the skin and sustain it with maintenance therapy.

Clinical evidence from most treatment modalities is scarce but slightly positive; thus, more research is needed to confirm such effects.

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