

# Unexplained Ecchymoses in Young Women: Unveiling Gardner–Diamond Syndrome

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Received: 12th Mar, 2026 | Revised: 24th Mar, 2026 | Accepted: 14th Apr, 2026 | Available Online: 30th Apr, 2026

## ABSTRACT

Gardner–Diamond syndrome (GDS), also known as psychogenic purpura or auto-erythrocyte sensitization syndrome, is a rare disorder characterized by recurrent spontaneous painful ecchymoses with normal haematological parameters. We report three women aged in their early 20s to mid-40s who presented with recurrent unexplained bruising over the extremities and trunk without preceding trauma. Laboratory investigations, including coagulation profile and autoimmune markers, were normal. Diagnosis was supported by a positive auto-erythrocyte sensitization test. All patients had underlying psychological stressors or psychiatric comorbidities. Management included reassurance, psychiatric evaluation, and oral vitamin C supplementation. During six months of follow-up, patients showed reduction in the frequency and severity of episodes, highlighting the importance of recognizing this psycho-cutaneous disorder.

**Keywords:** Gardner–Diamond syndrome, Psychogenic purpura, Auto-erythrocyte sensitization, Ecchymoses, Psychodermatology

**How to cite this article:** Deshpande P, Siva Elango R, Doshi BR. Unexplained Ecchymoses in Young Women: Unveiling Gardner–Diamond Syndrome. *Int J Drug Deliv Technol.* 2026;16(40s): 813-817. DOI: 10.25258/ijddt.16.40s.78

**Source of support:** Nil.

**Conflict of interest:** None

## INTRODUCTION-

Gardner–Diamond syndrome (GDS), also known as psychogenic purpura or auto-erythrocyte sensitization syndrome, is a rare and underrecognized disorder characterized by recurrent, spontaneous, painful ecchymoses predominantly affecting adult women. [1] First described by Gardner and Diamond in 1955, the condition was attributed to autosensitization to components of erythrocytes, particularly phosphatidylserine within the red blood cell membrane. [1]

GDS is considered an uncommon entity, where fewer than 200 cases have been described in the literature, with the majority occurring in women. [2,3]

A strong association with psychiatric disorders such as anxiety, depression, personality disorders, and emotional stress has been consistently documented, leading to the alternative designation “psychogenic purpura.” [3,4]

Due to its rarity and its potential to mimic bleeding diatheses or vasculitic disorders, GDS remains a diagnostic challenge in dermatological practice. Increased awareness is essential to avoid unnecessary investigations and to facilitate appropriate multidisciplinary management. Herein, we report three cases of GDS presenting with recurrent spontaneous ecchymoses and normal haematological profiles, highlighting the psycho-cutaneous correlation and diagnostic considerations.

## CASE PRESENTATION

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### Case 1

A woman in her mid-40s presented to Skin OPD with multiple spontaneous painful ecchymotic patches over the upper and lower limbs for the past seven months. The lesions were insidious in onset, increased gradually in size over 48 hours, and resolved spontaneously over several days without residual scarring and with post-inflammatory changes. On cutaneous examination, multiple ill-defined, non-palpable, ecchymotic patches of varying sizes were noted over the extremities and trunk. (Figure 1) The lesions showed mild tenderness on palpation. There was no history of preceding trauma, drug intake (including anticoagulants or antiplatelet agents), bleeding diathesis, systemic illness or self-infliction of lesions. There was no history suggestive of connective tissue disease. Although she had no prior history of psychiatric treatment, she reported persistent anxiety and significant increase emotional stress since past 8-9 months.

### Case 2

A woman in her early 20s presented with recurrent spontaneous bruises over the arms, thighs for past 3 months. The lesions were painful at onset and appeared without any identifiable trauma. They occurred intermittently and resolved spontaneously. Dermatological examination revealed multiple ecchymotic patches in different stages of resolution over the extremities and abdomen. Systemic examination was within normal limits.

She was diagnosed with anxiety disorder with panic attacks and was on sertraline, beta-blockers and etizolam since past 2 months. There was no history of mucosal bleeding, menorrhagia, epistaxis, or family history of bleeding disorders.

### Case 3

A woman in her late 30s presented with recurrent painful bruising over the limbs and trunk of insidious onset. The lesions developed

spontaneously and resolved over several days without any intervention. There was no history of trauma, systemic bleeding manifestations, or use of anticoagulant medications. Cutaneous examination showed multiple non-palpable ecchymotic patches over the extremities and trunk, tender on palpation. General and systemic examinations were unremarkable. She had been diagnosed with depressive disorder and was on treatment with amitriptyline and escitalopram for the past two years.

## INVESTIGATIONS

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In all patients, routine laboratory investigations were performed to rule out haematological and autoimmune causes of spontaneous ecchymosis. Complete blood count was within normal limits in all the cases. Liver and renal function tests, urinalysis were within normal limits. Coagulation profile including bleeding time, clotting time, prothrombin time, activated partial thromboplastin time, fibrinogen levels, D-dimer assay were within normal limits. Antinuclear antibody (ANA) testing was negative, and complement levels (C3 and C4) were within normal limits in all three patients.

Based on the absence of trauma, normal hematological and coagulation profiles, negative autoimmune markers, and the presence of underlying psychological stressors or psychiatric comorbidity, a provisional diagnosis of GDS was made.

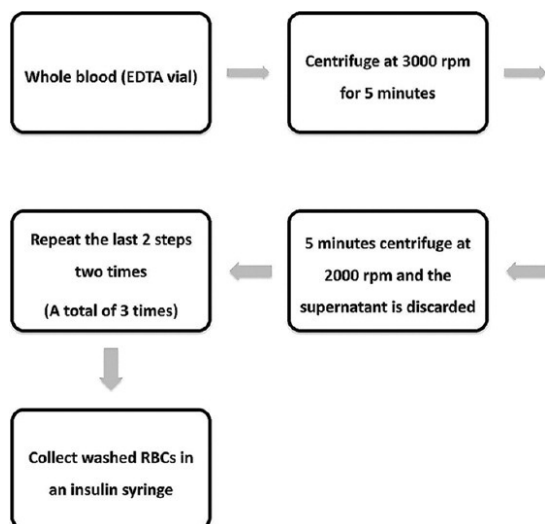
For confirmation of the diagnosis, we performed the auto-erythrocyte sensitisation test (AEST). A suspension of the patient's own saline-washed erythrocytes was prepared using a stepwise technique, described in the table (Table 1). 3 ml venous blood sample from the patient was separated by centrifugation following the mentioned technique. Following that, on the patient's inner forearm three circles were marked and 0.1 ml of saline was intradermally injected into the first circle, 0.05 ml of saline and 0.05 ml of venous blood (mix) was injected into the second one and 0.1 ml venous blood into the third<sup>[6]</sup> (Figure 2). The test sites were evaluated at 30 minutes and again at 24 hours.

At the end of the 24-hour follow-up, a well-defined ecchymotic lesion developed and persisted at the site of erythrocyte injection. No

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ecchymosis was noted at the normal saline control site. In all of the three patients, the test area showed ecchymotic patch after 24 hours indicating positive AEST (Figure 3).

TABLE 1 – Stepwise procedure for AEST



## DIFFERENTIAL DIAGNOSIS

The differential diagnosis considered was dermatitis artefacta, disseminated intravascular coagulation, idiopathic thrombocytopenic purpura, Henoch–Schoenlein purpura, Leukocytoclastic vasculitis, traumatic ecchymosis, drug – induced ecchymosis.

## TREATMENT

There is no specific curative therapy for Gardner–Diamond syndrome (GDS). Management is primarily supportive and multidisciplinary approach involving dermatology and psychiatry is considered essential for optimal patient outcomes.

All the patients were started on oral vitamin C tablets (ascorbic acid) 500mg/day for a period of 2 months. Along with this, patients were counselled extensively regarding the benign and self-limiting nature of the condition. Psychiatric evaluation was advised in each case. In Case 1,

psychiatric consultation was initiated, and anxiety management with pharmacotherapy and stress-reduction strategies was commenced. Cases 2 and 3 were already on psychiatric medications for anxiety disorder and depressive disorder, respectively; their treatment regimens were reviewed and optimized.

## OUTCOME AND FOLLOW-UP

Patients were followed up for a period of 3 months. During follow-up, all three patients demonstrated a reduction in the frequency and severity of ecchymotic episodes, particularly after optimization of psychiatric management and reassurance. No new systemic manifestations were observed during the follow-up period.

## DISCUSSION

Gardner–Diamond syndrome (GDS), also known as psychogenic purpura or auto-erythrocyte sensitization syndrome, is a rare and often underrecognized cause of recurrent spontaneous painful ecchymosis. The condition occurs most commonly in women between 19 and 72 years of age. [7] In our series, all patients were females and aged between early 20s to mid 40s. Nevertheless, the disorder has also been reported in men and children, although less frequently. According to Ratnoff et al., cases occurring in men constitute approximately 5% of all reported cases of auto-erythrocyte sensitization. [2]

The exact pathogenesis of GDS remains incompletely understood, and multiple mechanisms have been proposed. Subsequent studies have suggested a multifactorial aetiology involving immune dysregulation, vascular hypersensitivity, and psychoneuroimmunological interactions [4,5]. It has been proposed that psychological stress may trigger alterations in vascular permeability through neuroendocrine pathways, resulting in localized capillary fragility and extravasation of erythrocytes [4]. Stress-induced dysregulation of the hypothalamic–pituitary–adrenal (HPA) axis and autonomic nervous system may further contribute to microvascular instability [5].

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In our series, patients demonstrated clinical improvement with oral vitamin C (ascorbic acid 500 mg daily) given alongside appropriate psychiatric intervention when required. Vitamin C may play a therapeutic role in auto-erythrocyte sensitization by enhancing collagen formation via procollagen hydroxylation, thereby reducing capillary fragility. Additionally, it reinforces endothelial barrier integrity and exerts antioxidant effects by neutralizing free radicals in endothelial cells. These mechanisms further support the proposed involvement of capillary weakness and red blood cell leakage in the pathogenesis of the disorder. [8] A striking feature of GDS is its strong association with psychiatric comorbidities. Anxiety disorders, depressive disorders, and personality disturbances are frequently reported [4,5]. In our series, all three patients had significant psychological stressors, and two were already undergoing psychiatric treatment for anxiety and depressive disorders, reinforcing the psycho-cutaneous interface underlying this condition.

Management of GDS focuses primarily on reassurance, psychiatric evaluation, and stress reduction. Our series reinforces the importance of recognizing GDS as a rare psycho-cutaneous entity and highlights the pivotal role of psychological assessment and multidisciplinary management in improving patient outcomes.

### LEARNING POINTS/TAKE HOME MESSAGE

- GDS is a rare but important cause of recurrent spontaneous painful ecchymosis, particularly in women with normal haematological and coagulation profiles.
- Psychiatric comorbidities and emotional stress are strongly associated with GDS, highlighting the psycho-cutaneous interface.
- A multidisciplinary approach involving dermatology and psychiatry is crucial for optimal management and long-term improvement.
- Early recognition prevents misdiagnosis as factitious disorder or bleeding disorders, thereby reducing patient anxiety, unnecessary investigations and healthcare burden.

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### FIGURES -



Figure 1 – A solitary, well-defined, ecchymotic patch, measuring approx. 5 x 8 cm present over the left calf area.



third circle showing ecchymotic patch after 24 hours indicating positive AEST.

Figure 2 - three circles with 0.1 ml of saline intradermally injected into the first circle, 0.05 ml of saline and 0.05 ml of venous blood (mix) injected into the second one and 0.1 ml venous blood into the third on the patient's inner forearm.

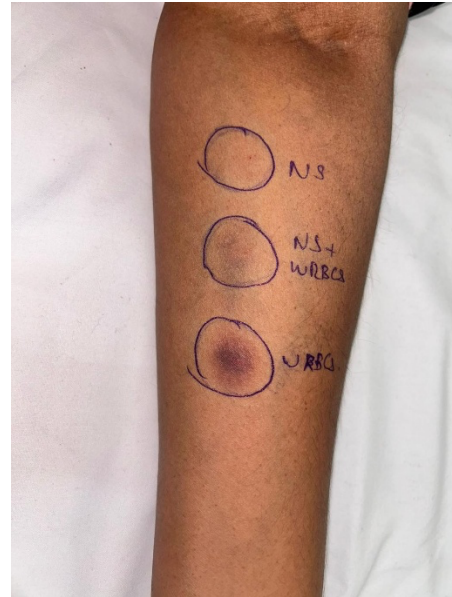


Figure 3- The test area i.e. the