# Cutaneous Reactions After Messenger RNA Based COVID-19 Vaccines: These Aren't Excuse To Avoid Them!

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## Introduction

The COVID-19 vaccine hesitancy is growing despite the known severe complication of the disease due to misinformation of the patients by different sources. COVID-19 vaccine is associated with various skin manifestations which as typically mild to moderate and requires symptomatic treatment and these symptoms do not obscure the necessity of vaccination. Approximately 5% of the patients that are seen in primary care practice is dermatology patients and having the knowledge of skin reactions secondary to COVID-19 vaccination and the appropriate patient counseling and management is required. Herein in this review, we will discuss the skin side effects of the current COVID-19 vaccination.

## Materials and Methods

We conducted a literature review of PubMed in November 2021 to identify cutaneous side effects of the current vaccines Pfizer-BioNTech and Moderna vaccines. We primarily focused this assessment on the Pfizer BioNTech and Moderna mRNA vaccines because reports of cutaneous events from adenovirus vaccines (beyond clinical trials) were limited. Abstracts and titles of identified contributions published in 2020 and 2021 were reviewed for relevance. We included data from publicly available online reports and this review did not qualify as human subject research; therefore, institutional review board approval was not required at the Saint Peter's University Hospital.

## Results

The most reported cutaneous finding after vaccine administration was a delayed large local reaction a median of 7 days after the first vaccine dose, primarily after Moderna vaccine (up to 92%). Less common skin adverse events were urticaria, morbilliform eruption, delayed large local reactions and erythromelalgia. Rare cutaneous adverse events were Herpes Zoster activation, vasculitis, flaring of the preexisting dermatitis, angioedema, pityriasis rosea, chilblains, vesicular eruption, lupus and psoriasis activation.

## COVID-19 Vaccine Induced Cutaneous Reactions

### Local injection site reactions

Occur soon after vaccine administration (hours)
Common (5.5% to 23.7% )
Localized swelling, redness or erythema, and pain

### Urticaria, angioedema, and maculopapular eruption

Urticaria, angioedema, respiratory distress, or anaphylaxis can occur within 4 hours of vaccine administration
Anaphylaxis and other serious reactions have been rarely reported for the Pfizer and Moderna vaccines (rates ranging from 2.5-11.1 per 1 million)
Nonlocalized erythema and morbilliform eruptions have likewise been reported days after vaccination

### Delayed large local reactions

Characterized by erythema with mild induration at or near the initial injection site
Primarily distinguished from local injection site reactions by their later time of onset (eg, days versus hours).
Temporary, resolving 3 to 6 days after onset
Recognition of delayed reactions is important to guide patient expectations and avoid unnecessary medical therapies (eg, an- tibiotics), because these eruptions are not infectious in nature.

### Herpes Zoster

COVID-19 vaccines may have promoted zoster reactivation, relatively rare
Dermatomal vesicular eruption with pain

### Immune thrombocytopenia

Generalized purpuric eruption
Thrombocytopenia with markedly decreased platelets (reduced to as low as 2,000/µL )
Treatment with dexamethasone and intravenous immunoglobulin

### Rarely reported adverse events

Inflammatory reactions to dermal fillers: facial swelling, predominately after the Moderna vaccine
Pernio/chilblains, erythromelalgia
Pityriasis rosea, erythema multiforme

## Discussion

The reported reactions to COVID-19 mRNA vaccines are largely self-limited, with the most frequent presentations being local injection site reactions echoing those from clinical trials. Studies widely concur that these local findings should not discourage vaccination. Allergic-type cutaneous symptoms, including urticaria and angioedema, have been transient and rarely associated with anaphylaxis. The development of uncommon entities such as herpes zoster, dermal filler reactions, and ITP were seldom serious in nature but justify clinical monitoring among certain groups. Although further studies are needed to elucidate specific reaction mechanisms and identify optimal management approaches, these existing reports should reassure patients of the overall compelling safety profiles and benignity of skin reactions that may occur after mRNA COVID-19 vaccination.

## Conclusion

The identified cutaneous reactions are largely self-limited and should not discourage vaccination. Existing reports should reassure patients of the overall compelling safety profiles of the mRNA COVID-19 vaccines and benignity of skin reactions after vaccination.

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