

been impacted by altered patient flow. Until COVID-19, teledermatology was underutilized in the inpatient setting. FTF review remains the gold standard for inpatient consultations. Nonetheless, we conclude that most inpatient referrals can be confidently managed virtually, thereby increasing efficiency, reducing response time and obviating the need for FTF ward visits in a safe, timely and equitable manner. This is particularly significant in our current climate, reducing the attendant risk of cross-contamination between sites.

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Good tolerance of hyaluronic acid injections during the period of the COVID-19 pandemic: observing a cohort of 1093 patients in a prospective, observational real-life study

Dear Editor,

Dermatologists have questioned the possibility of continuing hyaluronic acid (HA) injections during the COVID-19 pandemic period, fearing especially an increase in immune complications. Therefore, the Group for Aesthetic and Corrective Dermatology of the French Society of Dermatology (gDEC) decided to set up a prospective, clinical study over the period May to July 2020 to follow a large patient cohort being injected with HA during the COVID-19 pandemic.

Overall, 14 dermatologists working in France, Belgium and Switzerland participated in the study. Each physician included all patients during the observation period that received facial HA injections. Participating physicians were encouraged to treat all patients according to their usual practice. Due to the COVID-19 pandemic, the hygiene measures were reinforced by the use of hydroalcoholic gel of physician and patient and the practitioners wearing a FFP2 masks at all times during the patient encounters. All products injected were commercially available within Europe and were purchased by the physicians.

Two types of side-effects were recorded: (i) patient self-reported side-effects at any time of the study, (ii) side-effects discovered during the systematic follow-up by the treating physician at 1 and 3 months after the treatment.

A total of 1093 patients were included. Overall, 1927 syringes of HA were used, i.e. an average of 1.8 syringes per patient. 921 and 873 patients were reached, respectively, for the 1- and 3-month systematic follow-up. Ten patients with COVID-19 infection were injected later than 2 months after their infection. Five patients were diagnosed with an active COVID-19 infection within 3 months after their HA injection. 19 (1.7%) side-effects were reported, three self-reported and 16 (84% of side effect) observed at systematic follow-up. The recorded side-effects were those frequently associated with HA filler injections like erythema, oedema and temporary discomfort. They were all self-resolving within a few days and occurred in the absence of symptoms suggestive of COVID-19 infection. No further serious or unexpected side-effects were reported. A summary of the results can be found in Table 1.

Our study shows an excellent tolerance of HA injections during the COVID-19 pandemic. No immune complications, that

Table 1 Tolerance of hyaluronic acid injections during the COVID-19 pandemic period

Number of patients injected	1093
Number of syringes injected	1927
Number of patients reached at 1 months	921
Number of patients reached at 3 months	873
Number of patients injected with previous COVID-19	10
Number of patients injected by COVID-19 between first and third month after injection	5
Physician or patient COVID-19 infection just after injection	0
Immediate self-reported side effect	3
Discomfort + erythema + oedema	1
Oedema only	2
Immediate side effects on patients reached	16
Discomfort + erythema + oedema	10
Oedema only	2
Ecchymosis	4
Delayed self-reported side effects at 1 or 3 months	0
Delayed side effects on patients reached at 1 or 3 months	0

usually are triggered by viral or bacterial infections^{1,2} were reported. Most studies show that immediate and delayed immune HA complications are relatively quick to appear and are rare 2 months after the injection.³ A few case reports document granuloma formation in patients injected with HA after receiving therapeutic cytokine (interferon) injections.⁴ In this context, it is feared that COVID-19 infections, known to cause sometimes a 'cytokine storm', lead to an increase in immune complications during the current COVID-19 pandemic. Data collected by André, Belezny and Humphrey^{1,2,5} before the current sanitary crisis found a frequency of immune complications of 0.8%, 0.5% and 0.93%, respectively. Other smaller studies³ reported comparable rates of immune complications. Based on these data, the expected number of patients with immune complications can be expected to be within five to 10 patients in our cohort; however, we did not find any immune complications. It is possible that due to the additional hygiene measures that physicians implemented in this study and the generally increased hygiene measures in the population at large, we may observe a reduction in viral and bacterial infectious disease and with this also a reduction in immune complications.

Our prospective study with a systematic follow-up at 1 and 3 months of over 1000 patients did not reveal any unexpected side-effects in the context of facial hyaluronic acid injections during the COVID-19 pandemic. Particularly, immune response-related complications were not observed in our entire study population.

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