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Serial saline solution injections for the treatment of lipoatrophy and depigmentation after corticosteroid injection for medial epicondylitis



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Corticosteroid injections are commonly used as standard practice in many aspects of medicine, especially orthopedics and plastic surgery. Complications of corticosteroid injections can include pain, secondary infection, tendon changes, and hypersensitivity. Injections have also been reported to cause lipoatrophy and skin depigmentation at the injection site with an estimated incidence of 0.5%–5.8%.² Although there have been case reports of spontaneous resolution of these local changes with a 1-year time frame, there are no clear data on the likelihood of this occurring.¹²

Serial saline solution injections in the local area of subcutaneous lipoatrophy and skin depigmentation have been shown in case series to be a cost-effective and efficient treatment.¹⁴ There have only been a handful of publications on this method, however, and no series, to our knowledge, has presented the use of saline solution injections after subcutaneous lipoatrophy of the medial or lateral epicondylar area following cortisone injection for epicondylitis. This case study therefore presents a patient whose subcutaneous lipoatrophy was successfully treated with serial saline solution injections at 4.5 months from initial onset.

Case report

A 53-year-old female patient presented with atraumatic left medial-sided elbow pain. She stated that the pain was worse with activities that involved gripping with forearm rotation. The pain

began insidiously 6 months prior to presentation and had not improved with anti-inflammatory medications and rest. On physical examination, the patient had pain just distal to the medial epicondyle, had no evidence of ligamentous instability, and had full range of motion of the elbow. Radiographic findings were normal. Medial epicondylitis was diagnosed, and a mixture of cortisone (1 mL of Kenalog [triamcinolone acetonide; Bristol-Myers Squibb, Princeton, NJ], 40 mg) and lidocaine (1 mL of 1% lidocaine without epinephrine) was injected as a single injection into the area of the flexor tendon origin.

When the patient returned at 1 month, she reported excellent relief of pain. She then returned 3.5 months after the cortisone injection with cosmetic concerns over the medial aspect of the elbow. On examination, the left elbow had an asymmetrical appearance, with prominence of the medial epicondyle and significant local lipoatrophy, compared with the opposite elbow. In addition, there was a large area of skin depigmentation in the area of the injection (Figs. 1–3). This finding was especially upsetting for the patient, as she was a professional model. Treatment with serial saline solution injections was recommended. Five months after the initial cortisone injection, the patient underwent a series of 6 saline solution injections into the subcutaneous tissue in the medial epicondylar area of the left elbow, centered at the point of lipoatrophy and depigmentation. Each injection was composed of 5 mL of normal saline solution, and the injections were given approximately every 10 days.

After 4 injections, the patient noticed a visible improvement in the cosmetic appearance of the left medial aspect of the elbow (Figs. 4 and 5). Two months following the sixth—and final— injection, she had complete resolution of the initial observed lipoatrophy (Figs. 6–8). The patient was entirely satisfied with the cosmetic appearance of the elbow at the end of treatment, which concluded 4.5 months after

The patient provided verbal and written consent for publication of this case report. Institutional review board approval was not required for this case report.

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initial onset. No adverse effects were noted, and she tolerated the saline solution injections without complications.

Discussion

In orthopedics, cortisone injections are commonly used. Steroid injections for medial epicondylitis in particular have been shown to decrease pain in the short term.¹⁵ Although major complications from corticosteroid injections are rare, minor complications such as subcutaneous lipoatrophy and local skin depigmentation have been well documented. A more soluble steroid with smaller particle sizes may decrease this potential.¹³

Although the exact mechanism of subcutaneous lipoatrophy is unknown, it has been observed that both the size and number of adipocytes decrease with an increase in macrophage cells.^{1,4} Additionally, microscopic corticosteroid crystals have been identified in histologic evaluations of subcutaneous lipoatrophy following local steroid injection in animal studies.⁷ Observation, fat grafting, hyaluronic acid filler injections, and saline solution injections have all been presented as treatment options for unresolved cutaneous atrophy.⁹ Although fat grafting has demonstrated effectiveness, it is a more complex and invasive treatment than simple subcutaneous saline solution injections.^{3,8} Moreover, the use of hyaluronic acid fillers can be associated with granuloma formation or inflammatory reactions at the injection site.¹⁶

Case series have reported that saline solution may be a promising treatment option when subcutaneous lipoatrophy occurs following steroid injection. The exact mechanism of how saline solution injections are successful in resolving the cosmetic complications of cortisone injections remains unclear. One case study suggested that saline solution potentially caused a redistribution of the steroid crystals, leading to differing cellular changes.⁹ After injection of normal saline solution into the area of cutaneous atrophy, good outcomes have been reported in the face,¹⁴ abdomen, thigh,⁶ buttock,^{5,10} scapula, and ankle.¹¹

This case study demonstrates that serial injections with normal saline solution may be a viable option for patients who are cosmetically dissatisfied with subcutaneous lipoatrophy as this method is cost-effective and low risk. Although there have been reports that cutaneous atrophy can spontaneously resolve within a year, our patient showed clear and dramatic changes in the cosmetic appearance within 6 weeks of beginning the series of saline solution injections (Figs. 4 and 5) and full resolution 4.5 months after treatment initiation. The timing and speed of the cosmetic changes would suggest that the saline solution injections are an effective treatment modality for this problem.

Although future studies should include larger numbers of cases and randomized controls to more clearly establish the effectiveness of serial saline solution injections for this condition, this case report nevertheless shows great initial promise for patients who experience this distressing complication following a routine cortisone injection in the elbow epicondylar area.

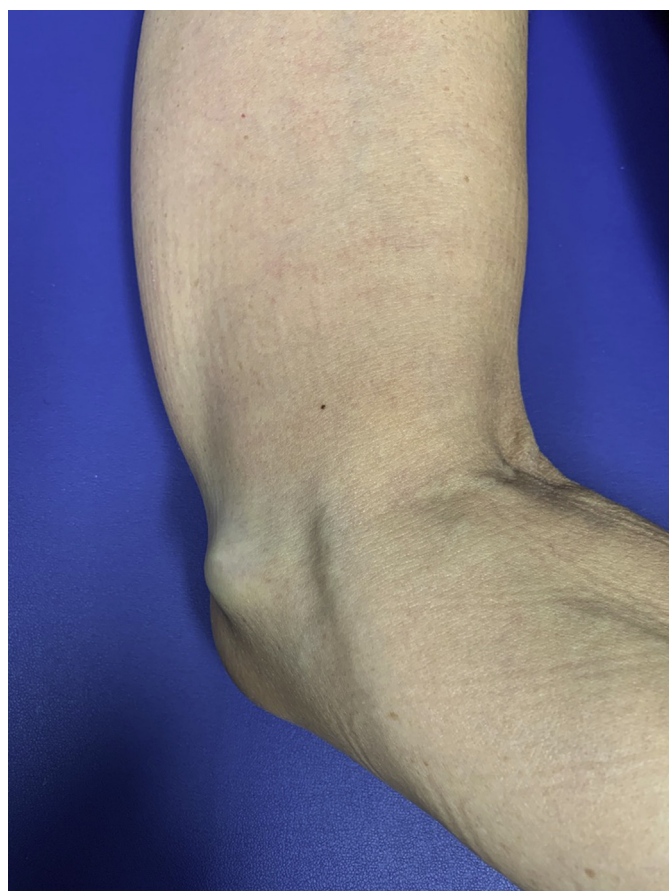


Figure 1 Appearance 5 months after cortisone injection, prior to saline solution injections.

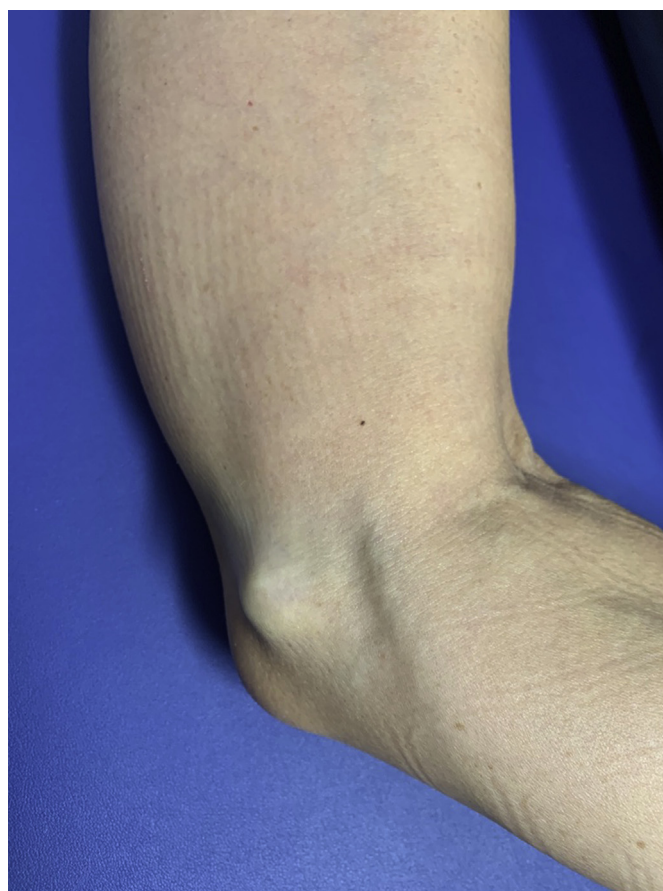


Figure 2 Second view of elbow appearance 5 months after cortisone injection, prior to saline solution injection.



Figure 3 Third view of elbow appearance 5 months after cortisone injection, prior to saline solution injection.

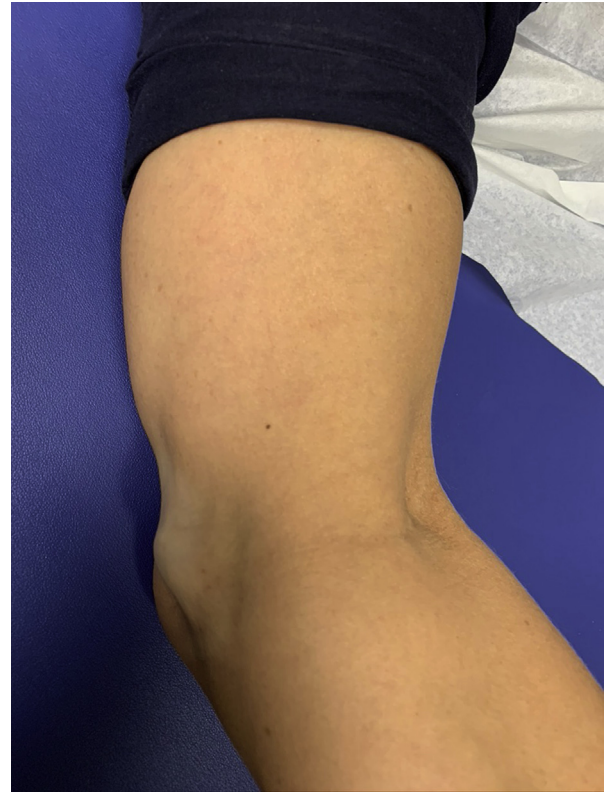


Figure 5 Second view of elbow appearance 6 weeks after initial saline solution injection and just prior to fifth saline solution injection.

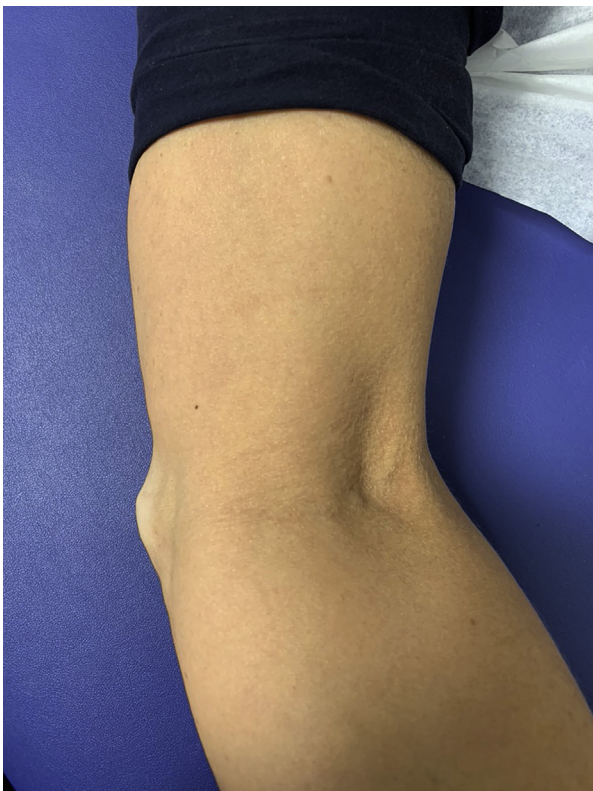


Figure 4 Appearance 6 weeks after initial saline solution injection and just prior to fifth saline solution injection.



Figure 6 Final appearance, after 6 saline solution injections, at 4.5 months after initial saline solution injection.



Figure 7 Second view of elbow appearance after 6 saline solution injections, at 4.5 months after initial saline solution injection.



Figure 8 Third view of elbow appearance after 6 saline solution injections, at 4.5 months after initial saline solution injection.

Conclusion

Subcutaneous lipoatrophy and skin depigmentation after steroid injections can be distressing for patients. The use of serial saline solution injections, as detailed in this case study, for the treatment of subcutaneous lipoatrophy and skin depigmentation is promising. Clinicians should consider serial saline solution injections as a treatment option for subcutaneous lipoatrophy and skin depigmentation following cortisone injection in the elbow.

Disclaimer

The views expressed in this article are not an official position of the institution with which the authors are associated.

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