Received: 18 March 2020 | Accepted: 28 May 2020

DOI: 10.1111/jocd.13527

JCD Journal of Cosmetic Dermatology

WILEY

COSMETIC COMMENTARY

Ultrasound-guided poly-l-lactic acid nodule excision: The importance of the injector ultrasonographic experience

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Abstract

The possibilities for facial and body treatments are wide, but when it comes to treatment for the cervical region, the options are more restricted and among them, the use of poly-l-lactic acid (PLLA) stands out. PLLA is used for collagen biostimulation and improvement of skin turgor with good results; however this procedure is not free of complications, and for the treatment of these, a correct diagnosis is essential. As it is esthetic medicine, the guarantee of results requires that complications are not tolerated, and thus, any resource that enriches the diagnostic and therapeutic arsenal is of great value. The objective of this study is to report the diagnosis of a PLLA nodule with the help of high-frequency ultrasound, establishing a clinical, radiological, and histopathological correlation, in a patient submitted to PLLA injection for esthetic improvement of the cervical region. We present a case in a female patient presenting a nodule in the cervical region after the application of PLLA, where we performed the excision guided by high-frequency ultrasound. Mastering the diagnostic technique with high-frequency ultrasound can play a valuable role in indicating early surgical exeresis, also contributing to complete patient care. It allows the application of the product, monitoring, diagnosis of the complication, and treatment to be carried out dynamically and precisely by the injector.

KEYWORDS

complications, esthetic, intradermal injection, ultrasound

1 | INTRODUCTION

Recently, there was an remarkable increase in the commercially available injectable products for minimally invasive cosmetic procedures. As well, patients' demand for such techniques has also increased1, due to their easier access, natural and satisfactory results, and shorter recovery time.

There are many possibilities for facial and body cosmetic treatments, but, for the neck region, the options are fewer. One of them is the use of poly-l-lactic Acid (PLLA) for collagen biostimulation and improvement of skin turgor. This procedure is not free from complications, and a correct diagnosis is essential for the treatment if there are any. In esthetic medicine, positive results are mandatory, and nontreated complications are not tolerated. This way, any technique that improves the diagnostic and therapeutic arsenal is of great value.

2 | GOAL

The objective of this study is to report the diagnosis of PLLA nodule with the aid of high-frequency ultrasound, establishing a clinical, radiological, and histopathological correlation in a patient who underwent PLLA injection for esthetic improvement of the cervical region.

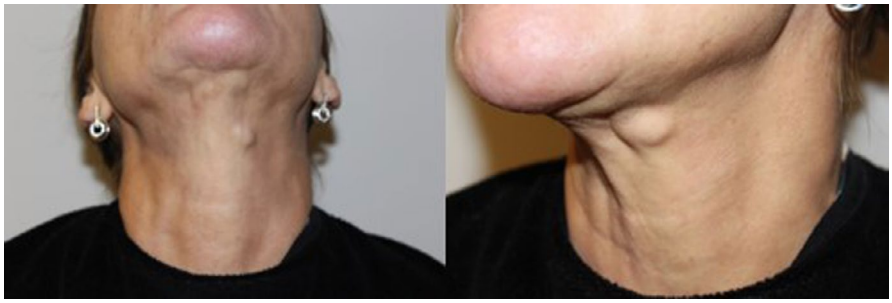

FIGURE 1 A 2 cm firm nodule on the left cervical region, not adhered to the deep planes, well delimited, with no signs of secondary infection

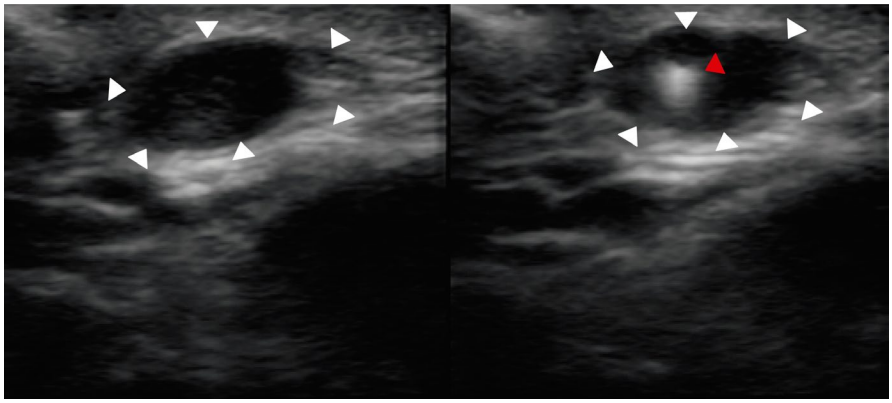

FIGURE 2 At ultrasound, the hyperechoic needle tip was visualized within the hypoechoic image, confirming the clinical-radiological correlation

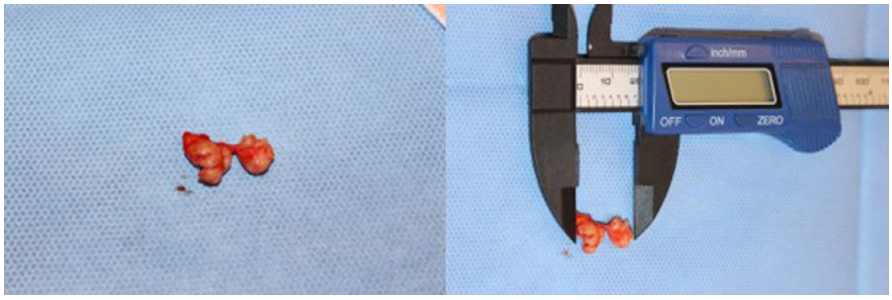

FIGURE 3 The surgical specimen was 2 cm, whitish, with irregular borders, moderately adhered to adjacent structures and friable

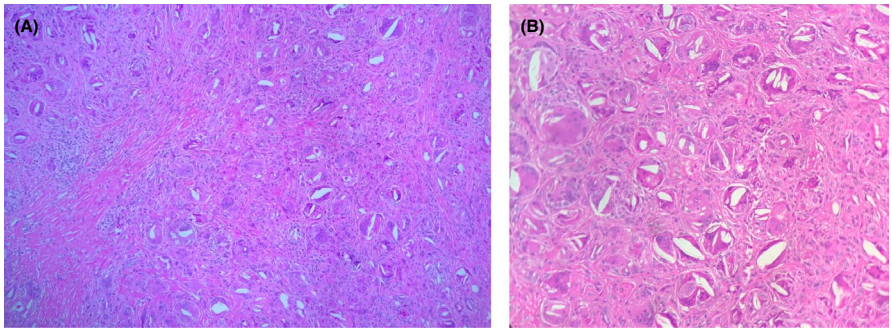

FIGURE 4 Histopathology revealed an extensive macrophage reaction with numerous foreign body giant cells encompassing transparent, acicular-shaped material that refracts to polarized light, compatible with foreign body reaction to PLLA

3 | CASE REPORT

Female patient, 55 years old, phototype IV, without comorbidities, presenting skin sagging in the anterior cervical region and treated with a diluted PLLA application, complaining of neck nodule and negative esthetic impact. Vigorous massage, dilution attempt with 0.9% saline solution injection, and intralesional corticosteroids were applied, without satisfactory results. After 4 months of application and without satisfactory improvement, it was indicated guided ultrasound surgical excision.

On physical examination, the patient had good general condition, with a 2 cm firm nodule on the left cervical region, not adhered to the deep planes, well delimited, with no signs of

secondary infection (Figure 1). There was no previous cervical nodule or lymphadenopathy.

Ultrasound examination revealed irregular, hypoechoic, mobile nodule superficial to the superficial cervical fascia and platysma. A 26 G needle was inserted into the nodule. At ultrasound, the hyperechoic needle tip was visualized within the hypoechoic image, confirming the clinical-radiological correlation (Figure 2).

Patient underwent nodule excision with local anesthesia with 1% lidocaine. The surgical specimen was 2 cm, whitish, with irregular borders, moderately adhered to adjacent structures and friable (Figure 3). It was sent for histopathological analysis immersed in formaldehyde, and surgical wound closure was with intradermal monocryl points. The surgical wound covered with a sterile transparent film dressing of polyurethane. Then, a second ultrasound evaluation found total removal of the nodule.

Histopathology revealed an extensive macrophage reaction with numerous foreign-body giant cells encompassing transparent, acicular-shaped material that refracts to polarized light, compatible with foreign-body reaction to PLLA (Figure 4).

4 | DISCUSSION

Poly-l-lactic acid is aliphatic polyester, lactic acid polymer. It is a biocompatible, fully absorbable, immunologically inert substance with a broad spectrum of indications, aimed at stimulating collagen production, offering a good therapeutic response.[1] Due to PLLA crystalloid microparticles, the most common adverse effect is papules and nodules caused by material accumulation, usually due to inadequate reconstitution.[2] For apparent or persistent nodules, vigorous massage, intralesional corticosteroid injection, or surgical excision may be options.[3] The development of ultrasound devices with a frequency greater than 15 MHz has made it possible to identify different layers, skin structures, and attachments, considerably expanding their use of dermatological conditions. High-frequency equipment has low penetration and therefore excellent resolution for visualization of surface structures.[4] The echogenicity of each layer depends on its main component: keratin (epidermis), collagen (dermis), and fat lobes (subcutaneous). In ultrasound imaging, the epidermis appears as a hyperechoic line, the dermis as a less bright hyperechoic band, and the subcutaneous layer as a hypoechoic layer with the presence of hyperechoic fibrous septa within it.[5] The PLLA nodule can be viewed as a well-delimited hypoechogenic image. In this case, it was visualized in the subcutaneous cellular tissue just above the superficial cervical fascia and platysma.

5 | CONCLUSION

High-frequency ultrasound can increase the accuracy of the PLLA nodule approach and also help minimize damage to surrounding tissue. This procedure allows smaller incisions, with shorter recovery time and better esthetic results.

With the increasing demand for PLLA procedures, the number of nodules diagnosed is expected to increase. Thus, mastering the diagnostic technique with high-frequency ultrasound can play a valuable role in the indication of early surgical excision, also contributing to complete patient care. It allows the application of the product, monitoring, diagnosis of the complication, and treatment to be performed dynamically and accurately by the injector doctor.

CONFLICT OF INTEREST

We have no commercial interest and no financial or material support.

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How to cite this article: Bravo BSF, de Melo Carvalho R, Souza E, Vargas TJDS, Bravo LG. Ultrasound-guided poly-l-lactic acid nodule excision: The importance of the injector ultrasonographic experience. *J Cosmet Dermatol*. 2020;00:1–3. https://doi.org/10.1111/jocd.13527