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Diagnostic ultrasonography: follow-up of the cicatricial process after cervicomental fat liposuction

Ultrassonografia diagnóstica: acompanhamento do processo cicatricial após lipoaspiração da gordura cervicomentual

Ayrton **ARCAZAS JUNIOR**[1] 0000-0002-4685-9801

Danilo Siqueira **PINO**[1] 0000-0002-5619-4647

Francine Küll **PANZARELLA**[2] 0000-0002-5650-7711

Tânia de Carvalho **ROCHA**[3] 0000-0002-3565-1079

Francisco José de Nadai **DIAS**[1] 0000-0002-3987-3162

Stella Aparecida de Andrade **PINTO**[1] 0000-0002-8841-7913

ABSTRACT

Mechanical liposuction of cervicomental fat is part of the aesthetic procedures of orofacial harmonization. Ultrasonography stands out for illustrating soft tissues with high-resolution images in the diagnostic and postoperative stages. The present study aimed to report the case of a female patient, 54 years old, in good general health, confirmed by all previously requested laboratory tests, whose main complaint was the presence of excess fat in the jowl region. The stages after the liposuction procedure were followed by high-resolution ultrasound examinations in order to assess the healing of the manipulated tissues, and ultrasound evaluations were performed in the postoperative follow-up periods of 30, 60 and 120 days. Through the present study, it was possible to conclude that ultrasonography is an important ally in the postoperative follow-up of neck liposuction, allowing to follow the evolution of the post-surgical repair process.

Indexing terms: Lipectomy. Ultrasonography. Subcutaneous fat.

RESUMO

A lipoaspiração mecânica da gordura cervical faz parte dos procedimentos estéticos de harmonização orofacial. A ultrassonografia se destaca por evidenciar tecidos moles com imagens de alta resolução nas fases diagnóstica e pós-operatória. O presente estudo teve como objetivo relatar o caso de uma paciente do sexo feminino, 54 anos, com bom estado geral de saúde, confirmado por todos os exames laboratoriais previamente solicitados, cuja queixa principal era a presença de excesso de gordura na região da papada. As

[1] Faculdade São Leopoldo Mandic, Instituto de Pesquisa São Leopoldo Mandic, Especialização em Harmonização Orofacial. Rua José Rocha Junqueira, 13, 13045-755, Swift, Campinas, SP, Brasil. Correspondence to: FJN Dias. E-mail: <franciscodenadai@gmail.com>.

[2] Faculdade São Leopoldo Mandic, Instituto de Pesquisa São Leopoldo Mandic, Curso de Radiologia e Imaginologia Odontológica. Campinas, SP, Brasil.

[3] Faculdade São Leopoldo Mandic, Instituto de Pesquisa São Leopoldo Mandic, Curso Ultrassonografia Odontológica. Campinas, SP, Brasil.

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etapas após o procedimento de lipoaspiração foram acompanhadas por exames ultrassonográficos de alta resolução para avaliar a cicatrização dos tecidos manipulados e as avaliações ultrassonográficas foram realizadas nos períodos de acompanhamento pós-operatório de 30, 60 e 120 dias. Através do presente estudo foi possível concluir que a ultrassonografia é uma importante aliada no acompanhamento pós-operatório de lipoaspiração cervical, permitindo acompanhar a evolução do processo de reparo pós-cirúrgico.

Termos de indexação: *Lipectomia. Ultrassonografia. Gordura subcutânea.*

INTRODUCTION

Currently, B-mode and Doppler ultrasound is widely used in the diagnosis of vascular structure dermatology and has been used to make invasive procedures safer [1]. With the aid of ultrasound, important structures such as blood vessels, muscles and glands can be identified [2]. This diagnostic imaging technique can be used in three stages: 1) during planning, preventing complications, mapping vascular structures or detecting previous procedures, 2) during execution, guiding needles, cannulas or instruments and 3) during postoperative follow-up to help in the case of complications or verification of compliance of the postoperative appearance with what is usually expected [1,3].

High frequency ultrasound

The use of ultrasound in dermatology began in the 1970s, but with the advent of more modern and easy-to-handle equipment, the technology's popularity has increased over the last 20 years [4]. Among the range of available sensors are linear sensors with a frequency range of 12 MHz to 20 MHz. These, in turn, are the most suitable for conventional aesthetics, as they allow evaluation of the dermis and subcutaneous tissue [5]. The frequency ratio of the transducers is inversely proportional to the depth of the ultrasound signal generated and, therefore, to the visualization of the studied anatomical region.

Ultrasound equipment has Doppler options that allow the assessment of blood flow, such as color Doppler (CD), microflow imaging (MFI), color angiography (CPA), and pulsed wave Doppler (PWD). MFI is used to detect flow (macroflow) in ultrathin blood vessels <1 mm in diameter, with velocities below 2 cm/s [6]. Ultrasound equipment has five basic modes of operation, but the most commonly used options for aesthetics are B-mode and Color Doppler (CD) mode. The B-mode is used to differentiate high-density and low-density grayscale structures and is useful for analyzing injected fillers; the Color Doppler (CD) mode option is advantageous in assessing blood flow as blue and red indicate the direction flow and are used for screening veins and arteries [7].

Ultrasound consists of a probe and a processor. Sound waves from the ultrasound probe are dissipated in body tissue and become weaker as they are absorbed. During this process, part of the sound waves is reflected and returned to the probe, which together with a processor converts the sound waves into images [1]; this phenomenon is called an echo. On ultrasound, the tissue is shown in grayscale; when there is no echo, this means that ultrasound waves are passing through the structure, and to use the term anechoic, producing a dark image on the monitor, which usually happens in liquid structures. The term "hypoechoic" is used when partial reflections of ultrasound echoes are present, showing on the monitor various shades of gray, typical of soft tissues. The term hyperechoic is used when there is high reflection of ultrasonic waves, presenting a bright white image on the monitor. The term isoechoic is used when we find structures that are equally echogenic but different [8].

Ultrasound and liposuction

Cervicomental mechanical liposuction - popularly known as "jowl liposuction" - is a procedure included in the field of dentistry in Brazil and is highly sought after by patients in dental offices. The correct technique should prioritize

safety and results and promote patient follow-up until complete recovery is achieved. Due to its recent evolution and the emergence of new devices, ultrasonography has become an increasingly common tool in the clinical-surgical practice of professional surgeons and injectors, providing valuable information for the planning, execution, and follow-up of aesthetic procedures. The practice of ultrasound is important aiming at the ideal separation of the different types of connective tissue for the exact notion of the skin layers depth.

Mespreuve and collaborators [9] reported that although ultrasound is easy to use by properly trained professionals and helps to obtain reliable images, it does not allow the visualization of a large vascular area or 3D images. Allows to visualize and delimit adjacent muscles, blood flow with the Doppler effect and subcutaneous tissues. In addition to assisting and guiding the procedure, pre- and post-procedure images can also be recorded with the measurement of each patient's fat layer and the evolution of postoperative results can be monitored. Thus, the professional will be able to compare the measurements immediately after the procedure or later. In this sense, the present work was planned to obtain and evaluate ultrasound images of a patient submitted to the cervical liposuction technique, I in the postoperative period (30, 60 and 120 days) in order to verify the evolution of the tissues throughout the process of repair after the procedure, thus avoiding any alterations in the aseptic chain during the surgical procedure.

CASE REPORT

The present study was submitted via the Brazil platform for consideration by the Research Ethics Committee of Faculdade São Leopoldo Mandic, having obtained a favorable opinion under number: 6,061,797.

A 54-year-old patient, in good general health, was confirmed by preoperative tests that included: complete blood count, complete coagulogram, liver and kidney evaluation and the complaint of excess neck fat (figure 1). Mechanical liposuction was performed through an incision of approximately one centimeter in the submental region, two centimeters from the edge of the mandible, through which the injection of tumescent anesthesia was later performed using Klein's solution (lidocaine from 0.05 to 0. 1% and adrenaline 1:1 million in 1L of saline solution). After waiting long enough for the solution to take effect, mechanical aspiration of the cervicomental fat was performed using cannulas and vacuum equipment, following all of the recommended postoperative parameters.

Figure 1. Preoperative (clinical).

The patient was submitted to 15 sessions of lymphatic drainage from the day after the procedure, with the first five sessions with an interval of 24 hours and the others at 48/48 hours. After 30 days, the patient began postoperative imaging evaluations and underwent monthly clinical evaluations and three evaluations using the SAEVO EVUS diagnostic ultrasound (Ribeirão Preto, São Paulo, Brazil) with a frequency of 16 mHz in periods of 30, 60 and 120 days after the operation. After this, the steps subsequent to the procedure and related to the healing process were evaluated, with recording of the sonographic findings.

It was then possible to clinically perceive the presence of areas of hardened cords with the appearance of fibrosis on palpation, which was confirmed by the ultrasound examination performed 30 days after the operation (figure 2). The patient was instructed to maintain physical therapy sessions three times a week. In this examination, anechoic areas were also evident in the regions where there was fat before, which could configure areas with the presence of seromas or even areas of still incomplete healing.

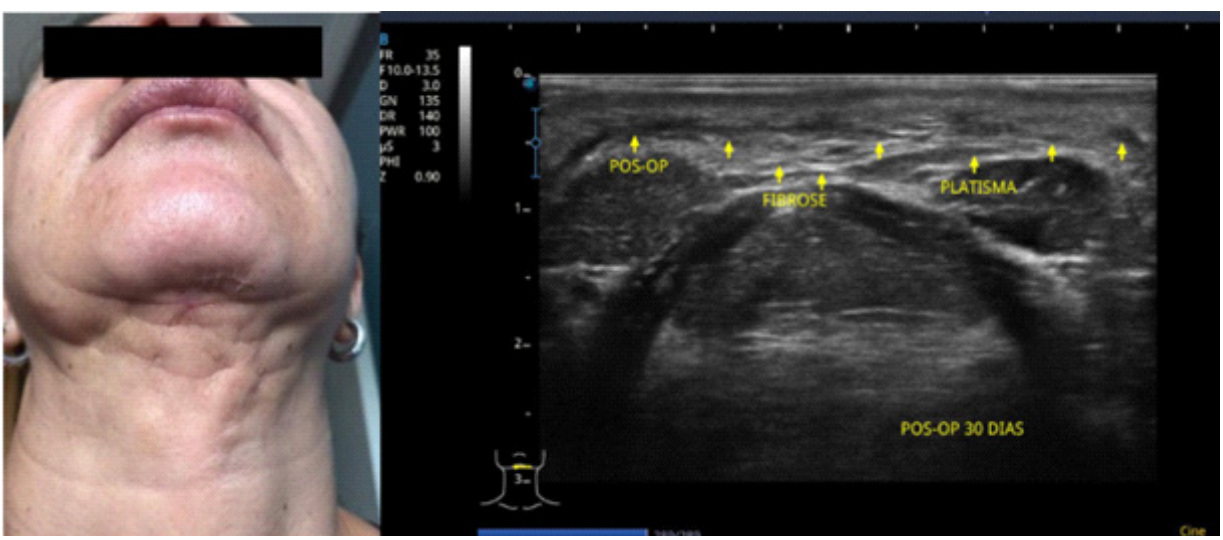

Figure 2. Thirty days after surgery. Clinical and imaging aspects showing fibrosis at the site of mechanical cervical liposuction.

At 60 days, the patient returned for reassessment and a new ultrasound examination. In that session, she was then also submitted to procedures aimed at accelerating the end of the fibrosis, such as manual massages by the team of professors of the course. Ultrasound Sonic Compact 1-3MHz HTM was also performed, for six minutes each: one at 60 days (figure 3) and the other at 90 days, with ultrasound monitoring continuing until 120 days postoperatively, with the final result being obtained satisfactorily (figures 4 and 5).

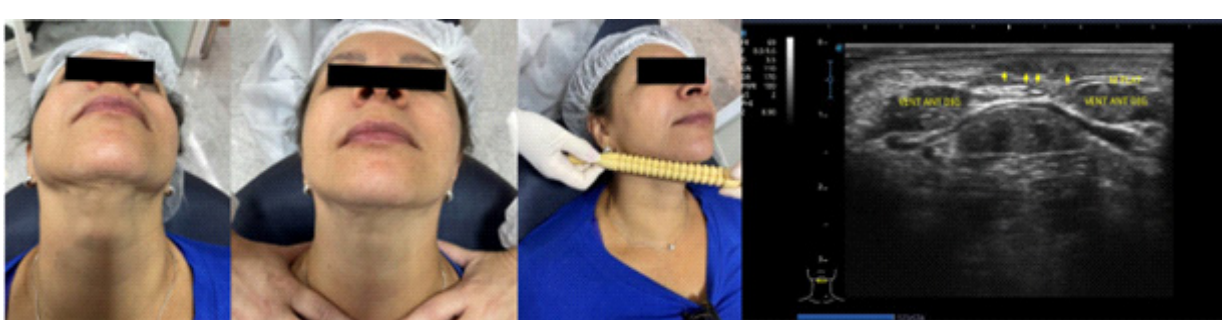

Figure 3. Sixty days postoperatively. Manual therapies and maintenance of postoperative care for follow-up of the case showing improvement in the imaging aspect of the fibrosis.

Figure 4. 120 days postoperative period. Final clinical appearance.

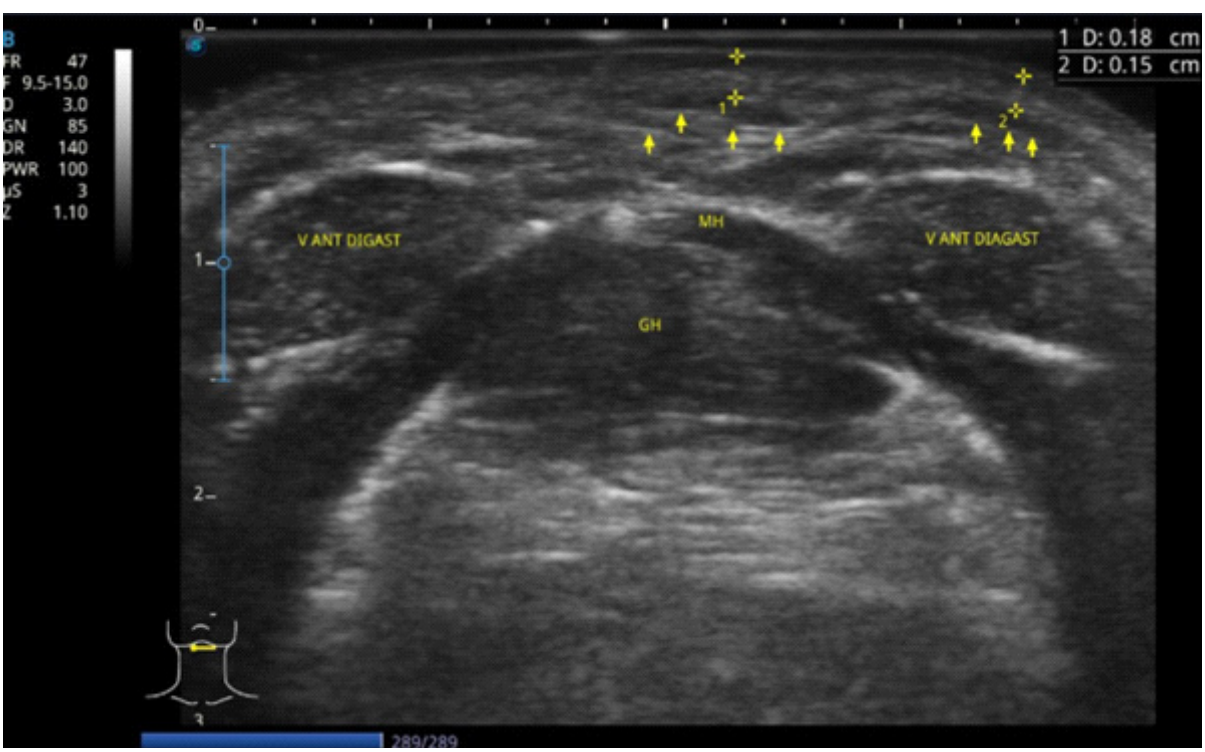

Figure 5. Ultrasound image showing regression improvement in fibrosis after 120 days.

DISCUSSION

Mechanical liposuction of the jowls has proven to be a safe procedure and much sought after by patients. The procedure, however, is not without risks [10], the most common being the appearance of fibrosis and seromas, which can be minimized with the use of tapping and post-surgical lymphatic drainage, as well as other recommendations that must be followed strictly; ultrasound can be an excellent ally during the pre- and postoperative phases [3,4,6,10].

In the present case report, the use of ultrasound allowed reliable visualization of the healing stages of mechanical liposuction of the jowls and monitoring the evolution of the post-surgical repair process. Since this is a punctual study with its intrinsic limitations, further studies on the subject are needed to improve knowledge of the interaction between ultrasound and mechanical cervicomental lipoplasty.

CONCLUSION

The use of diagnostic ultrasound has permitted to evaluate the cicatricial process after cervicomental liposuction - including the detection of fibrosis, helping to determine and understand what occurs in the superficial and deep layers of the skin and adjacent tissues after performing mechanical neck liposuction and allowing the adoption of the best therapeutic measures for a better evolution of the case.

Collaborators

FJN Dias, SAA Pinto, T Rocha, project administration and formal analysis and first writing, writing. A Arcazas Junior, review and editing. FJN Dias, SAA Pinto, A Arcazas Junior, conceptualization, data curation, writing. A Arcazas Junior, DS Pino, FK Panzarella, investigation, methodology supervision. A Arcazas Junior, DS Pino, FK Panzarella, T Rocha, FJN Dias, SAA Pinto, validation and visualization.

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