



## TREATMENT FOR NECK LAXITY WITH PMMA FILLING, MICROFOCUSED ULTRASOUND, AND RADIO FREQUENCY CO<sub>2</sub> LASER: CASE REPORT

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### ABSTRACT

**Introduction:** Facial structural changes observed in the form of wrinkles and sagging are signs of aging. The association of techniques that stimulate collagen has been researched.

**Objective:** The objective is to report the case of a patient who has neck laxity and underwent CO<sub>2</sub> laser treatment, microfocused ultrasound, and polymethyl methacrylate (PMMA) filling.

**Methodology:** Case report with follow-up for laxity treatment in the neck region. Filling, Ultherapy®, and radio frequency CO<sub>2</sub> laser were used.

**Report:** A 68-year-old male patient came to the clinic for laxity treatment of the neck area. Polymethyl methacrylate (PMMA) filling, micro focused ultrasound, and radio frequency CO<sub>2</sub> laser were proposed as treatment.

**Conclusion:** The combination of different rejuvenation technologies has provided significant results in the treatment for skin laxity.

**KEYWORDS :** polymethyl methacrylate; Laser therapy; rejuvenation; aesthetics; ultrasound

### INTRODUCTION

The skin's main function is to isolate internal structures from the external environment. Nearly all skin of the human body, with the exception of palms and soles, is haired, grooved, and thin. The skin is composed of epidermis, dermis, and hypodermis. Since the epidermis, the skin's outermost layer, is avascular, it is nourished by dermal capillaries. Present in the skin, collagen is organized in laminar layers of interwoven fibers at various angles and is important to ensure the firmness of the skin. Nevertheless, over the years the skin loses collagen, which causes structural changes that can be observed in the forms of wrinkles and sagging as a sign of aging<sup>1</sup>.

Apparent laxity not only on the face but also around the neck is an important indicator of age. This perception of sagging in the area of the neck is also a matter of aesthetic concern. Previously, surgical techniques were used for this purpose; however, nowadays there are different technologies that can soften the appearance of collagen loss and skin aging. The fractional CO<sub>2</sub> laser, for instance, is considered the gold standard in aesthetic treatments and provides excellent results in collagen stimulation<sup>2</sup>. Ultherapy® is a new microfocused ultrasound technology which acts on collagen stimulation, thus, treating skin sagging<sup>3</sup>. In addition, the bioplasty carried out with polymethyl methacrylate is also a collagen stimulant which improves skin quality and promotes volume increase in the regions where it is applied. The combination of such minimally invasive techniques provides even more satisfactory results.

This paper aims to report the case of a patient who had his neck laxity treated with a combination of polymethyl methacrylate filling, microfocused ultrasound, and radio frequency CO<sub>2</sub> laser techniques.

### CASE REPORT

Patient L. M. S., male, 68 years old, sought the clinic for treatment of skin sagging in the neck region. Polymethyl methacrylate filling, microfocused ultrasound, and radio frequency CO<sub>2</sub> laser were the adopted treatments. This study was approved by the Ethical Committee of Moinhos de Vento Hospital - H MV, under n° 26956914.3.0000.5330.

### TREATMENT

Polymethyl methacrylate filling, microfocused ultrasound, and radio frequency fractional CO<sub>2</sub> laser were used to treat neck laxity. Firstly, the evaluation form was filled out with complete anamnesis and record of previous treatments. The patient signed an informed consent and was registered photographically. Neck filling with 3ml of 10% polymethyl methacrylate was performed. Fifteen days after PMMA application, a microfocused ultrasound treatment was performed in the neck region, using 4.0 hertz of frequency and 4.5 mm depth, being reapplied at 7.0 hertz of frequency and 3.0 mm depth. Subsequently, radio frequency CO<sub>2</sub> laser was applied using the following parameters: 25 W power, 1600 ms dwell time, and 500 mm spacing. For analgesia, a paracetamol + codeine tablet and topical anesthetic were administered (Figure 1).



**Figure 1** – Images before and after treatment.

## DISCUSSION

Skin aging is noticed by vascular changes, pigmentation, wrinkles, texture or lack of firmness in the skin tissues. These changes in the skin occur not only due to chronological, intrinsic, lifestyle factors, but also external factors that accelerate aging<sup>4</sup>.

In the neck there is a decrease in skin firmness that changes the appearance and structure of this region. In order to treat laxity, the use of combined techniques enhances the result. The CO<sub>2</sub> laser generates heat and denatures the collagen, thus, causing it to contract. This collagen shrinkage, intracellular water vaporization, and ablation all contribute to the hardening of the skin. Subsequently, the healing phase presents high levels of collagenase that degrade the fragmented collagen. The epidermis is reconstituted and neocollagenesis begins, lasting for approximately six months.

Microfocus ultrasound technology is capable of reaching the tissue below the skin and the skin as it emits ultrasound and provides low-level thermal energy to reshape and shrink the tissues that cause the skin to contract. The heat energy, while stimulating the increase in collagen makes the skin contract, thus, elevating the tissue<sup>5</sup>. Our team has been using the polymethyl methacrylate filler (PMMA) for years. It helps to stimulate collagen and to improve skin quality and appearance by rebuilding soft tissue. After filling with this product, autologous collagen fibers are detected and increased by the fourth month. Later, there is a new formation of elastic and collagen fibers that remarkably improve the skin quality<sup>6</sup>. Our experience with PMMA allows us to ensure that this product is efficient and safe when used in adequate volume even in subcutaneous tissue<sup>7,8,9,10,11</sup>.

## CONCLUSION

The combination of different rejuvenation technologies, such as radio frequency CO<sub>2</sub> laser and microfocused ultrasound, combined with other therapeutic modality, the PMMA filling, provided significant improvement in neck sagging.

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