

# Waist Remodeling Without Incision, With Ultrasound-guided Monocortical Fracture: Report of 220 Patients

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**Summary:** In rib reshaping, it is known that the waist plays a role in defining the structure and harmony of the body. There are techniques as part of the costal remodeling that allow for achieving a narrower and more defined waist and generate a harmonious transition from the waist to the hip in the body of the patients. Waist remodeling without incision, with ultrasound-guided monocortical fracture (RibXcar), is a noninvasive technique that does not leave scars and helps sculpt the desired shape of the waist. The technique was applied to 220 patients who voluntarily consented under informed consent. Sociodemographic data were collected from an initial evaluation. Likewise, waist measurements were taken from patients preoperatively and 6 months after the intervention. RibXcar is safe; no serious complications were evidenced, and minor complications due to pain were adequately treated. As for the results, it was found that body measurements of the waist before the operation and 6 months after evidenced a reduction of between 6 and 11 cm less in the diameter of the waist after the application of the technique. RibXcar is an innovative, safe, and aesthetically pleasing technique without scarring or serious complications. (*Plast Reconstr Surg Glob Open* 2025;13:e6595; doi: 10.1097/GOX.0000000000006595; Published online 3 March 2025.)

Rib reshaping is a surgical procedure that has become more popular in recent years. This intervention allows achievement of a narrower and more defined waist. In addition, it allows for a harmonious transition in the body, because the waist is key to highlighting the buttocks, lower back, hips, and leg muscles, in the pursuit of feminine beauty and body harmony.<sup>1,2</sup>

Waist remodeling without incision, with ultrasound-guided monocortical fracture (RibXcar), is a minimally invasive technique that leaves no scar and produces favorable aesthetic results. This technique reduces the size of floating ribs, also known as lower ribs. These ribs are flexible and can be modified to help shape the waist. This is achieved by controlled fracture of the external cortex through sustained punctures, thus reducing the bony cohesive force.<sup>1,3</sup> The aim of this study was to report the results obtained by applying the RibXcar technique in 220 women who underwent this intervention.

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## MATERIALS AND METHODS

This study was conducted according to the Declaration of Helsinki and approved by the relevant institutional review boards. The sample consisted of 220 women from Santiago, Chile. The patients were aged 20–55 years, had a body mass index of 28 or less, a Goldman index of II or less, and no history of surgery. We informed the patients about the procedure and the risks, and they gave their consent. Abdominoplasty and liposculpture were also done. It is pertinent to mention that patients also had abdominoplasty and liposculpture as primary procedures.

This study was conducted in Santiago, Chile, with plastic surgeons trained in the technique. Operations were performed with calibrated, standardized ultrasound scanners, specifically, the Clarius L7 HD portable scanner. The variable was waist circumference, defined as the distance between the 12th rib and pelvis, taken preoperatively and 6 months after surgery.

Each patient's data were recorded in an Excel database for analysis. The technique was performed under general anesthesia. This involved infiltration with 1% lidocaine at a dose of 0.5 mg/kg in a total volume of 6 mL into the

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subperiosteal and subcutaneous spaces, and the infiltration was completed at the ribs to be treated.<sup>3,4</sup>

Next, the RibXcar<sup>1</sup> technique was performed, which uses intraoperative ultrasound to identify each rib. For this purpose, the linear transducer was placed parallel to them to highlight the trajectory of each rib and the type and location of the fracture. (See Video 1 [online], which displays the marking and use of the Manzaneda tool.)

The patient is in a lateral position on a flexed stretcher at ribs 11 and 12. Under ultrasound guidance, anatomical structures are identified, and a puncture is made using a no. 18 needle. Deperiostosis is done using a needle and piezotome tip. Two no. 21 catheters are inserted at an angle of ~45 degrees equidistant from the puncture site at 2 cm, positioned close to the piezotome (3-prong sign). Fracture is achieved using the piezotome at 80% power with a 6-s pulse and 0.9% NaCl solution at 10°C through 2 prepositioned catheters and an external syringe.

Two internal ports are placed equidistantly and continuously infused with saline to cool the ultrasound tip while keeping the effector warm and capable of performing fracture tracing. An external infusion over the puncture site with a continuous drip maintains a low temperature at the entry site and avoids skin burns.

Patients wore a special corset for 3 months, with no physical exertion for 1 month, to help them recover after surgery. The corset needed constant pressure initially and should be adjusted by 1 cm per week. Follow-ups were done by telephone and visits to the doctor.

## RESULTS

The surgical technique was performed on 220 women, with a mean age of 33.5 years, a mean weight of 63.5 kg, a mean height of 1.59 m, and a mean body mass index of 24.3. Of the 220 cases, 80 patients underwent abdominoplasty and RibXcar, 60 patients underwent liposculpture and RibXcar, and 80 patients underwent RibXcar only. All patients received optimal postoperative care, with 93% having no major complications.

The mean waist measurement in the preoperative stage was 77.92 cm, whereas 6 months after surgery, it was 66.18 cm. In all 220 cases, there was a reduction in waist circumference of 6–11 cm.

After following the patients postoperatively, it was verified that there was no scarring and that the procedure had been a success in achieving a smaller waistline (Fig. 1). (See Video 2 [online], which displays the before and after of RibXcar.)

## DISCUSSION

An understanding of body distribution is essential for appropriate intervention. For those wishing to reduce rib width and waist, rib reshaping is recommended.<sup>5,6</sup> After the operation, a reduction of the waist size between 6 and 11 cm can be observed, resulting in greater narrowness favoring the harmonious transition from the waist to the hips and buttocks.<sup>7,8</sup>

The technique was chosen for patient care reasons. First, it is an innovative technique that uses resources such

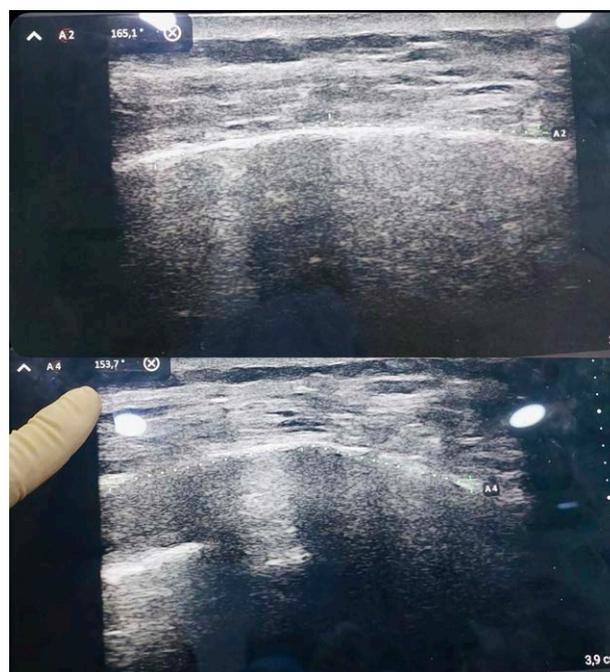


Fig. 1. Ultrasound pre- and postsurgery.

as the Manzaneda tool,<sup>9</sup> which has a straight tip for non-invasive, fast, and scarless access. (See Video 3 [online], which displays the piezotome.) Second, ultrasound guides the procedure by showing anatomy and helping to plan the best approach.<sup>10</sup> Third, there have been no serious complications. This makes the technique safe for patients.<sup>1,10</sup>

The RibXcar technique, including ultrasound and the Manzaneda tool, helps prevent complications. Complications such as pneumothorax are possible if a rib is fractured, as the pleura is in the subcostal region. Traumatic fractures often result in hemothorax due to vascular disruption. Controlled fractures avoid this, limiting force and avoiding vascularized sites. Minor complications may include skin burns or neuropathic pain, which can be managed with analgesia. However, no major complications were reported in the cases presented in this article. In the application of the technique, not only is the surgeon's experience and learning curve relevant, but it is also important that patients are aware and know in detail the postoperative care processes, as this will help reduce complications and enhance the final aesthetic results.

## CONCLUSIONS

The RibXcar technique is innovative, safe, and offers aesthetic results, without scarring or serious complications. It effectively reduces waist circumference and improves aesthetic appearance at 6 months postoperatively, as measured by postoperative follow-up.

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### DISCLOSURE

*The authors have no financial interest to declare in relation to the content of this article.*

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