



An Overview of Non-Surgical Body Contouring Treatments

Dr David Jack outlines the different non-surgical body contouring treatments available and the results that they aim to achieve

The quest for the ideal body has been a long held mission of many people of all ages across the world. Frustrated with exercise and diet, which often require strict and almost obsessive rigidity, people frequently end up looking into other options to reduce areas of stubborn fat and cellulite. Over the past few decades, multiple treatment modalities have been developed in an attempt to cater to those looking to shift these stubborn inches, which won't disappear with even the strictest of diets or the most intense training schedules.

In the past, this would almost invariably mean a visit to a plastic surgeon for either excisional body contouring surgery (such as abdominoplasty, brachioplasty and other similar procedures) or traditional liposuction. Nowadays, there is a plethora of new devices and techniques, which offer a favourable alternative to surgery for these patients, both in terms of morbidity and financially. In this article, I will outline some of the newer treatment options available in the world of body contouring, the approach to patients seeking these treatments, expected outcomes and potential adverse effects that may be experienced.

Patients seeking body contouring

In my experience, patients attending clinics with body contour concerns fall under two broad categories, with several common characteristics. Firstly there will be those patients who are well informed about the various different treatment modalities and techniques, who may even have tried some treatments previously, and who have a clear idea of what they would like to achieve. Generally, I find this group is slightly more realistic about the outcome they are hoping to achieve with treatments. The second group I tend to see are less well-informed and, therefore, have a less realistic idea of what can be achieved with non-invasive/minimally-invasive body contouring treatments. These patients generally are noncommittal about exercise and diet and are less likely to complete treatment courses. Managing the latter group is often the most challenging.

Generally patients will present with an area of concern, whether it is the abdomen, thighs or lower back, for example. The typical concerns patients seek treatments for are excess fat, cellulite or pockets of stubborn fat that don't resolve with diet and exercise. As with any other aesthetic treatments, body dysmorphic disorder (BDD) in potential patients can be an issue, and must be taken into consideration, which I shall explain in the patient's assessment section below. Indeed, body-contouring treatments are thought to be the most commonly sought cosmetic treatments by patients with BDD!

Patient assessment/selection

When selecting and assessing patients for non-surgical and minimally invasive body contouring, it is important to take a thorough history, including dietary and exercise history to identify any lifestyle factors that may need to be addressed, and also an in-depth assessment of the individual's expectations and reasons for seeking these treatments. As mentioned above, patients with unrealistic expectations of the potential outcome of non-surgical treatments can become disappointed in the longer term, should the results not be as expected. Therefore, it is extremely important that any pre-treatment information given to patients is thorough, clear and realistic (if even underestimated). It is also important that for most non-invasive treatments, the practitioner emphasises the requirement for repeated treatments and the delayed nature of the final result, as, in my experience, this tends to be forgotten. Pre-treatment photography and volume measurement is an essential part of this process, as results can be more easily seen when comparing before and after photographs. At this stage, it is also important to rule out, as far as possible, any patients with symptoms of BDD. It is useful to have a validated screening questionnaire, such as the Body Dysmorphia Disorder Questionnaire (BDDQ), which has an accuracy of 94% for detection of this disorder.² Avoiding treating patients with unrealistic expectations or psychopathology will prevent the almost inevitable post-treatment complaints, secondary to unsatisfactory outcomes.

Methods of body contouring

A plethora of body contouring treatments have been developed over the last 20 years or so. In this section, I will briefly outline some of the major treatment modalities available to non-surgical aesthetic clinics. Many of these treatments are based on thermal injury at temperatures which selectively induce apoptosis in adipocytes, however, there has been much interest lately in treatments that can selectively target these cells without the potential side effects that heating or cooling tissues for sustained periods can cause.

Radiofrequency

Radiofrequency (RF) has been a key modality of power delivery to tissues for a variety of purposes over the last 75 years.³ RF treatments are based on the principal of skin and deep tissue heating through conversion of radiofrequency waves to heat energy, resulting in vasodilatation and inflammatory



changes, with subsequent stimulation of dermal thickening and deeper connective tissue thickening and reorganisation.⁴ This heating of the adipocyte layer to 43-45°C has been indicated to induce selective apoptosis in fat cells, with sparing of surrounding cells, with volume reduction three to eight weeks post RF treatments.⁵ Most non-ablative RF treatments require multiple treatments sessions for optimal results.

Although RF treatments are considered on the whole to be safe, with modern devices often having in-built temperature sensors to prevent overheating of the surface of the skin, these devices are, to a large extent, operator dependent so complications such as burns do still occur. In addition, older monopolar RF devices have been associated with uneven depths of RF penetration and later unevenness of fat breakdown and associated surface contour abnormalities.³ Bipolar or multipolar RF handpieces tend to be much more predictable in the depth of penetration of RF waves, so the risk of unevenness and contour abnormalities is less with these when compared to monopolar RF.³ Transient post-treatment effects such as erythema are common and expected.

Cryolipolysis

Cryolipolysis or 'fat freezing' is based on the principle that adipocytes are more susceptible to cooling than other cells. When exposed to low temperatures, fat cells are triggered to undergo apoptosis, resulting in an inflammatory response and removal by phagocytes. Subsequently there is a volume reduction and restructuring of the whole subcutaneous layer when the inflammatory response has reduced.⁶ Several devices are available on the market today, often combining freezing with a vacuum mechanism and skin surface protection. Although these treatments may result in some post-treatment erythema, paraesthesia and bruising, side effects are rare and treatments are generally suitable for all skin types. Post-procedural pain is fairly common but resolves with time and analgesia. Often more than one treatment is required for optimal results and the best results are often seen after four six months.^{7,8}

High intensity focused ultrasound

The use of high intensity focused ultrasound (HIFU) for fat loss is a relatively recent development. HIFU has traditionally been used in medical aesthetics for several years, primarily to tighten and lift the SMAS layer of the face. It has been indicated that this technique, which uses focused ultrasound to create deep areas of coagulative necrosis in the subcutaneous layer, results in volume reduction and tightening, being apparent around 12 weeks post treatment.⁹ Again, more than one treatment is usually required to provide optimal results. These treatments are again suitable for all skin types and generally have a minimal side-effect profile.

Low level laser therapy

A recent review by Dr Sarah Tonks in the August issue of this journal elegantly highlighted the use of low level laser therapy (LLLT) in body contouring and other areas of medicine.¹¹ This exciting technology, which is based on the exposure of infrared or near infrared light, has been indicated to effect body composition in multiple ways, both directly, by inducing changes in adipocyte metabolism, and also by changing the expression of the hormone involved in appetite, leptin. Several devices utilising wavelengths of light between 532 nm and 635 nm have been approved by the Food and Drug Administration for body contouring. These devices, similar to RF, require multiple treatment sessions for full effectiveness with minimal, if any, side effects.¹¹

Deoxycholic acid

The use of unregulated injectable treatments for submental fat has been of interest for some time, with the CE-approval of a preparation of deoxycholic acid being granted in 2012.¹⁰ These injections work on the basis that deoxycholic acid acts as a lytic agent when injected into areas of fat, causing disruption of adipocyte membrane integrity and subsequent adipocytolysis. Following this, a mild inflammatory response with phagocytosis and removal of cellular debris results in long term volume reduction in areas treated.¹² Deoxycholic acid has been indicated to clear rapidly following injection, and its action appears to be limited to lipid-rich tissues, alleviating concerns that surrounding tissues could be damaged from treatments. In addition, there does not appear to be a measurable increase in plasma lipid levels following these treatments.¹² Treatment of submental fat with a deoxycholic acid preparation (ATX-101) has been subject to a phase III randomised control trial in Europe, which demonstrated a favourable outcome in the submental area (volume reduction with no increase in skin laxity) with minimal side effects; these being transient and local to the injection sites, including pain, erythema and oedema.¹³ Multiple treatments spaced over several weeks are usually required for deoxycholic acid injections for optimal results.

Conclusion

Body contouring is an area of medical aesthetics that is developing rapidly, with many new devices coming to market every year, using multiple different technologies. For these treatments, patient selection is probably the most challenging, as many non-invasive treatments require multiple sessions (and are, therefore, time intense for both patient and provider) so patient expectations must be managed carefully. The choice of equipment for an individual practice will depend on a variety of factors, including cost, patient demographics, space available and staffing levels.



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