Three Cases Comparing the Safety and Efficacy of Accent 980 Diode Laser and SmartLipo MPX

Karen S. Harkaway, MD

The removal of unwanted fat has been among the most popular aesthetic concerns since the advent of traditional tumescent liposuction. Recently developed energy-assisted techniques reduce downtime, improve safety, and provide better results. This study of 3 cases compares the efficacy and tolerability of 2 devices, Accent 980 Diode Laser by Alma Lasers (Accent 980) and SmartLipo MPX by Cynosure (SmartLipo MPX). Pretreatment protocols were similar in all 3 cases. No substantial adverse events were observed in any case. Equivalent results were obtained in all cases using the given treatment parameters, according to both the patient and the experienced physician administering treatment. On a 10-point scale, discomfort at day 1 after treatment was lower for Accent 980 in all 3 cases. Accent 980 can provide results equivalent to those seen with SmartLipo MPX but with less pain. Further study is warranted.

Reduction or removal of unwanted adipose tissue has been a major aesthetic concern since before the first liposuction procedures underwent clinical trials. According to data regularly collected by the American Society for Aesthetic Plastic Surgery (ASAPS), fat removal procedures have maintained a top spot on the list of most performed procedures year after year, driving the continuous advent and refinement of fat removal procedures within the industry.[1] Procedures number in the millions each year, translating into a billion-dollar business within the aesthetic medicine industry. While numerous fat-treatment modalities have been tested over the years, the aesthetic community has, until recently, not seen notable improvement over traditional tumescent liposuction. The development of energy-assisted liposuction technologies involving laser light, ultrasound, radiofrequency, and even water jet have increased the efficacy, safety, and tolerability of the procedure, providing greater skin retraction and smoother-looking outcomes.

The laser-assisted procedure, done under local anesthetic in an office setting, is safer and more appealing to patients than traditional hospital-based liposuction. Laser-based modalities depend on the conversion of light energy, accurately delivered through an optical fiber, to heat energy, which is absorbed by the target adipose tissue. Thermal chemical denaturation of fatty tissue is specific, and surrounding tissue is spared. The use of laser energy, rather than the kinetic energy used during traditional liposuction as the practitioner uses the cannula to dislodge adipose tissue for suction, is also much less traumatic, providing a smoother looking result for patients and a less physically exhausting procedure for the physician. This also reduces downtime, post-operative

Dr. Harkaway is Chief of Dermatology, Lourdes Medical Center of Burlington County, Willingboro, New Jersey.

Dr. Harkaway is on the advisory board of Alma Lasers.

Correspondence: Karen S. Harkaway, MD, 8001 US Highway 130 South, Delran, NJ 08075.

ecchymosis, and pain. Recovery is limited to a few days. Additionally, the energy transmitted to tissue beneath the skin also enhances post-operative retraction, and results of recent clinical investigations suggest that an additional skin-tightening component exists as well.

Laser-assisted liposuction is undoubtedly the most popular adjunct to liposuction, due both to scientific evidence of superior results and highly successful marketing with brand recognition. At the time of this writing, no device in the industry illustrates this better than the SmartLipo MPX (Cynosure, Westford, MA). The device combines 2 laser wavelengths, 1064 nm and 1320 nm, using a proprietary sequential delivery system to destroy fat cells for easier aspiration.

The Accent 980 (Alma Lasers, Inc., Buffalo Grove, IL) is designed to achieve results similar to those seen with SmartLipo MPX, using a single wavelength (980 nm) specifically tuned to disrupt fat cells. The device, in addition to being smaller and portable, also uses less power (10 W versus the 30 W with SmartLipo). Both devices can be used on any body location where traditional liposuction may otherwise be performed.

The purpose of this study is to compare the efficacy and tolerability of the Accent 980 to that of the SmartLipo MPX and demonstrate whether further scientific evaluation is warranted. This article highlights 3 cases comparing safety and outcomes data obtained with both devices on each patient using nearly identical pretreatment protocols.

MATERIALS AND METHODS

In each case two 2-mm portals were created at identical locations in each treatment area on each side of the patient, followed by the infusion of equivalent volumes of tumescent anesthetic fluid (lidocaine 0.1% with epinephrine) before treatment with each respective device. In all 3 patients, Accent 980 was used on the right side and SmartLipo MPX was used on the left side. Posttreatment protocols were typical of such procedures, including the use of a compression garment and the prescription of pain medication and precautionary antibiotics.

Patient 1

A 29-year-old woman presented with laxity and excess fatty tissue at the inferolateral aspect of the upper arms, with the purpose of seeking treatment to remove excess fatty tissue with subsequent skin contraction at the treatment site. Two 2-mm portals were created near each elbow and at the medial aspect of each mid upper arm. Each arm was infused with 250 ml of tumescent fluid. Treatment parameters with Accent 980 on the right side were 4000 mJ at 10 W over an 8-minute treatment period. Treatment parameters with SmartLipo MPX on the left side were 4000 mJ at 30 W over a treatment period of 4.5 minutes.

Patient 2

A 56-year-old female presented with laxity and excess fatty tissue of the lateroabdominal areas (flanks), with the purpose of seeking treatment to remove excess fatty tissue with subsequent skin contraction at the treatment site. Two 2-mm portals were created on each flank, which was then infused with 400 ml of tumescent fluid. Treatment parameters with Accent 980 on the right side were 7000 mJ at 10 W over a treatment period of 13 minutes. Treatment parameters with SmartLipo MPX on the left side were 9322 mJ at 30 W over a 7-minute treatment period.

Patient 3

A 49-year-old female presented with laxity and excess fatty tissue of the inner thighs, with the purpose of seeking treatment to remove excess fatty tissue with subsequent skin contraction at the treatment site. Two 2-mm portals were created on each inner thigh, which was subsequently infused with 350 ml of tumescent fluid. Treatment parameters with Accent 980 on the right side were 4500 mJ at 10 W over an 8-minute treatment period. Treatment parameters with SmartLipo MPX on the left side were 5764 mJ at 30 W over a treatment period of 5 minutes.

RESULTS

No substantial adverse effects were observed in any of the cases. Equivalent results were obtained in all cases using the given treatment parameters, according to both the patient and the experienced physician administering treatment. Approximately 100 cc of material was extracted from each side in patient 1. In patient 2 approximately 350 cc of material was extracted from the right (Accent 980) side, with approximately 375 cc extracted from the left (SmartLipo MPX) side. Approximately 400 cc of material was extracted from each side in patient 3.

Discomfort at day 1 after treatment was measured using a subjected 10-point scale, with 1 being the least pain and 10 being the most. Comparisons of delivered energy, treatment time, and posttreatment discomfort are highlighted in Table 1.

Except in patient 1, the energy necessary for SmartLipo MPX to produce results equivalent to those of Accent 980 was greater. In patient 1, equal energy was delivered. Treatment time during which laser energy was applied was, in all cases, lower for SmartLipo MPX.

Comparison of Delivered Energy, Treatment Time, and Posttreatment Discomfort Between Accent 980 and SmartLipo MPX

	Delivered Energy, mJ		Treatment Time, min*		Discomfort†	
	Accent 980	SmartLipo MPX	Accent 980	SmartLipo MPX	Accent 980	SmartLipo MPX
Upper arm	4000	4000	8	4.5	3	6
Flank	7000	9322	13	7	1	4
Inner thigh	4500	5764	8	5	1	6

*Treatment time only accounts for time during laser procedure and does not include infusion with tumescent solution or other portions of treatment.
†Measured one day after treatment using a 10-point scale (1=slight pain, 10=excruciating pain).

Discomfort was reported as lower for Accent 980 in all cases: 3 points lower in pateint 1 (3 vs 6) and patient 2 (1 vs 4), and 5 points lower in patient 3 (1 vs 6). In all patients, pain on the first day after Accent 980 treatment was reported as less than the lowest reported pain level with SmartLipo MPX.

Informal questioning of patients revealed that in each case, the postoperative course and downtime, such as bruising, were easier to tolerate on the Accent 980–treated side.

COMMENT

Like SmartLipo MPX, Accent 980 induces disruption of fat cells and breakup of subcutaneous fatty tissue through the application of laser energy. The 980-nm wavelength has been shown to be more specific to fat. Not only does this make the subsequent aspiration of liquified fat much less traumatic (leading to less downtime), the procedure also enhances skin retraction with additional dermal skin tightening that cannot be achieved with traditional tumescent liposuction. Either device can be used on any body location where traditional liposuction is normally performed, but are best employed in typical places (abdomen, thighs, flanks, arms) and are particularly useful for treating the neck/jowl area due to skin tightening properties. The efficacy of both devices is evident in Figures 1, 2, and 3, which represent before and after photographic documentation of results.

Although treatment with Accent 980 device itself may take longer (8 min versus 13 min of time for an average abdomen with SmartLipo MPX or Accent 980, respectively), the overall time difference is minimal because the infusion of tumescent anesthesia is the rate limiting step in most cases—as opposed to the lasing, where differences of a few minutes do not amount to much, especially if treatment is more tolerable.

For doctors with significant body contouring and liposuction experience, the comparatively lower power of Accent 980 (10 W vs 30 W or more with other devices) may be a concern. In the outpatient setting treating overweight (but not obese) patients, this does not seem to make a great difference. The high absorption coefficient of the adipose tissue for the 980-nm wavelength concentrates the thermal energy for more efficient and specific heating of target tissue; thermal energy also stimulates neocollagenesis and fibroblast production.

CONCLUSION

Accent 980 can be used to obtain results equivalent to those seen with SmartLipo MPX but with less discomfort. Patients reported discomfort levels 3 to 5 points lower (on a 10-point scale) with the Accent 980 versus the SmartLipo MPX. In all cases, pain on the first day after Accent 980 treatment was reported as less than the lowest reported pain level with SmartLipo MPX. Patients also reported less downtime and bruising from

Figure 1. Before (A and B) and after (C and D) photographs highlighting upper arm results obtained with the SmartLipo MPX (C) and Accent 980 (D).

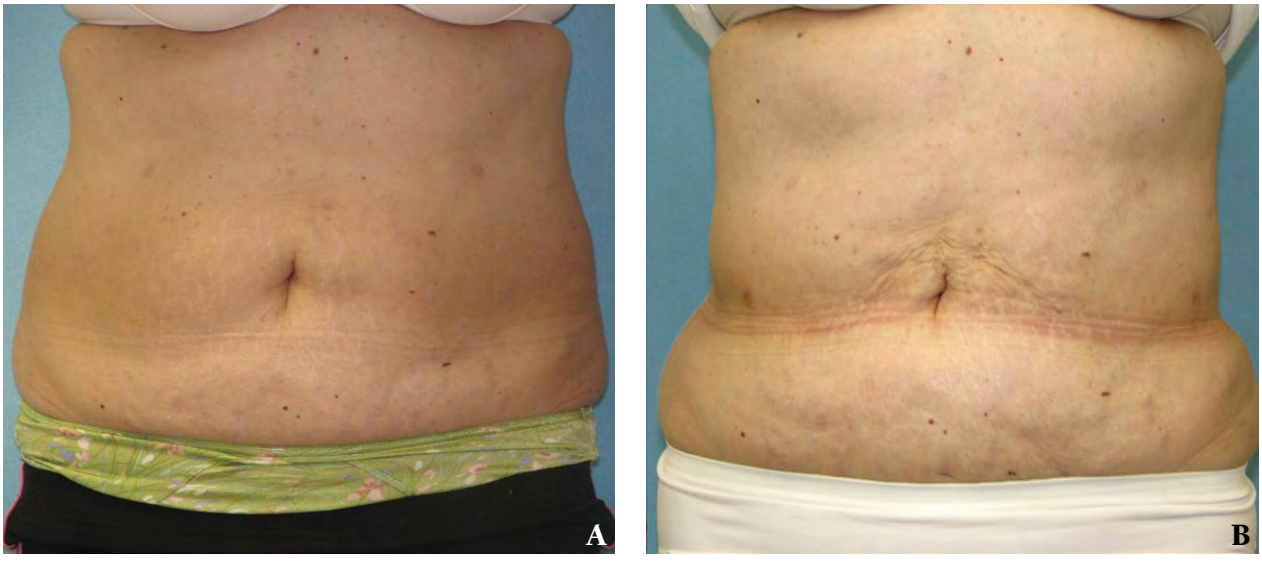

Figure 2. Before (A) and after (B) photographs of the results on the flanks, obtained with the SmartLipo MPX (patient's left side) and Accent 980 (patient's right side).

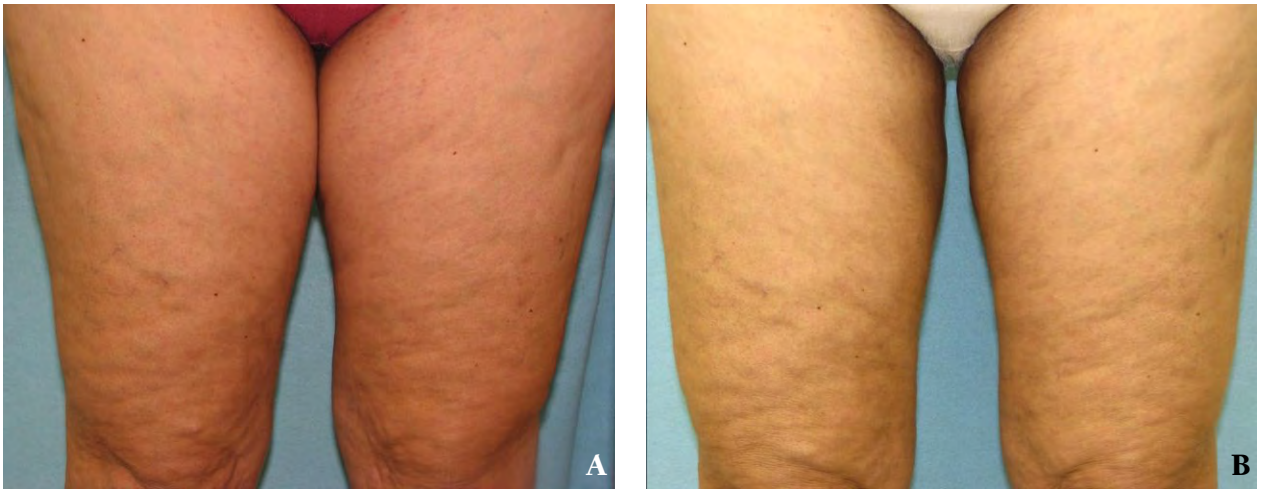

Figure 3. Before (A) and after (B) photographs showing inner thigh results obtained with the SmartLipo MPX (left leg) and Accent 980 (right leg).

the Accent 980 procedure. Further studies using larger populations and more controlled, blinded protocols would yield valuable data to support these conclusions.

From an efficiency standpoint for the clinician, treatment with the Accent 980 may take approximately twice the time of the SmartLipo MPX due to the lower wattage used; however, this also reduces the risk of over-treating the affected area, which may result in burns. In addition, the Accent 980 is a much more affordable and smaller device, rendering an easy transition into the realm of laser liposuction for practices that were previously not offering this very exciting procedure.

REFERENCE

1. The American Society for Aesthetic Plastic Surgery. statistics. http://www.surgery.org/media/statistics. Accessed February 9, 2011. ■