Fat Is Exciting, but . . .

David L. Larson, MD

I must confess: I still have as much enthusiasm for plastic surgery as I did over 35 years ago, in 1976, when I was a first-year resident and had just completed my training in otolaryngology. You might ask how someone now in the twilight of his professional career has remained excited for so long. I think the answer lies in one word: innovation.

Plastic surgery is the medical specialty that epitomizes innovation. My continuing enthusiasm stems from having been privileged to witness the initial description, subsequent evolution, and eventual institution of techniques and concepts that most of today’s graduating plastic surgery residents take for granted. Among those innovations were craniofacial surgery, tissue expansion, musculocutaneous flaps, free tissue transfer, and negative pressure wound therapy. And there were countless milestones in aesthetic surgery as well—liposuction, open rhinoplasty, soft tissue fillers, cosmetic applications for botulinum toxin, a deepening anatomic knowledge of facial planes and their clinical significance (eg, the superficial musculoaponeurotic system; SMAS), and so many more. Most of the above-named innovations are either uniquely cosmetic or reconstructive in nature. In contrast, recent scientific and clinical breakthroughs concerning fat encompass both reconstructive (“regenerative’) and cosmetic medicine.

Although fat has been employed for many years in a variety of clinical settings, it is mainly within the past 5 years that reports of significant new research and unique applications have emerged. As exciting as the current clinical and research accomplishments related to fat transfer are, it is even more exciting to imagine what the future may hold. In a world where dwindling health care resources are a grim reality, adult fat stem cell research raises the possibility of abundant supplies of a substance that can aid the body to regenerate tissue lost from disease, trauma, cancer, or even congenital abnormality. This scenario truly boggles the mind! In the future, fat may become such an important part of regenerative and reconstructive medicine that one would never consider simply aspirating and discarding this “golden” tissue. And unlike the kidney or cornea, fat is a “renewable resource.”

But . . . with innovation comes responsibility. I have observed over many years what seems to be a predictable evolutionary pattern of clinical innovation in plastic surgery, whether reconstructive or aesthetic. The pattern goes something like this: (1) An innovation is first reported as a series of patients. This is the “how-wow” stage. (2) The concept or technique is quickly adopted by a substantial portion of the specialty. (3) Only then do thoughtful clinicians and clinical scientists start asking questions about the procedure and “why” it works. (4) This, in turn, generates further work in the anatomy lab, bench research, and/or prospective, randomized studies to look deeper into the “why” of the innovation. (5) These data are shared with the plastic surgery community and the procedure continues to find favor, is further modified, or falls out of favor.

This process is essentially the antithesis of the approach used for innovative drugs. Drugs are brought to the market only after first being evaluated in animal studies and then in rigorous, cautious, and controlled patient studies. These steps are essential before a drug can be found suitable for widespread use. While I am not suggesting that the model for surgical innovation can or should be the same as the “drug model,” I do believe that greater caution and discretion in our clinical claims, some of which inevitably prove to be spurious or just plain inaccurate, is warranted.

Fat and its components have long been part of plastic surgery’s domain and, if we stay on course, should continue to be solidly within our specialty’s purview in the future. Yet plastic surgeons would do well to remember that the more we discover about the physiology and clinical applications of fat, the more there is to learn. It is absolutely essential that we refrain from the hyperbole that often surrounds fat grafting and stem cell therapy. As stated in the position statement of the American Society of Aesthetic Plastic Surgery and the American Society of Plastic Surgeons (ASAPS/ASPS), the 2 terms should not be used interchangeably. Fat grafting, commonly performed today, is the transfer of fat which may passively contain some stem cells, but it is not a stem cell procedure. The position statement continues: “terms such as ‘stem cell therapy’ or ‘stem cell procedure’ are reserved for those treatments or techniques where the collection, concentration, manipulation, and therapeutic action of the stem cells [are] the primary goal.” Stem cell therapy and procedures are not commonplace today. Rather, they are the product of high level-of-evidence (LOE) bench research now being conducted around the world.

Dr Larson is Chairman and George J. Korkos Professor of Plastic and Reconstructive Surgery at the Medical College of Wisconsin, Milwaukee, Wisconsin. He is Research Section Editor for Aesthetic Surgery Journal.
It is incumbent on organized plastic surgery to set the benchmark and establish criteria for fat research. We must resist the temptation to engage in the “fat transfer” hype (eg, “stem cell face-lift”) touted by some practitioners. Their claims are far ahead of any science and threaten to discredit the true promise that fat holds for “regenerative surgery.” Plastic surgeons have been and should continue to be the experts in all realms of fat science and its clinical applications. Now, in the initial stages of this exciting venture, we must not flag in our commitment to follow through in a scientifically responsible way. If we had insisted on a rigorous process of scientific evaluation and established clinical guidelines for silicone breast implants in the 1960s, think of the anxiety, anger, and angst (not to mention cost) that could have been avoided with the breast-implant crisis 30 years later. We must not allow that history to repeat itself. It is vital, standing at the threshold of the “regenerative” science related to fat, that we maintain an integrity that will be above reproach when viewed in years to come. Science comes first. Claims concerning fat’s clinical applications should parallel, and not go beyond, what we know is factual and credible science.

Over the past 5 years, Aesthetic Surgery Journal has been at the forefront of the distribution of knowledge concerning current and potential uses of fat. ASJ has published numerous articles on fat grafting, ranging from bench research and reviews to clinical applications covering the entire body, including the risks, complications, and long-term viability of fat. Complementing this expanse of work are continuing medical education (CME) opportunities and important position statements of our specialty on fat grafting.

As I reviewed the range of articles published in ASJ, I was pleased to see that many of the clinical and research contributions were international in origin, evidence of the increasing worldwide recognition of ASJ as “the gold journal” of cosmetic surgery. As Research Section Editor, I can promise you that one of our top priorities is publishing excellent new research on fat. ASJ is committed to bringing the results of careful clinical and bench research to our readers in the timeliest manner possible, so that you can remain at the forefront of this latest and most exciting development in plastic surgery.

We are entering a world of evidence-based medicine (EBM), which requires more than just case reports; it requires careful, methodical research. LOE is now being designated for many of the articles published in ASJ and recently was incorporated into oral presentations at the 2012 ASAPS annual meeting. If we are going to make meaningful advances in the science of fat, we must follow the standards that we espouse. I have every confidence that this can be accomplished by growing our knowledge base and clinical practices in a deliberate fashion, rejecting self-promotion in favor of simply doing what is right for our patients and their safety.

Funding
The author received no financial support for the research, authorship, and publication of this article.

REFERENCES