Section One: The Story of FAMI™

Part One

Science evolves following a particular paradigm. When researchers find anomalies that do not fit the paradigm, they cast about a new paradigm that will undermine the old one. Most great leaps are the product of often long calculations, made up of generations of study and exploration. Fig 1, Fig 2

More often than not, they are the result of knowledge, experience, methodology and luck coming together at just the right time, in just the right place, in just the right hands. Such is the case of FAMI and Dr. Roger Amar.

Fig 1: Class of Mathematics in Lycee Ardallion (Oran, Algeria, 1959-1960). Roger Amar is standing in upper left inside (position 27).

Fig 2: the Amar family: parents Solomon and Sarah, Brother elder Robert, Sister standing Huguette and Eliette sitting

Chapter One: The Arrival of Dr. Roger Amar

The story of FAMI has many beginnings; none more important than the other, but each are imperative elements of the calculation in their own way.

The experience component of the FAMI calculation began in the late 1960s when Roger Amar turned his attention to science and medicine.

Fig 3: Oran landscape: the harbour from the Santa Cruz Spanish fortress and French basilica. overhanging the city

Born and raised in the French Algerian town of Oran, Fig 3, just minutes from another cosmetic surgery pioneer, Yves Gerard Illouz - the inventor of modern liposuction - Roger Amar travelled to Paris in search of academic opportunities as soon as he was able.

Although he began his academic life pursuing a future in Electrical Engineering, Roger Amar soon found

that a field dictated by the strict limitations of mathematics was not for him. Instead, he found himself drawn to the world of medicine by a blend of insatiable curiosity and the desire to push the boundaries of traditional medicine in Paris at the most prestigious school of medicine of that time.

Fig 4: Roger Amar at 19: Class of biology in his first year of Medicine 1960-1961 Paris University

Recalling the inspiring stories his father had told him of his grandfather's medical past as a surgeon, Roger Amar soon turned his attention to the field of surgery, allowing him the opportunity to enter a field of experimentation and immediate results. Fig 4. A period spent working in rural clinics throughout the French countryside clarified this decision, making surgery the only logical path for the young doctor to take.

Following his graduation from the University of Paris in 1970, the aspiring surgeon spent the years that followed as both a medical resident and assistant professor of anatomy before graduating with an Master of Science in Surgery from Marseille University in 1975 and beginning a private practice the next year.

Although he entered the field with an expertise in cosmetic surgery, leading him to take a position as an Assistant Professor of Plastic and Reconstructive Surgery in Marseille Regional Centre Of Cancer in 1975, it was Amar's time spent perfecting his knowledge of anatomy that would most benefit the eventual creation and evolution of FAMI.

While he followed the logical path of a cosmetic surgeon in the 1970s, garnering experience with traditional methods and techniques, it was Roger Amar's deep knowledge and insatiable curiosity about the human anatomy that set him apart from other experts in the field.

Coupled with his time spent treating cancer patients, Roger Amar's anatomical inquisitiveness led him to question what alternatives lay deep beneath the surface of the skin. Working with patients whose skin had been seemingly destroyed by radiation treatments, Roger Amar began to

analyze the process that surrounded skin grafts and the regenerative power of certain cells over others. The amazing process by which skin samples could be removed from one part of the body and successfully, safely and permanently applied to an entirely different part through revascularization suggested a new world of cosmetic and medical procedures.

This was, in his opinion, the clearest example he had seen of the immediate positive possibilities of surgery. He witnessed patients that would have died or suffered lifetimes of pain and suffering just a few years before, able to return to a life of normality thanks to the work of surgeons.

While grafts were traditionally used to replace damaged skin tissue, Roger Amar began to consider how the technique might be applied to defective, atrophied or injured muscle.
However, it would be years before the answer would reveal itself.

In the meantime, Dr. Amar built a respected private practice, garnering a rich reputation for professionalism and medical expertise, allowing him the opportunity to author a lengthy list of journal articles and France's first book on skin grafting in the late 1980s.
Dr Amar continued to expand his practice in the following years, specializing in more traditional methods of cosmetic and restorative surgery, including face lifts and eventually fat transfers and injection. Although he focused mainly on the former throughout the late 1980s and early 1990s, it was the latter that provided the foundation of what would eventually become FAMI, Fig 5.

Fig 5: Roger Amar in January 1976, opening of his first private office In Marseille, 139 rue Paradis.

Developed to help add additional structure to atrophied or matured areas of a patient's face, the practice of fat transfer entailed the removal of fat cells from one part of a person's body and their careful placement in another. The end result was intended to provide desired volume where and how a patient desired.

However, while observing his own work and that of his peers, Dr Amar

began to question the unpredictability of such a technique due to the instability and quality of the fat cells commonly used.

Fig 6: Case of Fat injection malpractice, the marked areas (x) figure the injections in the wrong planes.

Dr Amar also began to wonder how much damage was being done to a patient's muscular and nervous systems Fig 6, by simply injecting fat cells directly through the skin, using sharp needles, cannulae and guns, Fig 7; those tools most commonly used during cosmetic surgery.

Fig 7: Instrument used in the nineties for facial fat injection, veterinarian needle on top a 10 cc serynge with a gun to overcome the subcutaneous resistance.

Dr Amar's main concern stemmed from his conclusion that fat injection and grafting did little to consider a patient's anatomy, offering only a shallow solution and far too much risk. Recalling his time spent studying and teaching anatomy, Dr. Amar understood that the facial muscle systems affected during surgery were a body's most delicate. Lean and taunt from constant use, facial muscles were the most susceptible to the abuse and trauma of contemporary cosmetic surgical techniques and would take the longest to properly heal.

Additionally, the samples commonly used by surgeons were rarely, if ever, purified, forcing the body to extract the debris through painful bruising and swelling.

Presented with an alternative to traditional fat injections in 1995, the Coleman Technique which explored the possibilities of grafting the fat cells to a desired location, Dr Amar remained unimpressed. The imprecision of his new modifications, in his opinion, offered too much room for error.

The unpredictability of injecting cells beneath the skin provided too many chances for lasting damage to a patient's body and did little to limit the customary side-effects of such procedures, including swelling, bruising and long term oedema due to lymphatic blockage.

Although it represented a step forward in cosmetic surgery, Dr Amar believed that surface fat grafting was not the answer and that adding volume where needed could be done in a safer, more effective and most importantly, predictable way.

With more than 14 years of fat injection experience behind him, Dr Amar concluded that the success of a fat transfer had more to do with the health of the host tissue than the extraction or re-injection of the cells. As with any graft, the cells would be more likely to take if the host tissue offered an environment rich with the necessary blood vessels to ensure the future health of the transplant.

Using his background in anatomy as a guide, Dr Amar began to consider the possibility of injecting the fat cells directly into the muscles themselves, instead of relying on the unpredictability of layering them under the skin.

Looking deep beneath the surface, Dr Amar saw that only the muscles could provide the body's richest collection of blood vessels, composing 80 percent of the tissue, making it the most hospitable environment in the body to place the cells.

Faced with the daunting task of navigating the complex and intricate system of facial muscles, Dr Amar decided that a completely different, novel scientific approach was needed to assure the kind of results he was seeking.

Further, Dr Amar felt there must be a way to accomplish this without the invasive and damaging tools usually used in cosmetic surgery, assuring fewer traumas and more predictability. There had to be a way to achieve the results he wanted without disturbing the delicate fabric of the facial tissue with sharp tools – to achieve surgery without a scalpel. Faced with a complicated overlap of capillary and lymphatic networks, muscles, nerves and bone, Dr Amar knew that this would be no easy task, Fig 8.

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Fig 8: The muscles of facial expression 3 planes demontrating the importance of good vascularized beds for the grafts..

The FAMI™ Technique

Flush with the kind of enthusiasm and scientific curiosity he had not felt since he was a young surgeon, Dr Amar decided that instead of relying on existing technology and tools, he would invent his own, Fig 9.

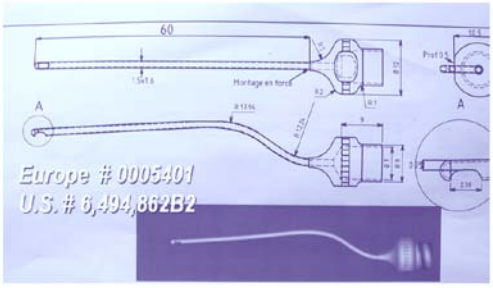

Fig 9: FAMI Cannula original drawings for the French and US patents.