

ESSENTIALS OF MICORNEEDLING TREATMENT

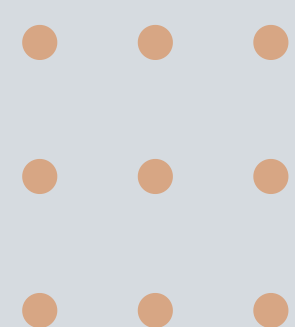
CBAM Aesthetic Mastery Series



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ABOUT AUTHORS



Dr. Reza Akef is a highly experienced and respected cosmetic physician, with over 15 years of experience in teaching and practicing cosmetic medicine. He is currently the Assistant Professor at McMaster University and the Chairman of the Canadian Board of Aesthetic Medicine (CBAM), where he shares his knowledge and expertise with other healthcare professionals to provide the best care for their patients.

Dr. Akef is board certified by the College of Family Physicians of Canada in both Family and Emergency Medicine. Additionally, he is deeply involved in interventional pain practice cooperation for the treatment of Migraines, chronic pain, TMJ, Myofascial pain, and Fibromyalgia. He is a leading cosmetic physician and an internationally recognized specialist in non-surgical cosmetic procedures.

Dr. Akef is dedicated to understanding his clients' concerns and creating personalized treatment plans that meet their needs and goals. He is committed to thoughtfully and strategically creating individualized combinations of leading, safe treatments that exceed client expectations. He is also the founder of Angel Gloss spa in Toronto, an established, leading destination for non-surgical cosmetic procedures for individuals seeking leading physicians with proven experience, the latest technology, and cutting-edge techniques.

Dr. Akef is actively involved in multiple training courses, webinars, and conferences all around the world, including prestigious international conferences such as IMCAS, AMWC, and Dubai Derma. He participates as a speaker at these events and is always looking to stay up to date with the latest developments in the field of cosmetic medicine.

Mohsen Talani is the Director of CBAM. He has over 18 years of experience teaching anatomy in Canada and internationally to students and healthcare practitioners in different fields of medicine such as physicians, dentists, nurses, chiropractors, and physiotherapists.

After graduating from medical school at a young age, he became a medical doctor in his home country, Iran, and practiced in the field of emergency medicine. While pursuing his Master's thesis in neuroscience at McGill University, he discovered his passion for teaching. Since then, he has been working in the field of medical science education, with a focus on anatomy.

He strongly believes that with the rapidly growing aesthetic industry, all practitioners should have a profound knowledge of skin basics, fat compartments, muscles, blood vessels, and nerves, in order to provide safe and effective care to clients and prevent or minimize post-treatment complications linked to lack of anatomy knowledge.

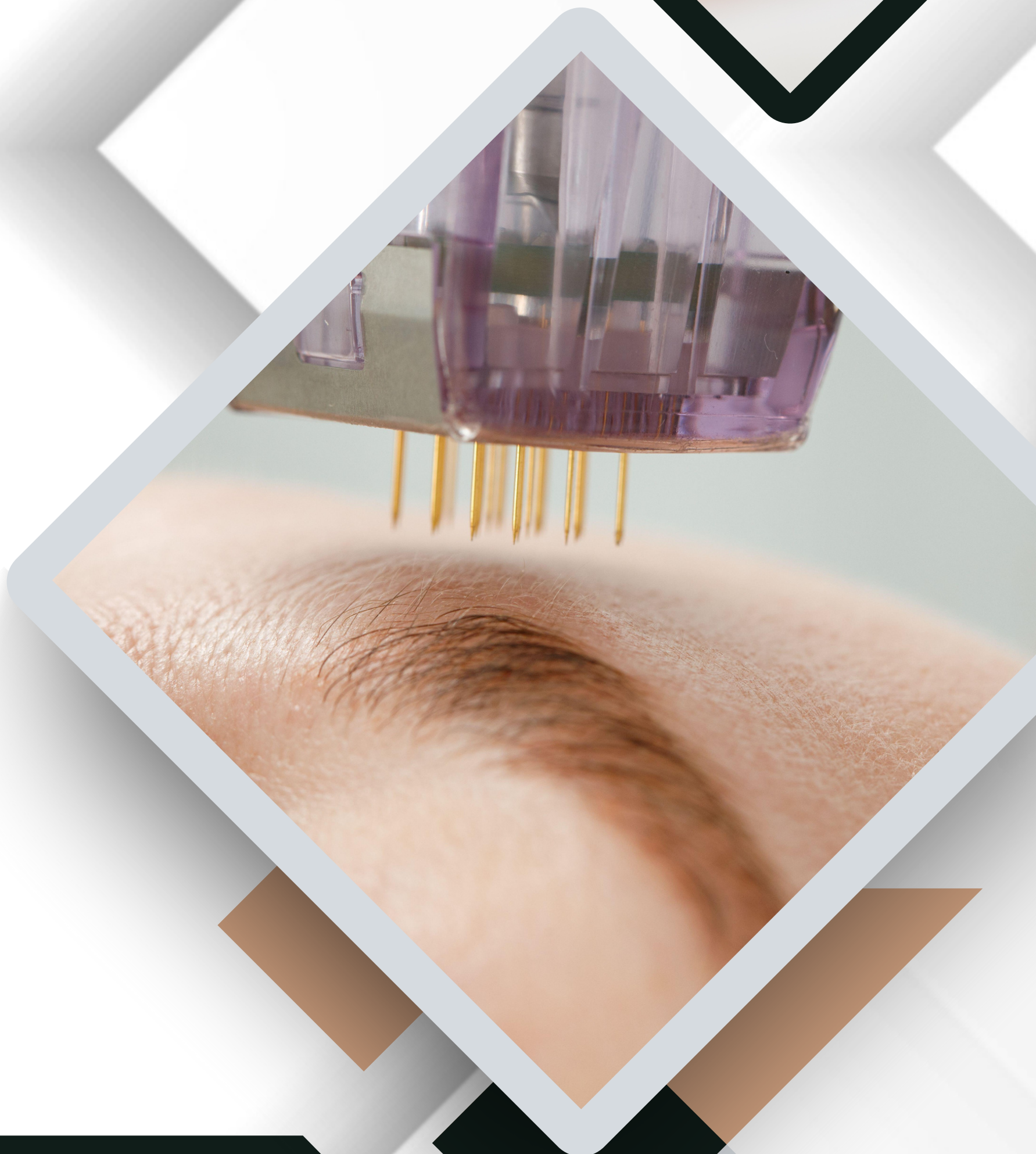
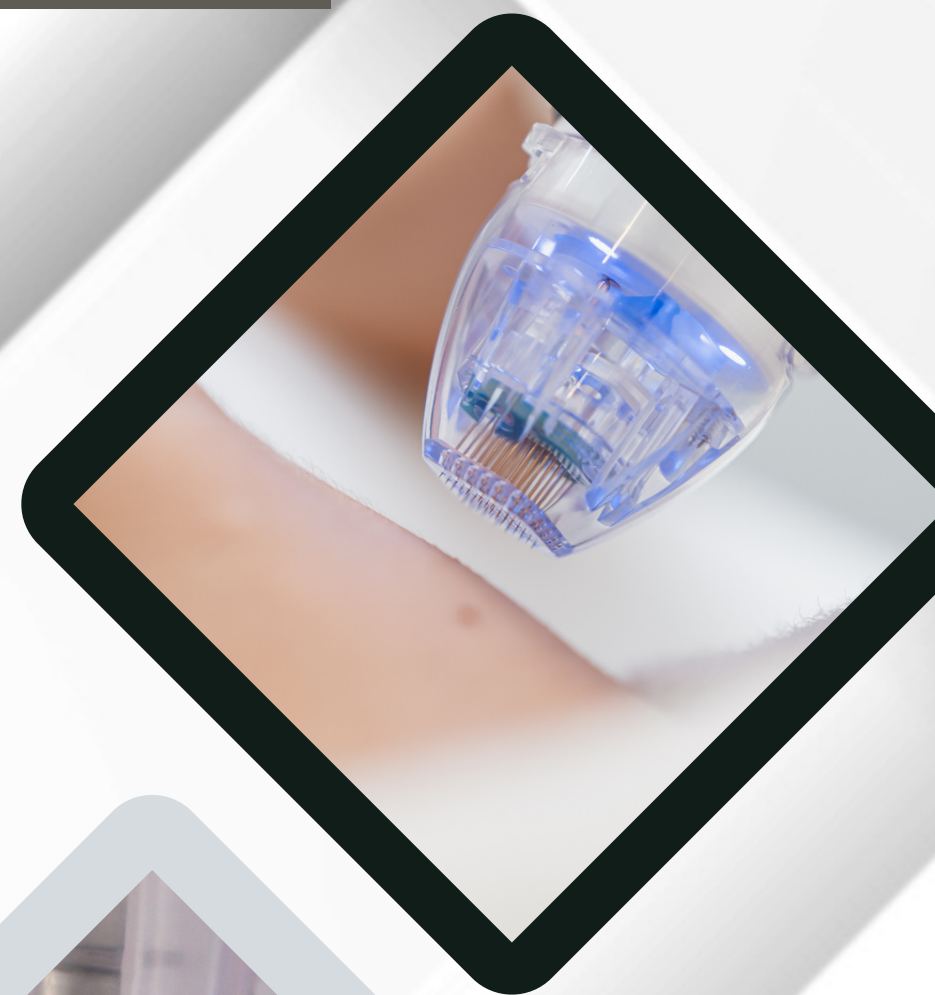
He is currently training healthcare practitioners who seek to have a deep knowledge of anatomy. He incorporates fun, innovative, and easy-to-understand methods of teaching in all of his classes, guest lectures, and presentations. Additionally, he supervises the cadaver lab dissections and hands-on practicals.



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INTRODUCTION



Introduction to Microneedling

Definition and Overview of Microneedling

Microneedling is a minimally invasive cosmetic procedure that uses fine, sterile needles to create controlled micro-injuries to the skin, which stimulates the body's natural wound-healing process. This technique is used to promote collagen production and improve the appearance of various skin imperfections, such as fine lines, acne scars, stretch marks, and overall skin texture. The procedure works by inducing the production of new skin cells and collagen, leading to a rejuvenated, youthful appearance.

Initially introduced as percutaneous collagen induction therapy in the 1990s, microneedling has evolved significantly with advancements in devices and techniques. Early methods involved simple roller devices, but today, microneedling pens and automated systems are commonly used, allowing for greater precision and control during treatment. The procedure is primarily employed in aesthetic medicine for skin

rejuvenation and scar treatments, and its versatility has expanded to include uses in drug delivery and other therapeutic areas.

One of the key benefits of microneedling is its ability to target deeper layers of the skin, inducing collagen and elastin formation without harming the epidermis. The controlled skin injury activates the wound-healing cascade, which triggers the release of growth



Fig 1.1. Microneedling is a minimally invasive cosmetic procedure that uses fine, sterile needles to create controlled micro-injuries to the skin, which stimulates the body's natural wound-healing process.

factors such as platelet-derived growth factor (PDGF) and transforming growth factors (TGF), both of which play significant roles in the formation of new collagen and skin repair. This process enhances skin texture, reduces the appearance of scars, and contributes to overall skin tightening.

History and Evolution of Microneedling in Aesthetic Medicine

Microneedling, initially introduced in the 1990s, has undergone significant development in both technique and application, becoming a cornerstone of aesthetic medicine. Its history is marked by continuous innovation, starting with simple needling methods and evolving into the advanced microneedling devices



Fig 1.2. Subcision is a minor in-office surgical procedure that's used to treat acne scars. It involves inserting a small needle into skin to release the acne scar from the underlying tissue.

used today.

The concept of using needles to induce collagen production dates back to 1995, when Orentreich first described **subcision surgery**, which used needles to release depressed scars and wrinkles by creating controlled trauma in the skin. This technique, often called **percutaneous collagen induction therapy**, was primarily used for treating scars, including acne and surgical scars, and was one of the early applications of needle-based treatments in dermatology.

In 1996, **Desmond Fernandes** made a pivotal contribution by introducing a **roller device** for microneedling at the International Society of Aesthetic Plastic Surgery (ISAPS) congress. This device allowed for more efficient treatment of larger areas of the skin, reducing the labor-intensive process of using a needle manually. While the roller device was a significant step forward, it was not until 2001 that Fernandes designed the first **percutaneous collagen induction dermaroller** with needles ranging from 1.0 to 3.0 mm, targeting the deeper layers of the skin for more effective collagen regeneration. This roller-based device revolutionized the technique by offering a more consistent and reliable method of treatment.

In the years following, **Camirand and Doucet** introduced the concept of "needle dermabrasion," a technique using tattooing needles for non-ablative treatment of scars and skin imperfections. This concept laid the groundwork for what would later evolve into the modern **pen-style microneedling devices**.

As research into microneedling continued, **Prof. Matthias Aust** in 2004 confirmed the regenerative properties of microneedling, specifically the **platelet-derived growth factors** that play a crucial role in skin regeneration. His work helped validate microneedling as an effective treatment for scars, stretch marks, and photoaging, while also suggesting that combining microneedling with other treatments like **vitamin A and C** could enhance results.

Today, microneedling is widely accepted as a safe, minimally invasive procedure with applications extending beyond scar treatment to include **skin rejuvenation, hyperpigmentation treatment, and hair regeneration**. The evolution of microneedling devices, from early roller tools to the more precise and customizable **pen devices**, has made the procedure safer, more effective, and easier to integrate into routine aesthetic practice.



Fig 1.3. Microneedling pens create controlled skin injuries, a critical feature for initiating your skin's natural repair processes.

The development of microneedling has also opened new doors in **medical applications**, such as using microneedles for transdermal delivery systems and therapeutic drug administration. With advancements in device technology, microneedling continues to grow in its versatility, offering both **aesthetic and medical benefits** to a wider range of patients.

Importance of Microneedling for Aesthetic Practitioners

Microneedling has become a fundamental tool in aesthetic medicine due to its versatility, minimal invasiveness, and significant therapeutic benefits. For aesthetic practitioners, incorporating microneedling into their practices offers numerous advantages that not only enhance patient outcomes