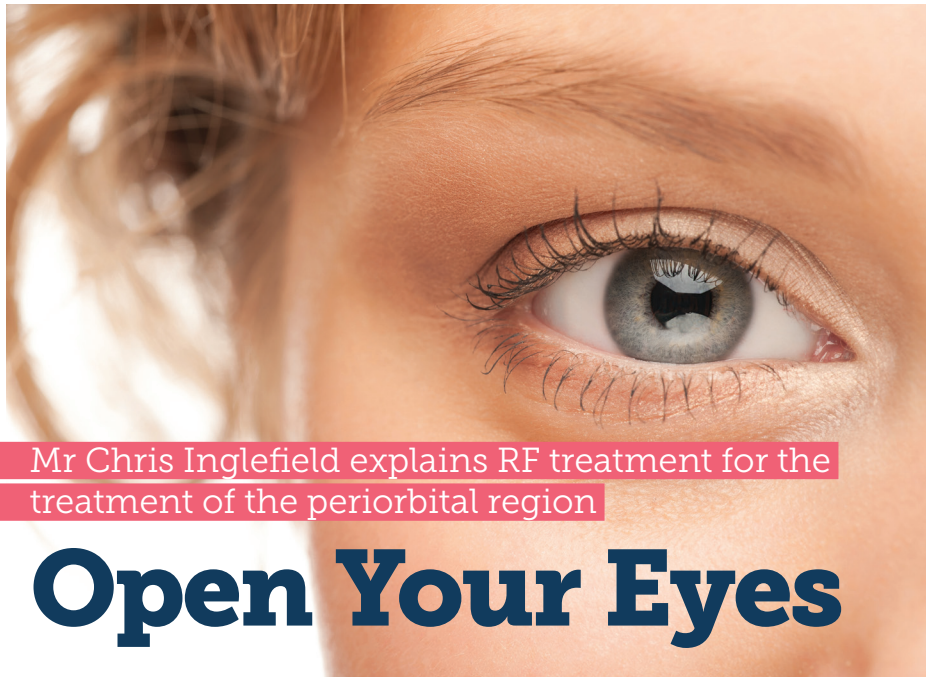


Mr Chris Inglefield explains RF treatment for the treatment of the periorbital region

Open Your Eyes

With increasing emphasis on maintaining a youthful appearance whilst upholding a busy social and work calendar, there is a growing demand for safe yet effective treatments that offer minimal discomfort or downtime. This is exemplified by trends in cosmetic treatments, which have shown a 12% decrease in surgical procedures since 2000, yet a 144% increase in minimally-invasive procedures.[1]

The periorbital area is a particularly popular area for treatment, being the third highest-ranking area for cosmetic surgery.[1] However it presents a number of difficulties and safety concerns. Eyelid surgery (blepharoplasty) has traditionally been used at a relatively early stage due to the limitations of non-surgical alternatives. This article will review how we at London Bridge Plastic Surgery (LBPS) have adapted the use of a novel radiofrequency technology, multi-source phase-controlled radiofrequency (RF), for safe and effective rejuvenation of the eye area.

THE CHALLENGE

The periorbital area is one of the first areas to show the signs of ageing; laxity, fine lines and wrinkles. Treatment options are limited, due to the delicate nature of the skin in this area and safety concerns related to proximity to the eyeball. Blepharoplasty, whilst still being the third most common cosmetic surgical procedure, is not an option for many patients due to cost, risks associated with the general anaesthesia, risks of scarring, and the post-operative recovery period.[1]

Non-surgical options such as botulinum toxin and dermal fillers can be effective in the right hands, but also have inherent risks.[2,3] Dermal fillers can lead to infection at the injection site as well as nodule formation or a bluish discolouration beneath the skin (the Tyndall phenomenon) due to superficial injection technique.[2] Complications of injecting botulinum toxin include dry eye syndrome, which if unidentified can lead to eyelid swelling, epiphora (excessive tear production) and scleral show.[3] Recently we have started using a novel combination of RF procedures using a multi-source RF system (in our case, EndyMed 3DEEP) to carry out a non-surgical eye-lift. With promising results and a high safety profile this procedure has since been termed the 'EndyBleph'.

RADIOFREQUENCY: HOW AND WHY

RF has been found to be effective in the safe delivery of energy into the skin, independent of skin colour.[4] Resistance encountered by the RF energy flow causes a build-up of heat, which induces an immediate contraction of the collagen (an 'instant lift') and stimulates a natural wound-healing response, production of new skin cells and collagen.[5]

When focused in the dermis and hypodermis, RF treatment can lead to improvements in the skin structure and tightening of lax and sagging skin. In addition to providing skin tightening, RF can be implemented for skin resurfacing and micro-needle dermal remodelling. The contraindications for RF treatment include implanted metal devices, immunosuppression, active keloid scars and recent cosmetic non-surgical or surgical treatments.[6]

However, due to the high safety profile of the treatment it is suitable for most patient groups and all skin types.[7] Multiple RF technologies and devices are available, with varying levels of efficacy and safety.[6] Most RF devices use monopolar or bipolar energy.

Monopolar RF uses one RF generator and one electrode to deliver the RF energy into the skin, often using a grounding pad. Bipolar RF also uses one RF generator and the energy flows between two electrodes. Results with these technologies can be variable, patients are often exposed to high levels of epidermal heating and discomfort so cooling must be implemented, and there are possible side effects including burns, purpura and hyperpigmentation.[6]

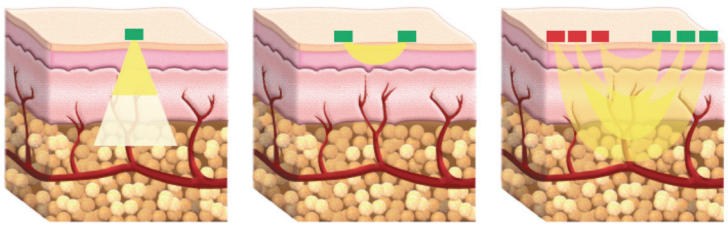
In my opinion, multi-source RF represents an innovation in RF skin tightening.

MULTI-SOURCE RF: CLINICAL EVIDENCE BASE

Multi-source phase-controlled RF is a novel, FDA-cleared RF technology that uses six RF generators and six electrodes. Sophisticated software controls how the energy flows between the electrodes, with multiple fields of energy interacting and forcing the energy deep into the skin without overheating its surface. The result is a deep, volumetric heating of the dermis and hypodermis, which delivers high level and predictable clinical results with excellent patient comfort and a high safety profile.[7]

Multi-source RF can also be implemented for fractional skin resurfacing, providing an epidermal and dermal skin rejuvenation effect. The multi-source RF micro-ablates up to 10% of the treated area with simultaneous volumetric heating of the dermis, resulting in good and predictable clinical outcomes.[8,9] The downtime is shorter than traditional laser resurfacing procedures and the risk of side effects is minimal.[8]

Figure 1 shows the different RF technologies. Image © EndyMed Medical Ltd

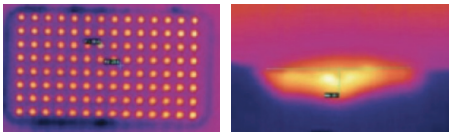


A Monopolar RF Energy is dispersed through the skin to the whole body; intense cooling is required to prevent epidermal damage

B Bipolar RF Energy flows superficially between the electrodes; cooling is needed to prevent overheating of the epidermis in the contact areas

C Multi-source phase-controlled RF Energy is focused in the dermis and hypodermis, eliminating the need for cooling

Figure 2 shows the multi-source RF FSR technology. Images © EndyMed Medical Ltd



A 112 0.1mm micro-ablation points are created beneath each electrode

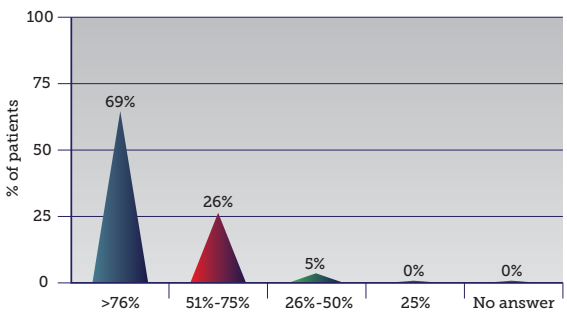
B Volumetric heating beneath the tip heats the dermis to 2.9mm

Multi-source RF has been shown to be a safe and effective treatment for face and body skin tightening and fractional skin resurfacing (FSR).[4,5,7,8,9] Harth and Lischinsky (2011), reported on the improvements seen in 30 patients undergoing treatment for facial wrinkles. Three months after completion of the treatment course 100% of patients saw an improvement, with good to excellent results seen in 87% of those patients.[7] Clinical outcomes for body contouring are also high, with average circumference reductions of 2.9cm after a course of treatments that is sustained for 12 months.[5] Elman *et al* (2012) and Dahan *et al* (2013) investigated the efficacy of multi-source RF for FSR. Dahan *et al* demonstrated an average reduction in 10 patients' Fitzpatrick wrinkle and elastosis score from 7.3 to 4.1, three months after a course of treatments.[8] In a study by Elman *et al* on the efficacy of combined FSR and skin tightening for acne scarring, 70% of patients had a 51-75% improvement in skin texture, roughness and acne scar appearance one month after the third treatment.[9] There were no incidences of infection, hyperpigmentation or scarring in any of the clinical studies.

NON-SURGICAL EYE LIFT

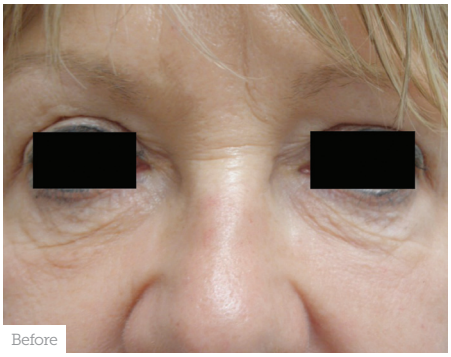
Earlier this year, Dr Amy Patdu reported on her experience using multi-source RF for eye rejuvenation in Asian skin.[4] 19 patients completed a course of six treatments with the 3DEEP iFine; a specially designed handpiece for the periorbital area that delivers heat to a depth of 1.8mm. During each treatment the skin temperature was raised to approximately 40°C and sustained for three minutes. Figure 3 shows Dr Patdu's evaluation of the patients' improvement three months after the treatment course.

Figure 3 Physician evaluation of overall improvement



We have been using the EndyMedPRO at LBPS since 2008 and introduced the 3DEEP iFine in 2012, which has revolutionised our treatment of the eye area. The technology allows pain-free, safe and effective treatment of the delicate and hard-to-reach skin immediately around the eyes and will reduce under eye bags, smooth and tighten the skin and lift the upper eyelid to reveal a more open eye. There is an immediate visible improvement, which disappears after one to two days but is an indication of the long-lasting result and is a great hook for first-time patients. More recently we have significantly enhanced our protocol and results for periorbital rejuvenation. The EndyMedPRO is a multi-application platform, so we are able to combine in a single treatment periorbital skin tightening and fractional skin resurfacing – now known as the EndyBleph. The skin tightening treatment is carried out according to the standard protocol described in Dr Patdu's study, then after application of a topical anaesthetic the FSR is used over the area. This provides an additional tightening effect and epidermal ablation for a smoother, brighter result. A course of four treatments spaced four weeks apart is recommended for optimum results. There is minimal patient discomfort and downtime; the FSR causes a mild micro-crusting which develops from one to two days and resolves after four to five days. Potentially irritating skincare products containing Retinoids or Alpha Hydroxy Acids (AHAs) should be avoided until the micro-crusting has resolved and high-level broad-spectrum sun protection should be used daily. Top-up treatments are recommended every nine to 12 months to maintain the results.

Figure 4 Before and two years after eight EndyMed 3DEEP iFine treatments. Images © Dr Isabelle Rousseaux, Loos, France



Before

After two years

The ideal patient for this treatment has less severe damage, is younger, or would prefer to avoid surgery for the reasons mentioned previously. To date we have treated 25 patients with the EndyBleph and 80% of patients who I would have previously recommended for blepharoplasty now have EndyMed 3DEEP eye rejuvenation.

Overall patient satisfaction for EndyMed is very high, with approximately 94% of patients very satisfied or extremely satisfied with the results they have achieved.

CONCLUSION

Multi-source phase-controlled RF is a safe and effective option for rejuvenation of the difficult-to-treat eye area. The risks to the patient are reduced, there is significantly less downtime and the cost is also lower. But this is not at a cost of results, demonstrated by the high patient satisfaction rates that have been achieved following 3DEEP skin rejuvenation.

Mr Christopher Inglefield is the founder of London Bridge Plastic Surgery. With over 25 years' experience, he has been at the forefront of the plastic surgery evolution. Mr Inglefield contributes and has been quoted extensively in medical journals on plastic surgery. He is regularly invited as a guest speaker to conferences worldwide and is a specialist advisor of NICE and leading cosmetic companies.

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