

**Simerdip Kaur** takes a look at the latest ophthalmology-related news stories and asks which are based on facts and which are 'fake news'.

**Headline:**  
*Does beauty truly lie in the eye of the beholder?*

**S**cleral whitening, iris colour-changing drops and cosmetic iris implants are some of the potential eye modification procedures available, however, this is not an exhaustive list. In 2004, Dr Gerrit Melles – director of the Netherlands Institute for Innovative Ocular Surgery (NIIOS) and pioneer in the development of lamellar keratoplasty, reported his findings from performing cosmetic extraocular implants (CEI) on five healthy women with no past ocular or medical history [1].

The CEI known as the JewelEye is made of platinum, available in several shapes with a curve to match the contour of the eyeball. It measures 3.5mm x 4mm and is less than 1mm thick. Melles performed a sutureless procedure by creating a conjunctival tunnel measuring twice as wide as the implant and thereafter inserting the CEI into the inferior temporal quadrant of the eye [1]. The procedure costs approximately 750 euros and takes 15 minutes to perform. Postoperatively patients were given Chloramphenicol to use three times a day and the commonest complication was subconjunctival haemorrhage that resolved within two weeks [1]. There were no reports of diplopia or visual impairment. Since then they have performed hundreds of CEIs, especially in the early 2000s when it was popular in Europe.

In the United States, a video of Dr Emil Chynn from the Park Avenue Safe Sight in New York performing this procedure emerged in 2018 [2]. He first performed this on a patient in 2013, however, claims that the demand for it is low. Unsurprisingly, the Food and Drug Administration (FDA) and the American Academy of Ophthalmology (AAO) do not approve the procedure. Similarly in the UK, the procedure is not condoned and to date no such advertisement for it exists. Moreover, the absence of evidence on complications in the medical literature such as blindness, globe perforation and severe infections is not synonymous with it being a risk-free procedure.

If ocular surface modification in the form of jewellery was not enough for some patients

then other possibilities also exist such as tattooing. A patient of Dr Melles, Rachel Larratt, had her JewelEye implant in 2004 that subsequently inspired her then husband Shannon Larratt, founder of Body Modificatin Ezine (BME) in Toronto, to develop the procedure [3]. This led to the first ever reported scleral tattoo procedure performed in 2007 by his tattoo artist colleague – Luna Cobra, and consequently it spread worldwide [4].

Generally, the preferred method is via the injection route involving several superficial injections of tattoo ink between the conjunctiva and sclera to cover the entire surface [5]. The other traditional tattooing method which is commonly used for the skin and also in keratopigmentation involves repeated penetration onto the intended surface with a needle dipped in ink but is not been deemed suitable for scleral tattooing [5].

The ink used is akin to that applied in skin tattoos, constituting a pigment combined with a carrier. The pigment in the ink is usually in the form of heavy metals such as copper (blue-green), chromium (green), cobalt (blue) and iron (black). Alternatively, azo non-toxic organic chemical dyes have also been used for their pigment [6]. The carrier acts as a solvent and could consist of distilled water, alcohol and glycerine [6]. Whilst there are success stories of people living complication-free from having undergone scleral tattooing, many others have equally been adversely affected.

One case report described how a tattoo artist self-injected green coloured tattoo ink into the anterior chamber of his eyes using a skin tattoo needle and presented to his local eye department with toxic anterior segment syndrome (TASS) [7]. Another patient who had also attempted to tattoo his own eyeball inadvertently gave himself a penetrating globe injury with intraocular pigment deposition resulting in severe panuveitis and retinal detachment [8]. In the former, a copper-based ink was used and in the latter, copper-containing particles were found on scanning electron microscopy of the intravitreal fluid. It is yet unknown whether these patients will suffer from any long-term complications due to chalcosis. Additionally, the use of carbon and hydrocarbons in some black pigments pose a carcinogenic risk [9].

One heavily tattooed patient with locally advanced cervical cancer had a false positive PET scan, suggesting metastatic disease affecting her iliac lymph nodes resulting in her having hysterectomy, salpingectomy and regional lymph node dissection only later for the pathologist to discover tattoo pigments with no malignant cells [10]. There is no definitive cause-effect established between

tattoos and cancer, however, it is known that organic pigments can translocate from skin to regional lymph nodes in the form of nanoparticles leading to chronic enlargement of lymph nodes.

On the whole, body modification procedures involving the eye are uncommon, however, it is prudent for the general ophthalmologist to be aware of the technique and processes involved, especially when dealing with a potential complication. The long-term effects of these procedures are unknown but will surely come to light in the near future.

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