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Samuel J. Lin, MD, MBA

Editor-in-Chief

Plastic and Reconstructive Surgery

Re: Submission of "Blepharopigmentation: From Medical Innovation to Global Cosmetic Practice - A Four-Decade Historical Perspective on the Development, Dissemination, and Evolution of Permanent Eyeliner"

Dear Dr. Lin:

I am pleased to submit the enclosed historical retrospective for consideration by Plastic and Reconstructive Surgery. In 1984, PRS published my article "Eye-Liner Implants: A New Cosmetic Procedure," which reported a 2-year experience involving 250 eyelids. More than four decades later, the present manuscript returns to that history using contemporaneous patents, medical publications, physician correspondence, commercial materials, and modern complication and regulatory literature.

The manuscript reconstructs the development of blepharopigmentation as a defined periocular medical procedure, its early dissemination through physician education and CooperVision's Natural Eyes program, and its subsequent evolution into today's broad permanent-makeup industry. The contemporary relevance is patient safety: a permanent procedure performed immediately adjacent to the ocular surface is now provided within educational and regulatory systems that vary substantially among jurisdictions.

The manuscript is not intended as a legal claim regarding present-day patent, trademark, or copyright rights. The relevant patents have expired, my historical royalty/licensing relationship with CooperVision has ended, and I have no current financial relationship with CooperVision related to permanent eyeliner. Historical clinical photographs were created by me, remain in my archive, and were obtained with patient permission for use; supporting documentation can be provided on request.

Primary archival materials available to the journal include the 1985 Charles S. Zwerling, MD correspondence, original Canadian patent documentation, international patent records, CooperVision/Natural Eyes promotional material, the 2004 American Academy of Micropigmentation acknowledgment letter, early instructional materials, and archival video documentation.

I believe PRS is the natural venue for this retrospective because the journal published the original 1984 report and because the evolution of this periocular cosmetic procedure raises current questions relevant to aesthetic surgery, patient safety, professional education, and regulation.

This manuscript has not been published elsewhere and is not under consideration by another journal. Thank you for your consideration.

Sincerely,

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Blepharopigmentation: From Medical Innovation to Global Cosmetic Practice

A Four-Decade Historical Perspective on the Development, Dissemination, and Evolution of Permanent Eyeliner

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Running title: Four Decades of Blepharopigmentation

Funding: No external funding was received for preparation of this historical review.

Financial disclosure: Dr. Angres was historically the named inventor on patents concerning permanent eyelid liner and previously had a royalty/licensing relationship with CooperVision Surgical. Those patents have expired. He has no current royalty, licensing, ownership, consulting, or other financial relationship with CooperVision related to permanent eyeliner.

Image rights and consent: The author created the clinical photographs used in the historical archive and retains the original images. The photographed patients granted permission for use of the images; supporting documentation is available to the journal on request.

Abstract

Background: Permanent eyeliner, also termed blepharopigmentation, is now a widely performed component of permanent makeup. Its development as a defined periocular medical procedure involving controlled pigment implantation along the eyelid margin and lash line has received comparatively little historical analysis.

Methods: A historical review was undertaken using contemporaneous primary-source documentation and published medical literature. Sources included United States and international patent records, peer-reviewed medical publications, original physician correspondence, early educational records, contemporary commercial documentation concerning CooperVision Surgical and the Natural Eyes program, archival clinical photographs and video material, and subsequent literature concerning complications, training, and regulation.

Results: In the early 1980s, Giora G. Angres, MD, developed a microsurgical method for implantation of pigment along the eyelid margin and lash line. U.S. Patent No. 4,508,106, “Microsurgical Method for Applying Permanent Eyelid Liner,” was filed in 1983 and issued April 2, 1985, with related international patent protection. In 1984, Angres published the procedure in *Annals of Ophthalmology* and in *Plastic and Reconstructive Surgery*; the latter reported a 2-year clinical experience involving 250 eyelids. The technique was subsequently disseminated through physician education and commercialized through a relationship with CooperVision Surgical under the name Natural Eyes. A May 5, 1985 letter from Charles S. Zwerling, MD, documented contemporaneous professional recognition of Angres’s contribution. In 1985, Angres published the term blepharopigmentation in the medical literature. Over subsequent decades, permanent eyeliner expanded beyond its early physician-centered environment into the broader permanent-makeup industry, where practitioner training and regulation remain heterogeneous.

Conclusions: Blepharopigmentation illustrates the transition of a physician-developed periocular procedure from invention, patent protection, peer-reviewed publication, and physician education into widespread cosmetic practice. The historical record has contemporary relevance to practitioner training, informed consent, ocular protection, complication management, and minimum safety standards for permanent periocular pigmentation.

Keywords: blepharopigmentation; permanent eyeliner; permanent makeup; micropigmentation; eyelid pigmentation; cosmetic surgery; ophthalmology; patient safety; medical history; regulation

Introduction

Permanent makeup occupies an unusual intersection of medicine, surgery, tattooing, and visual art. Pigment implantation is used for eyeliner, eyebrows, lips, areolar reconstruction, scar camouflage, and other cosmetic and reconstructive purposes.

Permanent eyeliner is anatomically distinctive because the procedure is performed immediately adjacent to the eye. The eyelid margin contains the eyelashes and meibomian glands and lies in direct relationship to the conjunctiva, cornea, lacrimal structures, and ocular surface. Permanent implantation of pigment in this region therefore presents technical and safety considerations different from those associated with tattooing of less delicate anatomical sites.

Popular accounts of permanent makeup frequently begin with ancient tattooing or historical eye cosmetics. Those histories are relevant to body decoration generally but answer a different question from the one examined here: when did permanent eyelid pigmentation become a defined, medically described procedure involving controlled implantation of pigment along the eyelid and lash line?

This review reconstructs the surviving documentary history of that development, its dissemination through medical education and commercialization, and its subsequent migration into widespread permanent-makeup practice. It does not seek a legal determination of inventorship, infringement, trademark ownership, or copyright scope.

Historical Sources and Approach

The review gives greatest weight to contemporaneous primary sources: patent records, peer-reviewed medical publications, original physician correspondence, early physician-training materials, contemporary commercial documents, and archival photographs and video. Later medical literature concerning complications and regulation was reviewed to place the historical development in current clinical context.

Because historical priority is difficult to establish absolutely, this article distinguishes between the documented development of a specific modern medical procedure and the broader proposition that no person anywhere had previously placed pigment near an eyelid.

Development of a Permanent Eyelid-Liner Procedure

In the early 1980s, Angres developed a technique intended to provide permanent enhancement of the eyelash line through controlled implantation of pigment. The clinical motivation included patients who desired the appearance of eyeliner but who experienced difficulty applying conventional eye cosmetics because of visual or physical limitations, sensitivity to cosmetics, or other practical considerations.

The earliest peer-reviewed publication identified in the contemporary record was “Angres Permalid-Liner Method: A New Surgical Procedure,” published in *Annals of Ophthalmology* in 1984. A second major publication appeared several months later in *Plastic and Reconstructive Surgery*: “Eye-Liner Implants: A New Cosmetic Procedure.” That report characterized the technique as a new microsurgical cosmetic procedure and described a 2-year clinical experience involving 250 eyelids.

These publications provide contemporaneous medical documentation that permanent eyeliner had entered peer-reviewed clinical literature as a defined periocular procedure by 1984.

Patent Development and International Protection

U.S. Patent No. 4,508,106, entitled “Microsurgical Method for Applying Permanent Eyelid Liner,” was filed October 24, 1983 and issued April 2, 1985. The patent describes implantation of permanent or semipermanent pigment along the eyelid edge and/or lash line, including anesthesia of the treatment region, stabilization of the eyelid, controlled needle penetration, guidance of needle position, and deposition of pigment to a predetermined depth.

The surviving international record includes Canadian Patent No. 1,220,691, granted April 21, 1987; British publication GB2162798A; French publication FR2574265A1; and German publication DE3432425A1. Contemporary patent-counsel correspondence in the Angres archive also identifies an Italian patent for “Permanent Eye Lid Liner.”

The international filings are historically relevant because they show that the technique was treated contemporaneously as a defined technological innovation. They are presented here as documentary history, not as a legal opinion regarding present-day rights. The patents have expired.

Physician Education and Early Dissemination

Following publication and technical development, the procedure was taught through organized physician education. Surviving archival materials document instructional programs involving ophthalmologists, plastic surgeons, dermatologists, cosmetic surgeons, and other physicians. The programs combined didactic material with practical clinical training.

This physician-to-physician pathway is relevant because it documents how blepharopigmentation initially circulated: as a periocular medical procedure requiring specific anatomical, technical, and clinical instruction rather than merely as an informal cosmetic tattooing practice.

Contemporaneous Recognition: The Zwerling Correspondence

A particularly important primary document is a letter dated May 5, 1985, from Charles S. Zwerling, MD, to Giora G. Angres, MD. Written approximately two weeks after Zwerling visited the Angres practice, the letter states that Zwerling observed Angres's surgical technique on the eyelids and an eyebrow reconstruction case. Zwerling also explained that he and two coauthors were completing a textbook on micropigmentation surgery and invited Angres to write its foreword and contribute material concerning surgical technique.

Zwerling wrote that Angres deserved his "proper place in medical history" and described him as "the first medical doctor to describe and perform cosmetic eyeliner." This correspondence should not be treated as a legal determination of priority; its value is that it provides contemporaneous third-party evidence of how Angres's contribution was perceived by another physician during the formative period of the field.

Commercial Dissemination Through CooperVision and Natural Eyes

The procedure subsequently moved from clinical development and physician education into commercial medical dissemination. Contemporary documentation identifies a relationship between Angres and CooperVision Surgical involving the permanent-eyeliner procedure.

A June 23, 1985 Los Angeles Times report described CooperVision as marketing the Angres procedure under the name Natural Eyes and reported that Angres had entered an agreement with CooperVision during the preceding year. The same report described physician training associated with the program and identified ophthalmologists among the principal early practitioners, with plastic surgeons and dermatologists also participating.

A surviving Natural Eyes professional advertisement provides additional period documentation. It describes Natural Eyes as a "micro-surgical procedure" implanting natural pigments "at the base of the lashes" for permanent eye enhancement and contains before-and-after images from the Angres photographic archive. The advertisement's promotional safety language reflects marketing of its period and is not offered here as a contemporary evidence-based safety conclusion.

The historical royalty/licensing relationship with CooperVision has ended; the related patents have expired, and Angres has no current financial relationship with CooperVision concerning permanent eyeliner.

Emergence of the Term Blepharopigmentation and Continuing Medical Publication

In 1985, Angres published “Blepharopigmentation and Eyebrow Enhancement Techniques for Maximum Cosmetic Results” in *Annals of Ophthalmology*. The appearance of blepharopigmentation in the title provides an objectively dated record of the term’s use in the medical literature during the mid-1980s.

Following the 1984 *Plastic and Reconstructive Surgery* article and the 1985 *Annals of Ophthalmology* publication, Angres published “Blepharo- and Dermapigmentation Techniques for Facial Cosmesis” in *Ear, Nose & Throat Journal* in 1987. This publication continuity is important because the present retrospective returns to a subject documented contemporaneously across ophthalmology, plastic surgery, and otolaryngology rather than introducing the historical narrative for the first time decades later.

From Physician-Centered Procedure to Permanent-Makeup Industry

Over the ensuing four decades, permanent eyeliner expanded beyond the physician-centered environment in which the early procedure was developed, published, and taught. It became incorporated into the broader permanent-makeup and cosmetic-tattooing industry and is now performed by practitioners with widely varied professional backgrounds.

This transition should not simply be characterized as medicine “losing” a procedure. Broader adoption also represents successful dissemination of an aesthetic technology and increased public access. The clinically relevant question is whether safeguards appropriate to a permanent procedure performed immediately adjacent to the eye evolved as consistently as the commercial market itself.

In 2004, the American Academy of Micropigmentation formally thanked Angres for a donation of patent interests related to permanent eyeliner and identified him as the patent holder and inventor of the technique. The Academy emphasized certification and quality assurance as organizational goals. This later institutional acknowledgment is relevant not as evidence of original priority, but as documentation of the field’s transition toward broader professional standardization.

Regulation, Training, and Periocular Safety

Permanent-makeup regulation in the United States remains heterogeneous. Recent dermatologic literature has documented substantial variation among jurisdictions in the qualifications, education, and regulatory requirements applicable to permanent-makeup practitioners.

This variation is particularly important in blepharopigmentation because the treatment site is immediately adjacent to the ocular surface. Published complications include pigment migration or fanning, inflammatory and allergic reactions, infection, scarring, eyelid injury, cilia loss, and ocular injury.

Goldberg and Shorr reported pigment fanning and eyelid-margin necrosis with loss of cilia and secondary

cicatricial entropion. Later literature has described inadvertent corneal pigmentation following cosmetic blepharopigmentation and other ocular complications.

These reports do not establish that permanent eyeliner is inherently unsafe. Rather, they demonstrate that pigment depth, tissue trauma, sterile technique, pigment composition, patient selection, medical and allergy history, ocular protection, informed consent, recognition of complications, and timely referral are clinically important.

The relevant policy question is therefore not necessarily whether permanent eyeliner should be restricted exclusively to physicians. A more practical question is whether minimum evidence-based standards appropriate to a permanent periocular procedure should apply regardless of practitioner category.

The Role of Medicine Today

The history of blepharopigmentation suggests a constructive role for medicine rather than an attempt to reclaim exclusive ownership of the procedure. Plastic surgeons, ophthalmologists, dermatologists, otolaryngologists, oculoplastic surgeons, and other physicians can contribute to consensus standards for periocular anatomy, pigment depth, ocular protection, infection prevention, patient selection, contraindications, informed consent, recognition of abnormal healing, and referral pathways for complications.

The growth of permanent makeup makes standardization more important, not less.

Historical Chronology

Year	Documented milestone
1983	Development and patent filing concerning a microsurgical permanent-eyelid-liner method and apparatus.
1984	Publication of the Angres Permalid-Liner method in <i>Annals of Ophthalmology</i> .
May 1984	Publication of “Eye-Liner Implants: A New Cosmetic Procedure” in <i>Plastic and Reconstructive Surgery</i> , reporting a 2-year experience involving 250 eyelids.
1984-1985	Physician education and early commercial dissemination; CooperVision markets Natural

	Eyes.
Apr 2, 1985	U.S. Patent No. 4,508,106 issued.
May 5, 1985	Charles S. Zwerling, MD, writes contemporaneous correspondence following observation of the Angres eyelid technique.
1985	Publication of “Blepharopigmentation and Eyebrow Enhancement Techniques for Maximum Cosmetic Results.”
1986-1987	International patent publications and grants continue; Canadian Patent No. 1,220,691 granted Apr 21, 1987.
1987	Publication of “Blepharo- and Dermapigmentation Techniques for Facial Cosmesis” in Ear, Nose & Throat Journal.
1989 onward	Medical literature documents complications of blepharopigmentation.
2004	American Academy of Micropigmentation acknowledges Angres’s donation of patent interests and emphasizes certification and quality assurance.
1990s-2020s	Permanent eyeliner expands substantially into the broader permanent-makeup industry.
2020s	Contemporary literature documents heterogeneous regulation and training requirements and continuing ocular and dermatologic complications.

Discussion

The documentary record supports a recognizable sequence in the development of modern permanent eyeliner: technical development, patent documentation, peer-reviewed medical publication, physician education, commercial dissemination, and expansion into permanent-makeup practice. Each phase is supported by a different category of evidence rather than a single retrospective narrative.

The patent record provides contemporaneous technical documentation. The 1984 medical publications establish appearance of the procedure in peer-reviewed clinical literature. The Zwerling correspondence

provides contemporaneous third-party recognition. The CooperVision relationship and Natural Eyes material document organized commercial dissemination. Subsequent medical publications establish continuity, while modern complication and regulatory literature demonstrates why the history remains clinically relevant.

This review does not assert that humans had never previously tattooed or cosmetically pigmented tissue around the eyes. Tattooing predates modern medicine by centuries. The narrower proposition is that the early-1980s documentary record demonstrates development, technical specification, peer-reviewed publication, physician teaching, and commercialization of a defined modern permanent-eyeliner procedure.

The unusual feature of blepharopigmentation is its location. Permanent pigment implantation occurs immediately adjacent to the eye. That fact justifies continued medical attention even when the procedure is performed outside a traditional medical office. The appropriate contemporary response is not necessarily professional exclusivity; it is standardization of safety.

Limitations

Historical priority is difficult to establish absolutely, particularly when undocumented or nonmedical cosmetic procedures may have occurred outside the published literature. Several primary archival documents remain to be fully catalogued, including the original CooperVision royalty/licensing agreement and some course materials. The complete international patent family also requires final reconciliation of certain national records.

The author is himself a principal historical participant. Wherever possible, contemporaneous third-party documentation and independent published sources have therefore been used to corroborate the archival record. Regulation of permanent makeup also varies geographically and changes over time; this manuscript does not attempt a jurisdiction-by-jurisdiction legal analysis.

Conclusions

Blepharopigmentation provides an instructive example of how a medical innovation can evolve over several decades. The surviving record documents development in the early 1980s of a technically specified permanent-eyelid-liner procedure, followed by patent protection, peer-reviewed publication, physician education, and commercial dissemination.

The procedure subsequently expanded beyond its original medical environment and became part of a large international permanent-makeup industry. That expansion represents both success and challenge:

increased public access to an aesthetic procedure, but also performance within regulatory and educational systems that vary substantially among jurisdictions.

The next chapter in the history of permanent eyeliner should emphasize consistent, evidence-based standards for training, patient selection, informed consent, ocular protection, pigment safety, infection control, recognition of complications, and referral when medical care is necessary.

Forty years after permanent eyeliner first appeared in the pages of *Plastic and Reconstructive Surgery*, its evolution from microsurgical innovation to global cosmetic practice provides both a history worth preserving and a patient-safety question worth revisiting.

Figure Legends

Figure 1. Natural Eyes professional advertisement, circa 1984-1985. Contemporary CooperVision/Natural Eyes promotional material showing before-and-after eyelid appearance. The model is identified in the Angres archive as Laura Angres. The advertisement describes Natural Eyes as a microsurgical procedure involving implantation of pigment at the base of the eyelashes.

Figure 2. U.S. Patent No. 4,508,106, “Microsurgical Method for Applying Permanent Eyelid Liner.”

Figure 3. May 5, 1985 correspondence from Charles S. Zwerling, MD, written following observation of the Angres eyelid procedure and requesting Angres’s participation in a forthcoming micropigmentation textbook.

Figure 4. Canadian Patent No. 1,220,691. Original Canadian Patent Office certificate, granted April 21, 1987.

Figure 5. Selected international patent documentation relating to permanent eyelid liner, including British, French, and German national records.

Supplemental Figure 1. June 11, 2004 American Academy of Micropigmentation acknowledgment letter concerning Angres’s donation of patent interests and the Academy’s certification and quality-assurance mission.

Supplemental Digital Content 1. Archival early permanent-eyeliner video, subject to final verification of copyright registration and PRS technical requirements.

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19. Angres GG. Copyright registration PA 25-550-089. Archival video documentation. Registration details to be verified from original certificate before final publication.

Disclosures

Historical intellectual-property and commercial interests: Dr. Angres was the named inventor on patents concerning permanent eyelid liner and historically entered into a royalty/licensing relationship with CooperVision Surgical concerning commercialization of the procedure. The patents have expired, the historical CooperVision relationship has ended, and Dr. Angres has no current financial relationship with CooperVision related to permanent eyeliner.

Current financial interests: The author reports no current financial conflicts of interest relevant to this manuscript. He has no current financial relationship with CooperVision and receives no current royalty income from the expired permanent-eyeliner patents.

Funding: No external funding was received for preparation of this historical review.

Image rights and patient permission: Dr. Angres created the historical clinical photographs, retains the original images, and states that the photographed patients granted permission for their medical and educational use. Documentation can be provided to the journal as requested.