



TWO CENTURIES OLD INTRAOCULAR LENS IMPLANTATION: A STORY REVEALED BY TWO SELF-PORTRAITS

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Our interest in a seemingly trivial but intriguing question, the nature and function of the glasses depicted in the self-portraits of an aphakic artist, Anton Graff, at dawn of the creation of modern Europe during the Napoleonic wars and the Serbian uprising against Ottoman Empire, revealed a surprising way of the advanced medical ideas and technology transfer. Three Venetians were involved: Tadini, the oculist, had the idea and technology, Casanova, the adventurer, learned about it in a European university debate and in a prison, and transferred the idea to Casaamata, the court oculist in Dresden, who was able to perform the first intraocular lens implantation, though unsuccessfully, around 1796. Casaamata's fame, our finding of the vicinity of his private hospital ward to Anton Graff's house at Altmarkt in Dresden, and the fact that both the surgeon and the artist served at the court of Augustus II of Saxony have brought us to conclusion that it was Casaamata who performed cataract surgery on Anton Graff in 1803. By measuring corneal diameters and finding neither magnification nor distortion in the size-adjusted computer images of Graff's self-portraits with and without spectacles, we have also concluded that these glasses were not aphakic. The disappearance of spectacles in Graff's last self-portrait may be an indication of: his poor adaptation to the lenses without the astigmatic correction, unknown prior to 1821; the artist's esthetic choice, as suggested by others; or the aggravation of the visual acuity and the necessity to use a loupe. This late and slow postoperative visual loss might have been caused by the age-related macular degeneration, untreated posterior capsule opacity, corneal edema due to the endothelial decompensation, or, less probably, by a macular pucker. *Acta Ophthalmologica 2017;43(1-2):31-35.*

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Uvod

„After a painless corneal incision, the opaque lens popped out by itself.” J.W. Goethe. Poetry and truth. 1833.

Introduction

Two self-portraits of the most famous German portrait painter of the second half of the 18th century, Anton Graff, are exhibited in the same oval room of the Alte Nationalgalerie in Berlin: one, earlier, with

the presumably aphakic glasses; the other, his last portrait, without any glasses. In the lines that follow, we shall prove that the glasses depicted after Graff's cataract surgery in 1803 (1) are not aphakic, and further present the circumstantial evidence that his most likely eye surgeon was Joannis Virgilius Casaamata, the man who had attempted intraocular lens implantation (2) 150 years before Harold Ridley (3) and two centuries before lens implantation became a common practice. Casaamata's link to two other Venetians, Casanova and Tadini, and their role in the transfer of advanced ideas and technology at the dawn of creation of modern Europe will also be presented.

Anton Graff, the painter

Anton Graff (1736-1813), was a Swiss-born artist whose work is more famous than his name. His extraordinary portrait of Frederick the Great has appeared on a modern German stamp, and has also been an inspiration for Andy Warhol to create a series of five graphics.

The portrait of Thomas Bruce, 7th Earl of Elgin (famous for the removal of the marbles from Parthenon in Athens) still hangs in Broomhall, the seat of this old Scottish family. The names such as Prince von Metternich, Gluck, Schiller, Lessing, and Herder appear among hundreds of portraits of the nobility and politicians, composers, and famous writers of the Enlightenment, painted by Graff's hand. During the last period of his activity, he also painted a few landscapes which anticipated impressionism. (1) Ten good years of a prolific artistic activity after cataract surgery, in Graff's case a life-long ability to paint, at the very beginning of the 19th century seems to be such an extraordinary accomplishment that his ocular surgeon deserves to be known.

Casaamata, the first intraocular lens implant surgeon, Graff's neighbor and the member of the same court entourage

In 1803, fifty years after Daviel had turned the course of cataract surgery by extracting the lens through a corneal incision (4) instead of pushing it into the vitreous, there was such a great enthusiasm for this method that even Goethe, a witness to this miraculous maneuver, devoted a few lines, cited at the beginning of this paper, to immortalize it. Those who practiced extracapsular cataract surgery after Daviel in the sovereign states yet to become Germany, were either well established professors of the highly esteemed universities, or the palimpsests of the medieval travelling charlatans. One would expect that Anton Graff, a professor at the Dresden Academy and a court painter during the reign of Elector of Saxony Frederick Augustus II (later Frederick Augustus I, King of Saxony), would choose to seek a remedy for his failed sight from a surgeon well-known at the court of Saxony, in the prosperous city of Dresden. Our search has singled out a most qualified person who both lived and worked in Graff's closest vicinity.

The oculist at the court of Saxony at that time was Ioannis Virgilius Casaamata (Quero di Piave, Venice 1747-Dresden, 1807).(5) Therefore, both Casaamata and Graff belonged to the same ruler's entourage.

Casaamata graduated from the University of Padua, and was an accomplished doctor of medicine and surgery. A contemporary inaugural dissertation gives a detailed description of Casaamata's technique

(Figure 1) of extracapsular cataract surgery after Daviel, using his own modification of the corneal knife, after having postponed operation of the very tense patients, and after having applied exsanguination preoperatively. Casaamata even made an attempt at the intraocular lens implantation after cataract extraction, a hundred and fifty years before Ridley, but the sole weight of a glass implant caused it to sink into the vitreous.(2)

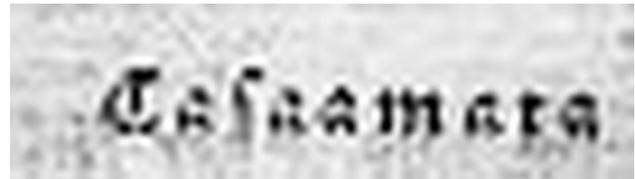


Figure 1- Casaamata's name at the beginning of the page 88 of the inaugural dissertation from 1797, which describes his technique of cataract surgery.

We are indebted to Taieb's critical and inspired reading of "The story of my life", the world famous memoirs of the Venetian adventurer Giacomo Casanova.(6) It revealed a most intriguing story about Casanova's role in the transfer of a very advanced idea of intraocular lens implantation from Venice to Dresden. In all likelihood, this idea and a set of the unheard of glass spheres intended to be implanted during cataract surgery belonged to another Venetian oculist, Felice Tadini.(7) In Casanova's presence in Warsaw, Tadini exposed a box of Venetian glass spheres, and described his intention to implant one of them after cataract extraction, only to be ridiculed by a German professor. The paths of these two Italians crossed later in even less favorable circumstances: Casanova was arrested in Barcelona, and his prison guard was Tadini, who had accepted this post in order to avoid being punished as a charlatan, and lost all hopes to perform lens implantation. Instead, his idea seems to have been transferred to Casaamata, during one of Giacomo Casanova's visits to the Italian colony in Dresden, where his mother was an actress and his younger brother, Giovanni Batista, a painter.(1,7)

There is no trace of evidence to suggest that Casaamata ever performed another implantation after his first failure. Therefore, a tempting idea that Graff's eyeglasses were not aphakic because an intraocular lens had been implanted into his eye during extracapsular cataract surgery has no ground. However, this great ocular surgeon left a remarkable legacy by turning a part of his house into a ward where patients with ocular diseases were treated, what is considered as the first hospital for eye diseases in Germany.

We have learned that Casaamata's home with the ward was at the corner of Altmarkt and Grosse Frauengasse, (8) while Anton Graff lived a few steps

away, in a house at Altmarkt number 9.(1) The only conclusion from the fact that these two neighbors also served at the same place, the Court of Saxony, can be that they were well acquainted with each other. Bearing this in mind, our hypothesis that it was Casaamata who cured Graff's cataract becomes highly probable.

To minimize any controversy, we have considered two surgeons other than Casaamata: Rudolf Abraham von Schiferli, whose dissertation in Jena in 1797 is the source of information on Casaamata's operative technique,(2) and Johann Heinrich Jung Stilling, a celebrated cataract surgeon of that time. But Schiferli left Jena to become a Swiss garrison doctor, and later a professor of surgery and gynecology in Bern, who neither practiced cataract surgery nor visited Dresden.(9) Jung Stilling was a friend of Goethe's, and Graff also knew the great German writer who witnessed and described Stilling's art of cataract extraction. However, Jung Stilling was far from Dresden in 1803, moving from Marburg to Heidelberg.(10)

Reasons for the artist's failing sight

If we accept that Casaamata was Graff's surgeon, and that the method was extracapsular cataract extraction, we can try to explain the progressive worsening of Graff's sight, which became marked in 1810/11.(1) The assumption most appealing to a modern ophthalmologist's mind is that of a dry form of age-related macular degeneration. Much simpler is the idea that he developed a posterior capsular opacity which could not be solved by a simple discision either because of the loss of Graff's faith or due to a continuous troublesome life during the Napoleonic wars, which finally culminated in Graff's movement to his daughter's home and his sudden death from typhoid fever, two months before the battle of Dresden.(11) Less probable is the development of a macular pucker caused by a vitreous loss during the operation by a surgeon whose belief that losing the vitreous was not harmful was well known.(2) Any of these reasons could cause the use of a loupe instead of the aphakic eyeglasses, and consequently, the disappearance of the spectacles from the self-portrait from 1813. But, were these really aphakic glasses?

The enigma of aphakic glasses

Between 1765 and 1813 Graff painted more than eighty self-portraits. None of those created before 1803, when he underwent cataract surgery in Dresden, and exhibited in the museums, shows him with the eyeglasses. The temple spectacles, which had been introduced in 1739,(12) appeared on his face in 1804 (Old National Gallery, Berlin), in 1805/6 (Art Gallery, Dresden), (Figure 2), and in 1809 (Art Museum, Leipzig). However, a few months before his end in

1813, we see him without glasses, protected by a green eyeshade. (Figure 3).



Fig. 2- Anton Graff. Self-portrait in the old age. Oil on canvas 1805. Courtesy of Gemaeldegalerie Alte Meister, Dresden

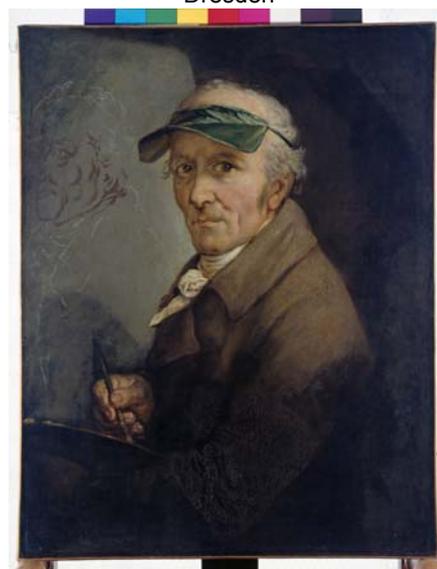


Fig. 3- Anton Graff. Self-portrait with a green eyeshade. Oil on canvas 1813. Courtesy of Alte Nationalgalerie, Berlin.

The look of Graff's eyeglasses, as well as the reason for their disappearance from the artist's face in his last self-portrait has been debated. The most reasonable interpretation seems to be that: "...the eyeglasses painted in these pictures hardly have the look of thick aphakic glasses. If one discounts a preexisting myopia, it is then a question of and esthetic pictorial choice."(13)

To check the existence of the magnifying effect of the aphakic glasses objectively, we adjusted the computer images of Graff's „Self-portrait at the age of fifty“ (1787, Hamburg Arthall), and one of his self-portraits without glasses so that the dimensions of the face and pupillary distance became equal in both

images. Then we measured the corneal diameters in these images, and found that they were equal. This suggests that there is no magnification produced by his glasses, and that they are not aphakic.

It is unlikely that quite detailed biographical texts would not have mentioned Graff's adolescent myopia had it existed. If we accept that Graff's esthetic pictorial choice was to present the aphakic glasses without the refraction, why then did they disappear from his last self-portrait? Was he ever adapted to the aphakic glasses?

We know that Claude Monet needed two long years for the adaptation to the color shift and distortions created by aphakia and aphakic correction with glasses.⁽¹⁴⁾ His astigmatism was four diopters, but a pair of his glasses in a Paris museum contains a cylinder of even seven diopters.⁽¹³⁾ It is highly probable that Graff had quite a large uncorrected postoperative astigmatism. While the art of prescribing aphakic glasses has been practiced since 1623,⁽¹⁵⁾ astigmatism was unknown until Thomas Young, and the production of cylindrical lenses did not start before 1821.⁽¹⁶⁾ It must have been hard for Graff to adapt to an inadequate correction and to paint in his usual style. Even with his previous routine, there are small signs of aphakic vision in the lighter backgrounds of his paintings which show even some blue areas, and in his free brush-work, noticeable even in his last self-portrait, but so conspicuous in his landscapes

that they were seen as a sign of the forthcoming impressionism of his paintings which show even some blue areas, and in his free brush-work, noticeable even in his last self-portrait, but so conspicuous in his landscapes that they were seen as a sign of the forthcoming impressionism.⁽¹⁾

Yet, one cannot easily discard the painter's choice to represent himself as in good old days, before the wars, operation and the glasses. As an addition to this enigma, more Graff's self-portraits without glasses, from 1806 and 1809, have recently appeared on Artnet.⁽¹⁷⁾ If they are original, this could mean that the painter either used his esthetic choice in the decision whether to paint himself with or without glasses, or that he was using them from time to time, as they were not of a great help.

The appearance of the green eyeshade is probably due to the painter's wish to stress his new practice of landscape painting. The eyeshade was a customary equipment for the outdoor painting at that time; or, it could be a simple protection from the glare at the window of an atelier. That can be seen in the self-portraits of a typical painter of the intimate atmosphere, Jean-Baptiste-Simeon Chardin.⁽¹³⁾

Conclusion

In conclusion, there is enough evidence to prove that the depicted glasses are not aphakic, as well as to suggest that Casaamata, the first intraocular lens implant surgeon, performed cataract surgery on Graff's eye. A search of a list of Casaamata's hospitalized patients might be the next task of an investigator visiting the Dresden Archive. The rationale of our study is to teach us modesty, for the medical achievements of the past were as exciting and promising as the modern ones, and the inadequacies of medical treatment at one time become so obvious at another.

Acknowledgement

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IMPLANTACIJA INTRAOKULARNOG SOČIVA STARA DVA VEKA: PRIČA KOJU OTKRIVAJU DVA AUTOPORTRETA

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Naše zanimanje za naizgled trivijalno, ali zamršeno pitanje prirode i funkcije naočara naslikanih na autoportretu afaknog umetnika Antona Grafa, u praskozorje stvaranja Evrope tokom Napoleonovih ratova i Prvog srpskog ustanka, otkrilo je neobačan način tadašnjeg prenošenja naprednih ideja i tehnologija. Učesnici su trojica Mlečana: okulista Tadini je nosilac ideje i vlasnik tehnologije o kojima je pustolov Kazanova saznao na jednom evropskom univerzitetu i u zatvoru, pa zamisao preneo Kazaamati, dvorskom okulisti u Dresdenu, koji je, premda neuspešno, izveo prvu implantaciju intraokularnog sočiva oko 1796. godine. Kazaamatina slava, naše zapažanje da mu je privatni stacionar za lečenje očnih bolesnika bio u najbližem susedstvu sa kućom Antona Grafa na Staroj tržnici u Dresdenu, kao i činjenice da su i hirurzi i umetnik služili na saskom dvoru Avgusta Drugog naveli su nas na zaključak da je 1803. godine, Grafa od katarakte operisao niko drugi do Kazaamata. Naočare koje umetnik slika na svome licu posle toga nisu afakne, jer ne proizvode ni uveličanje ni izobličenje, što smo utvrdili premeravanjem prečnika rožnjače na svim računarskim prikazima Grafovih autoportreta sa i bez naočara, svedenim na istu veličinu. Tome što naočara nema na poslednjoj od ovih slika možda je pogodovalo slabo prilagođavanje na stakla. bez korekcije astigmatizma, otkrivene tek 1821. U literaturi su navođeni i drugi uzroci: slikarev estetski izbor i korišćenje lupe zbog slabljenja vida. Do smanjenja oštine vida mnogo godina posle operacije moglo je doći zbog pojave degeneracije makule, nelečenog zamućenja zadnje kapsule, hroničnog edema rožnjače usled dekompenzacije endotela ili pakera u makuli. *Acta Ophthalmologica 2017;43(1-2):31-35.*

Key words: intraokularnosočivo, hirurgijakatarakte, afakija, istorijaumetnosti, Anton Graf, Kazaamata, Kazanova, istorija medicine

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