A Pioneer in Eyelid Plastic, Reconstructive, and Esthetic Surgery: Pietro Gradenigo

To the Editor:

The figure of Pietro Gradenigo represented 1 of the highest moments of cultural and scientific activity of Padua Ophthalmology.[1] Pietro Gradenigo (1831–1904) studied Medicine in Padua where he took his doctor's degree in 1855. After serving for some time at the Venice Hospital, he became the assistant at the Ophthalmic Clinic at Padua. Three years later he was appointed surgeon at the Venice Hospital and in 1873 he succeeded Gioppi to the Chair of Ophthalmology in the University of Padua. His contribution to the literature of his speciality have been gathered together in a large volume, edited by his pupils Ovio and Bonamico. He was interested in surgery and, in particular, in eyelid reconstruction.[2,3] After his death, Gradenigo left to Padua's Eye Clinic a series of 18 wax models representing different pathologies and surgical reconstructive techniques. AQ2

In particular, in 5 wax models Gradenigo revealed his sense of esthetic and his interest in proposing and testing new techniques for eyelid reconstruction. He was aware of the importance to reconstruct different areas of the eyelid to guarantee the correct function. In the wax model in Figure 1, for example, he shows a rotation flap of the upper eyelid, with medial pedicle, for the reconstruction of the eyelid margin. In wax models in Figures 2 and 3, it represented a transposition flap from the temporal region for the reconstruction of the upper eyelid. As well showed by the wax model, here he used a flap from the temporal region, while other times he used the frontal area.[4] This method might be considered a variant of the method of Johann Friedrich Dieffenbach (1792–1847), who first proposed the use of a skin transposition flap from the cheek region to reconstruct the lower eyelid. Gradenigo was also interested in esthetic surgery of the eyelid as is represented in the wax model in Figure 4 in which he probably would like to show a case of esthetic blepharoplasty, with a wrong approach because the scar is 2 mm above eyelid margin.

But, surely, the most interesting reconstructive technique is represented in Figure 5 in which you can see a complete upper eyelid reconstruction using the tissue of the lower eyelid. Reconstructive surgery based on grafts of tissues taken from different parts of the same body became popular thanks to the Swiss surgeon Jacques-Louis Reverdin (1842–1929). Gradenigo here shows his ability to acquire new techniques and, at the same time, to find new ways. In 1870, he published an article in which he described the procedure represented in this wax model. Traditional techniques for upper eyelid reconstruction were not very effective because the grafted tissues were always too thick and not sufficiently elastic to be moved by the elevator muscle, and also because of the scar. As a consequence, the new eyelid was not able to perform any healthy function.[5] He proposed a new method to obtain a completely functional eyelid by transporting the lower eyelid in the place of the upper one. This operation was performed in 2 stages. First, the surgeon created an artificial anchiloblefaron by sewing together AQ4 AQ5

FIG. 1. A rotation flap of the upper eyelid, with medial pedicle, for the reconstruction of the eyelid margin.

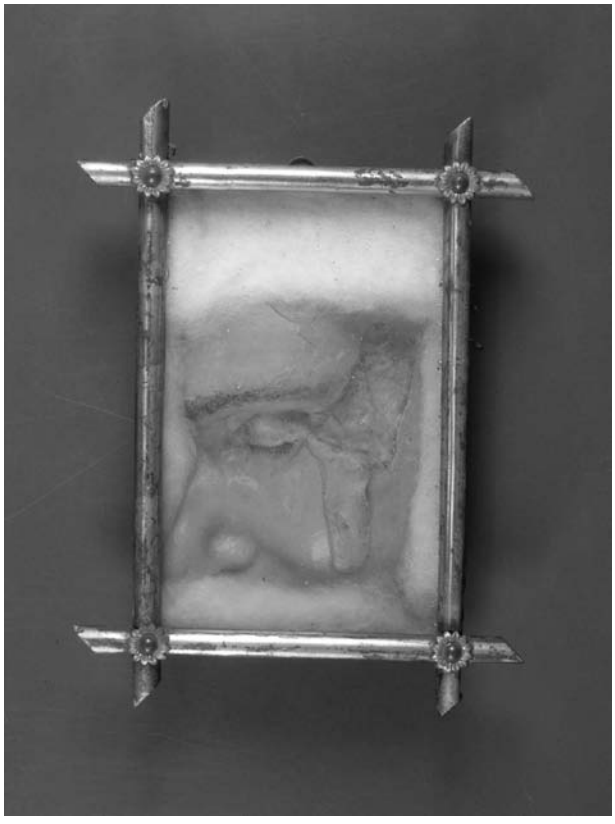

FIG. 2. A transposition flap from the temporal region for the reconstruction of the upper eyelid.

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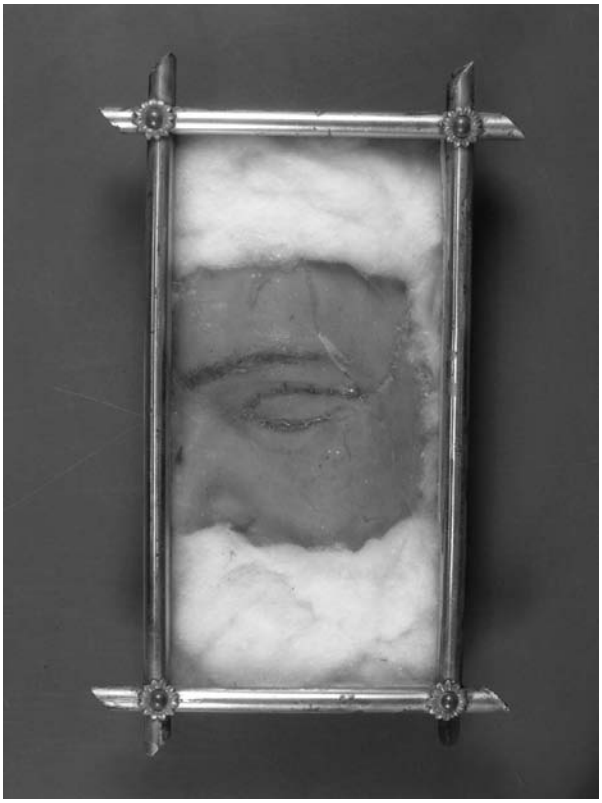

FIG. 3. A transposition flap from the temporal region for the reconstruction of the upper eyelid.

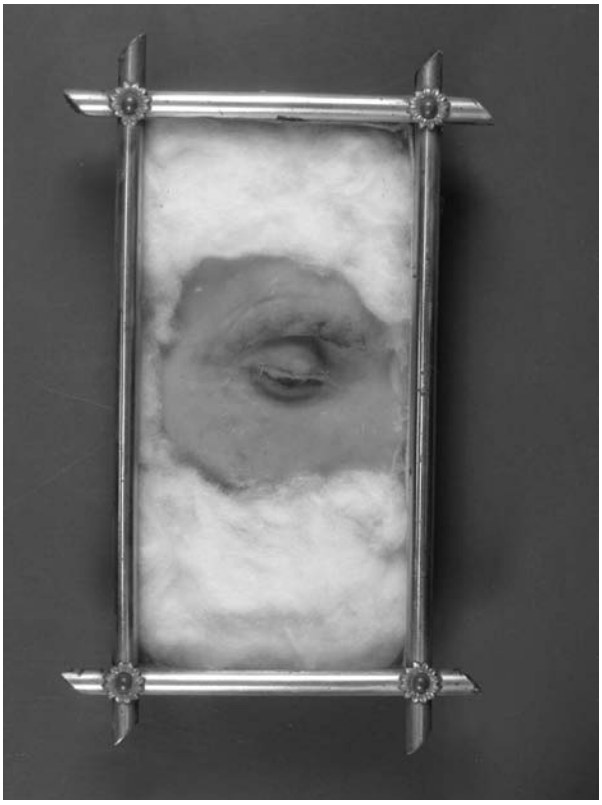

FIG. 4. A case of esthetic blepharoplasty with scar 2 mm above eyelid margin.

FIG. 5. A complete upper eyelid reconstruction using the tissue of the lower eyelid.

the lower eyelid (the lower lashes being already extirpated) with the residual stump of the upper eyelid through a series of parallel surgical silk strings. Thirty or 40 days were necessary to get a complete fusion of the lower eyelid and the stump of the upper eyelid. The second step consisted of a cut at the base of the lower eyelid following a line parallel to the arch of the osseous orbital border. Lower and upper lines of incisions were finally spot welded. So, in this quite simple way, the stump of the upper eyelid could acquire a new functional extension which could be moved by the elevator muscle. Gradenigo wrote: "The eyelid, reconstructed with this process, is naturally not dissimilar to the normal one, because it is constituted by the same tissues which compound this organ, and we cannot desire an autoplastic with better properties of an eyelid than this one which is performed with an eyelid itself."[5]

The artistic or esthetic sensibility of Gradenigo, came out also in his first lecture at the beginning of his academic carrier in Padua, in 1873, when he significantly decided to speak about the "Cosmetic of the organ of eyesight." First, according to Gradenigo: "Scope of the surgeon, not less important than every one other, after having arrested, and cured the disease, is to correct the surviving deformity."

Reconstructive surgery, at least in the field of ophthalmology, was never a mere cosmetic procedure. In conclusions, we can affirm that Gradenigo really supported the idea of a strict relationship between *art*, *esthetic sensibility*, *technical ability,* and *medical knowledge* to be a good surgeon. *Art* and *esthetic sensibility* to be able to reconstruct correctly the part previously destroyed. The correct reconstruction, as declared by Gradenigo, also determined the physiologic function. *Technical ability* to be able to carry on difficult surgical procedures such as those on the eyes. *Medical knowledge*, finally, was

essential to have a critical approach, by which eventually being able to improve new methods based on new ideas, as done by Gradenigo himself.

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AUTHOR QUERIES

AUTHOR PLEASE ANSWER ALL QUERIES

AQ1—Please confirm the disclosure statement.

AQ2—Please approve the edits made to the sentence “After his death,... reconstructive techniques.”

AQ3—Figures 2 and 3 have the same caption. Please clarify whether Figures 2 and 3 can be given as part labels “A” and “B”, respectively, in Figure 2.

AQ4—Please approve the edits made to the sentence “He proposed a... the upper one.”

AQ5—Please approve the edits made to the sentence “This operation ... in 2 stages.”

AQ6—Please rephrase the last part of the sentence, “First, the surgeon ...surgical silk strings.” for clarity.

AQ7—Please approve the edits made to the sentence, “The correct reconstruction, ... physioogic function.”