Advances in Plastic & Reconstructive Surgery

Applis Publishers

Review Article ISSN: 2572-6684

Pioneer Doctors Who Made the History of Japanese Aesthetic Surgery

Yukio Shirakabe, Jiro Kataoka, Mia Shirakabe

Sapho Clinic, B1, 5-17-16, Roppongi Minato-ku, Tokyo, Japan

Abstract

Background: There were three great surgeons in the dawn of Japanese aesthetic surgery's history. The first was Kotaro Mikamo, who was an ophthalmologist. The second was Toshikazu Nishihata, who was an otolaryngologist. And the third was Kozo Uchida, who was also an ophthalmologist. These three doctors offered medical procedures to create beauty before aesthetic plastic surgery was introduced into Japan. They pioneered aesthetic surgery in Japan, responding to the rapid influx of Westernization after the Meiji Restoration in the late 19th century and the second wave of Westernization after World War II. In fact, they paved the way for aesthetic surgery in Japan as well as other Asian countries. As I was digging into these three people, I found each individual's unique humanity other than their magnetism as doctors who had performed surgery and created new surgical techniques. First, I will address Kotaro Mikamo. He wrote about blepharoplasty technique in a medical journal called Chugai Iji Shimpo published in 1896. This was the world's first article on double eyelid surgery. Not only operative procedures, but also pre- and post-operative photos were reported. I will talk about his career, his motives toward aesthetic medicine, and others, focusing on this article.

Keywords: *Aesthetic surgery pioneer; Ophthalmologis;, Double eyelid surgery; Trichiasis.*

Introduction

Immediately after I reported on the world's first double eyelid surgery performed by Kotaro Mikamo, a Japanese ophthalmologist, in Annuals of Plastic Surgery in 1980, I found Dr. Kotaro Mikamo information and documents through the Internet, Japanese National Diet Library, and other sources. I report here the results of my research. I will also add his background and career trajectory, in order to better understand the doctor's way of living in those days.

Personal history of Kotaro Mikamo [Figure 1]

Kotaro Mikamo (January 1859 - March 26, 1936) was born the eldest son of Masatomo Mikamo, the feudal retainer of the Tsuyama Domain (present-day Okayama Prefecture), Japan in January 1859. He attended Okayama Medical School (currently the Medical School of Okayama University) in 1880. He left the school two years later as the Education System Order was revised. He then went to Tokyo, learned at Saisei-Gakusha (the predecessor of Nippon Medical School) and Juntendo University, and passed the exam for medical practitioners in 1885 (Medical Register No. 269).

He moved a lot and worked in various places. First, he worked for Shizuoka Fukumeikan in Shizuoka Prefecture, in response to an invitation by Dr. Kodo Maruo. Then, he returned to Tokyo in 1889, and worked at Chugai Iji Shimpo Company editing medical journals. He carried out research at Inoue Eye Hospital. Upon the founding of Hamamatsu Fukumeikan in Shizuoka Prefecture, he was invited to work as a doctor. Since he attended the inaugural meeting of the Japanese Ophthalmological Society in 1897, he served as a councilor of the society. He was already practicing as an ophthalmologist in Okazaki City, Aichi Prefecture in 1906, but relocated and opened his practice in Hamamatsu City, Shizuoka Prefecture in 1913.

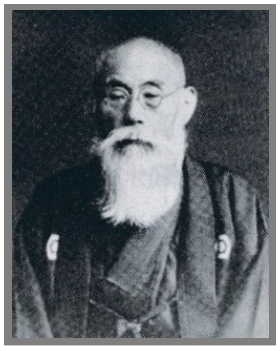

Figure 1: Kotaro Mikamo.

While publishing a book titled "Ganka-gaku" or Ophthalmology [Figure 2] as an ophthalmologist of Numazu Fukumeikan in 1895 [2], he also published a book called "Bankoku Rekishi Nenkan" (which literally means international historical chronology) in 1898 [3].

Figure 2: The book entitled "Gankagaku" or Ophthalmology written by Kotaro Mikamo, and published by Tohodo Shoten in 1895.

***Address for Correspondence:** Dr. Yukio Shirakabe, Sapho Clinic, B1, 5-17-16, Roppongi Minato-ku, Tokyo, Japan

Received: September 21st, 2019; **Date Accepted:** October 30th, 2019; **Date Published:** October 31st, 2019.

His technique for double eyelid surgery enabled the almond eyes of Japanese people to be changed into big round eyes like those of Western people. As shown in [Figure. 3], clothes were westernized during the Rokumeik an era in the 1880s, and the Westernization of facial features was made possible by medical treatment in 1896.

Figure 3: A photo of a woman wearing Western clothes during the Rokumeikan era.

The world's first double eyelid surgery by Kotaro Mikamo in 1896

The article titled "Ganken Seikei Shogi" (which means small blepharoplasty technique) was featured in Chugai Iji Shimpo (Japanese medical journal) No. 396 published in 1896. The author was Kotaro Mikamo, an ophthalmologist then at Numazu Fukumeikan. He introduced a surgical technique to artificially create a double eyelid by suturing a monolid or single eyelid. He performed this technique developed by himself, on more than a dozen young women. He wrote that every attempt was successful and received unexpected gratitude from his patients.

A part of "Ganken Keisei Shogi"is shown in [Figure. 4]. This world's first literature on double eyelid surgery is easy to understand both anatomically and surgically even in the modern age. Below is the full translation of "Ganken Keisei Shogi" written by Mikamo in 1896. Therefore, in sentences from the following paragraph through Case 3, "I" means Kotaro Mikamo, and present tense means what was happening in 1896.

Figure 4: The article written by Kotaro Mikamo about his blepharoplasty techniques published in Chugai Iji Shimpo No. 396 in 1896.

A monolid or single eyelid is a small tissue defect of the upper eyelid. It is a condition that most ophthalmologists, even Western ophthalmologists who carefully observe and seek the truth, would overlook. Japanese ukiyo-e artists and novelists, however, paid close attention to this condition. A partial lack of fibers inserting into the skin of the palpebral part of orbicularis oculi muscle makes it impossible to form a double eyelid, which they regard as a symbol of gentle cuteness. Monolids sometimes make women look unamiable.

The tendon of the levator palpebrae superior is muscle spreads like a fan from the eye orbit, and vertically divided into three layers. Its most superficial layer penetrates the space between the fiber bundles of the levator palpebrae superioris muscle, and inserts into the skin of the upper eyelid. When the levator muscle is raised to open the eye, the skin is also elevated to prevent ptosis of the upper eyelid. As a result, a double eyelid fold appears below the eyebrow arch when the eye is open. Therefore, the absence of these fibers results in fatty ptosis. The monolid that I have referred to is caused by a defect of the small part belonging to the lower portion of these fibers.

Physiologically, double eyelids are the norm, because there should be an arch-shaped fold on the upper eyelid to respond well to the vertical movement of the eyelid. When observing people with monolids opening their eyes, the upper eyelid skin always slightly droops and overlaps the root of the upper eyelash, somewhat narrowing the visual field.

To my knowledge, there is no report on double eyelid surgery. That's why I mention physiological results of the research I have carried out on several hundreds of people since last year, and then discuss a surgical technique to treat this tissue defect or the so-called "small blepharoplasty technique".

Proportion

This small tissue defect, or monolid, is a commonly observed defect. In my research, 17 to 18 out of every 100 Japanese people had monolids; the others had double eyelids. I presume I should not say all had physiologically and commonly double eyelids. However, only 1 or 2 cases had significant fatty ptosis.

Position

The distance between the double fold and the upper eyelid margin significantly varied among individuals. It was 8 to 12 mm for most cases in my research, where the maximum was 15 mm, and the minimum was 4 mm. I saw a person with 2 mm; narrower than the minimum. These creases did not appear as double eyelids. To measure them, I put my fingers under the eyebrow arch to raise the upper eyelid, told the subjects to look downward, extended the skin, and measured the maximum width of the center. After extending the skin, in the bottom of the double crease I found a thin groove-like line. Strangely, despite the significant difference in the distance from 4 mm to 15 mm, when viewing the subjects with their eyes open from the front, they showed similar double eyelids. The creases of subjects with a wider distance were deeply retracted.

Shape

It is remarkably diverse including deep double eyelids, shallow ones, ones which slightly appear in the central part and who's both ends disappear, ones which are in parallel with the upper eyelid margin, and ones whose lateral end gradually rises away from the eyelid margin and disappears. But the medial end always gradually gets closer to and blends in with the eyelid margin.

In some cases, there is an extrafold between the doublefold and the upper eyelid margin. I have seen three folds on the upper eyelid of a 20 year-old woman. In most cases, the double eyelid line appears in an arched shape. In rare cases, the line is crossed in the middle. This line is bilaterally symmetrical. Many people have asymmetrical double eyelids in height, size and shape. Some people have a double eyelid on one side and a monolid on the other side. A double eyelid may turn into a monolid for several days after the onset of blepharitis. In contrast, a monolid may temporarily become a double eyelid by accident. This fold seems to be closely related to myopia. Nearsighted people have a habit of narrowing the palpebral fissure. This habit often can cause a double eyelid fold to disappear and become a monolid. On the other hand, a few shortsighted people have significantly droopy eyelids, which may overlap their eyelid margins, narrowing the palpebral fissure. In this case, it looks like a single eyelid in appearance. Skins fold runs obliquely to the nasal bridge at the medial canthus in the monolid. This is the so-called epicanthus or Mongolian fold. This fold occurs in a monolid, and never in a double eyelid. Fig. 5 shows a mild epicanthal fold on the right eye, but the epicanthal fold on the left eye almost disappears because it became a double eyelid after surgery [Figure 5].

Figure 5: Preoperative and postoperative photos. Preoperative: monolid on her right eye and double eyelid on her left eye. 20-day postoperative photo: double eyelids on both eyes.

Age

It is said that people with double eyelids account for more than 80% of adults. In fact, I have never seen any double eyelids in newborns. I have however once seen very obvious double eyelids in a 6-month old baby. This is the only case I saw double eyelids in babies. Therefore, I think that many double eyelids occur after one year of birth, or from 3 or 4 years to 6 or 7 years of age. When folds occur due to aging, many folds occur. The presence of these folds affects not only the facial appearance, but also the size of the visual field when looking upward. As noted previously, there is a flexible conjunctival fornix fold inside the eyelid, to which a double eyelid fold forms in response, outside the eyelid. Without a double eyelid, the skin would droop, overlap the upper eyelid margin, and cover the upper visual field. Impairment of visual field as well as that official appearance should be the indications for double eyelid surgery.

Technique

Dr. Komoto reported a technique to improve the eyelid by incising cartilage from the back side of the upper eyelid in trichiasis surgery in his book "Ganka-gaku" (third edition), and said "(this technique) creates pretty double eyelids." I observed him performing this technique many times. I tried my own technique on a few dozens of patients, and obtained good results. I developed a double eyelid surgery inspired by Dr. Komoto's expression, "creates double eyelids". Initially I was afraid my double eyelid surgery was not worth telling, but I came to think it was worth it because it was my original idea. My technique is used for monolids and does not use excision or incision of cartilage. The purpose of this surgery is also different from that of Dr. Komoto's surgery [Figure 6].

Figure 6: Case 1. A photo taken 20 days after double-eyelid surgery was performed on her left eye. Her visual field was also expanded. This photo shows strong epicanthus of her right eye, highlighting the difference between the right and left eyes before surgery. Her right eye surgery produced good results similar to her left eye.

First, topical anesthesia with a cocaine ophthalmic solution is given into the eyelid. A curved line is drawn with an iodine tincture on the upper eyelid: The width of the double eyelid is 6 to 8 mm in the middle, and each end is gradually approximated to each eyelid margin so that it looks like a double eyelid. The curved line represents the line where sutures will be placed to create a double eyelid. Second, prepare a suture with two needles, one on each end. Make three sets of these sutures. Invert the eyelid, insert a needle from the fornix area away from the upper margin of cartilage, pass the needle through all the eyelid layers, and take it out of the line drawn with the iodine tincture. Then, pass another needle on the other end in the same manner at 3-mm intervals, and finish by tying both ends of the suture on the outer skin. It looks unnatural just after the operation, because a wide horizontal groove appears in the middle of the eyelid. It seems too wide, but this is not surprising. When I used this technique for the first time, I passed a suture at 8 mm from the eyelid margin. Because it looked too wide during the operation, I tied the suture at 5 mm. However, it was due to postoperative swelling. After the swelling completely disappeared several weeks after the operation, the width of the double eyelid became significantly narrower. The first key point to note in this surgery is the height of the puncture. If it is narrow, the fold gets close to the eyelid margin, and if wide, the fold becomes too wide. On average, 6 to 8 mm is good. Once you learn the knack of it, you can be said to have mastered this technique. If it is too wide, a 2-mm wide skin strip is excised and sutured between the double eyelid line and the upper eyelid margin. Then, the line gets close to the margin, and the fold becomes narrow.

The second key point is the period until the removal of the suture, which is significantly related to the depth of the fold. You can usually remove the suture after 48 hours to create shallow double eyelids, and after 4 to 6 days for deep ones. But the period depends on the season. In summer, it should be shortened, and in winter lengthened. The timing of suture removal also depends on whether or not the path of the needle exhibits signs of infection. If you remove the suture too early, the surgery will be ineffective. If too late, the scar will be notice-

able, and the groove will be deep and unnatural when the eyes are closed. If you understand these facts, you can perform this surgery successfully.

I performed this surgery on more than ten young women, and never failed. Some had monolids on both sides and others had a monolid on one side. I was appreciated by them more than I had expected. I would like to share a few photos of my patients. No scar is visible and the results of surgery are considered artwork.

Case 1: An 18 year-old woman

She suffered from blepharitis marginal is for many years, and sought for outpatient treatment. The blepharitis marginal was cured through my treatment. But the palpebral fissure was slightly narrow; 25mm in transverse diameter and 8 mm in longitudinal diameter. In particular, her eyes were monolid and the visual field was only 25 degrees superior to the point of fixation. Thickening still remained in her eyelid margins and the treatment effect was doubtful. So, I tried my double eyelid surgical technique on her left eye, and succeeded. The visual field extended to more than 40 degrees superiorly. If you pay close attention to her right eye in Figure 6, you will find a rather strong epicanthal fold on her right eye [Figure 6]. The photo in Figure 6 was taken 7 days after the removal of suture of the left eyelid. Immediately after taking this photo, I performed the surgery on her right eyelid, and obtained as good results as the left one. I put in Figure. 5: a photo of the postoperative left eyelid and preoperative right eyelid in order to show the clear difference between right and left eyes.

Case 2: A 16-year old woman

She naturally had a double eyelid on her right eye and a monolid on her left eye. She visited my clinic seeking double eyelid surgery. The groove on her right eyelid was 9 mm. Therefore, I decided the suture line should be less than 8 mm on her left eyelid. As evidenced by Figure 6, however, her left eyelid fold seemed slightly higher than her natural right eyelid fold. Because the entire postoperative fold stand to be higher, I make a point of suturing a little lower than the other eye when performing surgery on only one eye. [Figure 7] is a 40-day postoperative photo.

Figure 7: Case 2. Her congenital double eyelid was 9mm on the right side. The double-eyelid fold was marked at 8mm on the left side, which looked somewhat wide 40 days after surgery.

Case 3: A 17-year old woman

She was born with a monolid on the right side and a double eyelid on the left side. Because her left double eyelid fold was 8 mm, a suture was placed at a little more than 6 mm on her right eyelid. I placed suture sat two sites because she asked me to make a shallow eyelid like the other one. When the suture was removed on the fourth postoperative day, the fold still looked wide. [Figure 8b] was photographed before the operation, [Figure 8a] on the 21st postoperative day.

Fig: 8A **Fig: 8b**

Figure 8: Case 3. Right blepharoplasty. a: A 21-day postoperative photo. A right double eyelid was created at a little more than 6 mm in harmony with the left double eyelid (8 mm). b: A preoperative photo.

To treat fatty ptosis, Dr. Fuchs' or Dr. Holts' technique for trichiasis is usually chosen. These techniques are actually effective, but leave ugly scars. I believe my technique will be good for mild to moderate fatty ptosis although I have not had an opportunity to try it yet. It is not suitable for severe fatty ptosis because it creates deep double eyelids. In fact, my technique has shown some efficacy in epicanthus. It is also an artful technique, which transforms an ugly scar into beauty.

It is because of the following reason: After surgery, connective tissue regeneration occurs along the path of the needle inserted from the fornix. This new connective tissue connects the tendon inserted into the cartilage of the levator palpebrae muscle, which creates a double eyelid along the scar by pulling on the skin during the contraction of the levator palpebrae muscle. This is similar to the physiological function of fiber.

This technique leaves no external scar. With some experience, you can get what you want in size, height, depth, and shape. The technique recovers the physiological function of fiber despite fiber deficiency, and also enhances the beauty of young women. I could never have imagined they cared so much about their looks. My patients smiled from ear to ear, and thanked me for the results of their surgery".

Discussions

As Kazumichi Hashimot [6] notes in the medical journal called "Kangokanri" published in 2009, the above article by Mikamo is the earliest known literature discussing cosmetic surgical techniques in Japan. But it seems that this article did not receive much attention and was forgotten. He may have been way ahead of his time. There was no discussion on similar techniques until 1926, 30 years later, when Kozo Uchida performed the first buried suture double-eyelid blepharoplasty and reported his operation.

I came across Mikamo's article about double-eyelid surgery at the library of Okayama University Hospital in 1980, and made a report about it at the American Society for Aesthetic Plastic Surgery (ASAPS) [7] in 1983. In 1985, Mikamo's technique was published in Annals of Plastic Surgery [1], and recognized as the world's first double eyelid surgery.

Mikamo wrote that a monolid would affect not only looks but also visual field, and a double-eyelid surgery would improve both. However, at the end of his article he emphasized that the beauty of young women would be enhanced by this surgery. Given this, it would appear that he was mainly interested in the aesthetic aspect. As 30 years have passed since the Rokumeikan era, when clothes were westernized, the age of aesthetic surgery to westernize the eyes had just began.

Mikamo said his technique was inspired by Jujiro Komoto's incision technique [Figure 9] [8] to treat trichiasis. Komoto was then a professor with Department of Ophthalmology, Faculty of Medicine, and University of Tokyo. His technique was a modified procedure of Hotz's trichiasis surgery [Figure 10] [9]. It was almost the same as the currently available incision double eyelid surgery. Because these techniques by both Komoto and Hotz aimed to improve trichiasis, it could be argued that Mikamo was the first who reported on a technique to create a double eyelid for cosmetic purposes. He invented a technique to change monolids unique to Asian people into double eyelids to make beautiful big eyes.

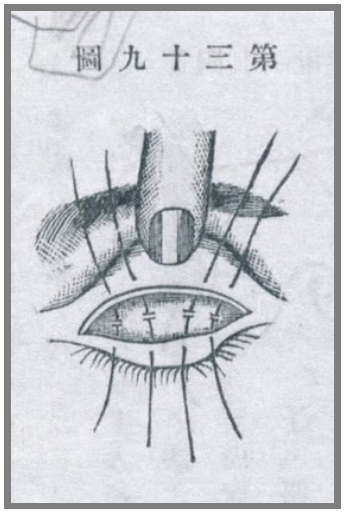

Figure 9: Komoto technique for trichiasis. This is almost similar to the current incision double eyelid surgery. Fig. 8 is quoted from "Ganka shujutu" by Kenza- buro Ogawa published in 1905.

By the way, the buried suture double eyelid blepharoplasty reported by Kozo Uchida in 1926 was the world's first buried suture double eyelid surgery [10]. For this technique, an absorbable catgut suture was used and no suture removal was necessary. The suture was threaded through three points of the upper eyelid skin and the knots were buried under the skin, which was similar to Mikamo's technique. Uchida reported that he invented a method of turning monolids into permanent double eyelids without using a scalpel in just a few minutes [11].

In 1954, Filipino doctor, Sayoc [12] reported on incision double eyelid surgery in English at the American Academy of Ophthalmology Annual Meeting. This was the first English report on double eyelid surgery. Kozo Uchida reported his double eyelid surgery at medical

Figure 10: Hotz technique for trichiasis. Fig. 10 is quoted from "Gankagaku" by Jujiro Komoto published in 1907.

meetings and published in ordinary magazines in Japan, but did not write medical literature in English or Japanese. In 1962, Kozo's achievement was published in English by his son, Jun'ichi Uchida in British Journal of Plastic Surgery [13], and gained worldwide recognition.

References

1. Shirakabe Y. The double-eyelid operation in Japan: its evolution as related to cultural changes. Ann Plast Surg. 1985; 15: 224-241. [Crossref]
2. Mikamo K. Gankagaku (pocket book of ophthalmology*). Proofread by Ito M. Tohodo. 1895. [Crossref]
3. Mikamo K. Bankoku rekisi nenkan (International historical chronology*). Maruzen. 1898. [Crossref]
4. Mikamo K. Ganken keisei shogi (blepharoplasty tricks*). Chugai Iji Shimpo (Chugai medical journal). 1896; 396:9-14. [Crossref]
5. Komoto J. Gankagaku Jokan (Ophthalmology 1st volume *). 1907. [Crossref]
6. Hashimoto K. Biyo seikei (Cosmetic surgery*). Kangokanri. 2009; 19: 1004-1005. [Crossref]
7. Shirakabe Y. The double-eyelid operation in Japan: its evolution as related to cultural change. Presented at the 17th ASAPS in Los Angeles, April 17-22, 1983. [Crossref]
8. Ogawa K. Ganka shujutsu (Ophthalmic surgery*). Tohodo Shoten. 1905. [Crossref]
9. Hotz FC. Remarks on 177 operations for entropion and trichiasis. Arch Opthal. 1882; 11: 242-250. [Crossref]
10. Uchida K. Uchida-shiki jukenjutsu (Uchida's double-eyelid surgery*), 1926, Presented at the Annual Meeting of the Japanese Ophthalmological Society. No literature is available. [Crossref]
11. Yamashita Y. Rupo biyo seikei (Reportage cosmetic surgery*). Sanichi Shobo, 1991; 97. [Crossref]
12. Sayoc BT. Plastic construction of the superior palpebral fold. Am J Ophthalmol. 1954; 38: 556-559. [Crossref]
13. Uchida J. A surgical procedure for blepharoptosis vera and for pseudo-blepharoptosis orientalis. Br J Plast Surg. 1962; 15: 271-276. [Crossref]