Dr Jules Gonin: Burning the Hole

Jules Gonin: (1870–1935)

"In order to effectively fight a pathological process, we must know its nature and anatomic conditions. Only the study of pathogenesis of spontaneous detachment, based on facts and not on hypotheses, will make it possible to find the treatment of this disease".

Jules Gonin

Intelligence, analytical thinking, problem-solving skills, creativity, vision, passion, articulation, resilience, self-confidence, adaptability, interpersonal skills, and courage to take risks are some qualities that are considered important for attaining an ‘audacious goal’ and these were embodied by the father of retinal detachment (RD) surgery, making him an undisputed role model for ophthalmologists.[1]

Jules Gonin was born in Lausanne, Switzerland on August 10, 1870. In 1888, he joined the College of Science and studied medicine at the University of Lausanne. In college, he was part of and also the President of the ‘Zofingue’, a Swiss fraternity with aim of “free school of free ideas”, supporting liberal ideology. His research topic was on development of wings in the chrysalis and with a distinction from the University, he entered the Institute of Pathology in Lausanne.

For a year, between 1894 and 1895, he travelled to different parts of Europe and became interested in ophthalmology. In 1896, he started his training in ophthalmology under Dr Marc Dufour, the first professor of ophthalmology in Lausanne and Director of the Eye Hospital. Three years ago, Dr Dufour had asked Gonin, a medical student then, to temporarily take over the work of his only assistant who had fallen ill. It was the beginning of a long friendship and mutual respect. Dufour, who had trained with the likes of Liebreich, Horner and von Graefe, took Gonin under his wings as his assistant. This hospital was itself a new establishment, erected only in 1873, next to an asylum for the blind built in the first half of nineteenth century.[2] Gonin went on to become one of the founders and also the first president of the Swiss Ophthalmological Society, established in 1908, the director of the Eye Hospital in 1918 and in 1920, the Professor of Ophthalmology at the University of Lausanne.[3]

During his training, he was involved with several projects related to bacterial conjunctivitis, ocular tumors, and hereditary retinopathies. He developed a method to preserve enucleated globes in formol-hardened gelatine. Between 1902 and 1921, Gonin was completely absorbed with research on retinal detachment. At that time, retinal detachment had no known cure and surgical success rates were less than 5%. Dr Dufour appointed Gonin with the task of writing a chapter on retinal detachment for the French Encyclopaedia of Ophthalmology.[3] Together, they reviewed the existing literature which confirmed that the pathogenesis of retinal detachment was actually unknown with multiple hypotheses but no concrete evidence. Helmholtz’s ophthalmoscope had given the ideal tool to observe retinal tears but these were considered a secondary consequence of the detachment. Gonin and Dufour pursued the quest for finding not just the retinal tear but the cause and management of retinal detachment. Unlike their contemporaries, they often used a modified indirect ophthalmoscope based on Reute’s “inverted image instrument” which allowed better visualization of the peripheral retina and they could identify retinal tears in 60% of their patients.[3] His first publication was on the pathogenesis of spontaneous retinal detachment based on his observations on enucleated eyes. In 1904, he presented a paper at the International Congress in Lucerne highlighting that the vitreous may have role to play in the development of traumatic retinal detachment. His findings were similar to those reported by Leber and Nordenson with the addition that pre-equatorial chorioretinitic foci, to which the vitreous was adherent, determined the site of retinal breaks. In the Presidential address at the Congress, Dr. Dufour made a prophetic proclamation, hailing Gonin’s ability to find a cure for retinal detachment, “Gentlemen, do you believe that there will never be a means to re-attach the retina? No, I have faith in science. And I bless the one of us - or of our successors - who at a future Congress will make the great announcement, as great as the one by Albrecht von Graefe at the Brussels Congress, that the treatment of glaucoma had been found.” Interestingly, Gonin was also the author of diseases of optic nerve, amaurosis and amblyopia for the Encyclopaedia.[2]

Between 1919 and 1934, Gonin published 40 papers on pathogenesis and surgical treatment of retinal detachment where he emphasized that the hole was the cause rather than the consequence of the retinal detachment. The hole must be treated by the closure of the hole. He developed ignipuncture, his trademark technique of treating retinal breaks by cauterezation which induced a chorioretinal scar resulting in the closure of the break. Gonin himself emphasized that this was not the only method to produce a scar. He would first meticulously localize the breaks with a direct ophthalmoscope. The patients would then be advised complete bed rest with both eyes patched, in a position that would facilitate the resorption of subretinal fluid, allowing the retina to settle. Once the fluid had maximally resolved, he would estimate in disc diameters the distance of the break from the ora and then determine the distance in millimeters from the limbus. The meridian of the tear was marked on the cornea with India ink. He performed the surgeries under local anesthesia. After incising the conjunctiva, he marked the site of the tear. The sclera was pierced with a Graefe knife and a curved thermocautery, heated white, was applied to the retinal break through the small sclerotomy. The subretinal fluid would drain out along with the steam from the thermocautery. The conjunctiva was then closed with a few sutures. The patients were again kept on strict bed rest for a week with bilateral patching of eyes. The head was placed in a position that put the break in the lowest position, allowing
the fluid to get absorbed. He would then remove the patch and examine with an ophthalmoscope. He defined a successful surgery as the one with complete and lasting reattachment, not just subjective improvement. If everything was fine, gradually the patient’s head was raised and activities increased. Unlike the modern-day retinal surgeries, patients would often be discharged after almost 3-4 weeks. He treated a traumatic RD for the first time in 1913 and an idiopathic RD in 1916. The cure rate of retinal detachment shot up from 1% to 30–40%.

But this was not enough to make his colleagues believe in the ingenuity and efficiency of the procedure, enounced emphatically by Prof. Gabriel Sourdille, “You have not convinced anyone”. He was another retinal surgeon who would make deliberate holes in sclera and retina followed by instillation of weak mercuric cyanide solution around sclerotomy sites for the treatment of retinal detachment. He remained an opponent of Gonin’s idea for years. Much later, on his deathbed, Professor Sourdille and his son signed an article for the French Encyclopaedia validating Gonin’s theories.

Three women played very important parts in his life and works. In 1929, one of Gonin’s students, Noëlle Chome-Bercioux, filled in for him at the International Council Congress in Amsterdam, ably describing his surgical techniques and results. It was then that his work started receiving international recognition. Gonin’s work became exahustingly strenuous with his teaching commitments, patients, and visitors coming from far and wide. His former student, Jean Rumpf recalled, “Helping him was a desperate task; he would write on any piece of paper or on any blank space he found in an old notebook; he had no alphabetical files of his some 38,000 private patients and got indignant if one of his patients forgot his code number from one visit to another”. “Professor, I cannot afford to be as disorganized as you are,” Noëlle Bercioux had once snapped at him. But she not only helped him concentrate on his research and handled tours and demonstrations to visiting ophthamologists, she also organized his work and array of files of patients. He often referred to her as his “ophthalmological daughter.” His wife would organize his papers and write his letters and manuscripts which he dictated. His daughter, Gabrielle, helped him edit his book on retinal detachment, called “Le decollement de la rete” which was published in 1934.

As the director of the Eye Hospital, he gave his associates complete freedom of clinical and surgical activities with the only condition that they would lend their patients for his lectures. He did not interfere with their surgical techniques. But patients with RD underwent the same surgery by Gonin himself. He could well be called the first true retina specialist. Once a visitor asked Gonin where his laboratory was, he pointed at his forehead and replied, “That’s my lab.”

The Nobel Prize Committee considered awarding Gonin the prize and a questionnaire was sent to several ophthalmic authorities worldwide. All of them sent favorable replies except Alfred Vogt, one of the three to describe the Vogt-Koyanagi-Harada disease. He wrongly cast doubt on Gonin’s priority in discovering the successful surgical technique to treat retinal detachment. This made the Committee reconsider their decision for a year, a glaring omission. The reasons for opposition were unsubstantiated and possibly the prize would have been conferred a year later, but for his premature death in May 1935. In his will, he gave a large part of his asset to the blind who had lost sight late in life.

A man of science, he was equally enthusiastic about politics, a supporter of proportional representation, linguistics, travel, mountain climbing, and butterflies of course. He was passionate about butterflies to the extent that he collected and sketched them till his last days. His consulting room walls were indeed adorned by butterfly specimen. Many remember seeing him roaming around the countryside with net catching the beautiful creatures even in old age. He was an active member of the Alpine club, preferring glaciers over rocks. He was once arrested in Greece having been mistaken for a spy and, in Pyrenees, he was cornered by a flock of sheep and managed to escape by barking at them. His linguistic talent included fluent French, Swiss German, Latin, Greek as well as English, Spanish, Italian, Serbian and Arabic. He referred to his skill in terms of gramophone, saying he would put on the English Gramophone record when he was about to speak in English.

Jules Gonin’s legacy lives on. The University Eye Hospital at his home country is named after him. The street that he would walk down from his home to the hospital bears his name. The Gonin Medal was established by the University of Lausanne with the Swiss Ophthalmological Society. It is awarded by the International Council of Ophthalmology every 4 years for highest achievements in ophthalmology.

Duke-Elder pointed out rather succinctly that, “It is unique that the same man, should have heard in his youth the prophetic benediction of a teacher addressed to those who would discover how to cure a certain serious disease; should search patiently during long years to attain this end; should discover, little by little, the process that is the origin of this disease; should invent the surgical procedure that cures this affliction; should succeed in his purpose in an ever increasing number of cases; should struggle endlessly to convince his confreres of the efficacy of his operation; should tie together, before disappearing, the sheaf of his works and of his experience, into a masterly monograph.”

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