

JAKUES-LOUIS REVERDIN (1842-1929): THE SURGEON AND THE NEEDLE

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Summary.- **OBJECTIVES:** With the development and rise of abdominal laparoscopic techniques, the old Reverdin needle has had a revival, because it proved to be useful for the endoscopic closure of laparoscopic access ports, in order to lower the incidence of incisional hernias. Several new modifications of the Reverdin needle, with different names, are in the market now. This new use of an old instrument, prompted a review of the life and work of Jaques-Louis Reverdin, the Swiss surgeon trained in Paris and founder of the modern Swiss surgery.

METHODS: Biographical and bibliographical review of Jaques-Louis Reverdin and his contributions to surgery.

RESULTS: Jaques-Louis Reverdin (1842-1929), born in Geneva, completed his medical studies in Paris, where he practised in several well-known hospitals such as La Pitié (with Goselin), Saint Louis (with Guérin), Lariboisière, and Necker (with Guyon). In 1869 he published and presented in several meetings, a pioneering experience of successful free skin graft procedure, that is still performed in some cases and constitutes the first organ transplantation. In 1870 he presented his doctoral thesis "Etude sur l'uréthrotomie interne" with the experience of his master Guyon (63 operations), gaining the Civiale prize and the bronze medal of the Paris Faculty of Medicine. He returned back to Geneva in 1872 to begin a long surgical practice and Faculty teaching, and he made seminal contributions to the knowledge of thyroid diseases, in particular on the clinical presentation of function deficiency following exeresis of the thyroid gland (postoperative myxoedema). His contributions paralleled that made by Theodor Kocher in Bern, the surgeon that received in solitary the Nobel prize for these studies in 1909. With Jean-Louis Prevost and Constant Picot, they founded the "Revue medicale de la Suisse romande", the most important Swiss medical journal of the 20th century. He is remembered in the field of Urology for a special needle designed to pass through a suture in a time were catgut and silk were the most employed sutures to control organ pedicles.

CONCLUSIONS: Reverdin, that pertains to the glorious epoch were surgery performed under anaesthesia and with the antiseptics postulates of Lister and Pasteur, reached most of his goals, is remembered for the first human transplant (skin grafting) and, fortunately, one of the several surgical instrument he designed, the Reverdin needle, had a revival in current laparoscopic surgery.

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Resumen.- OBJETIVO: Con el desarrollo y pujanza de las técnicas de laparoscopia abdominal, la aguja de Reverdin ha tenido una nueva vida, porque se ha mostrado útil para el cierre endoscópico de los puertos de acceso de laparoscopia, disminuyendo la incidencia de hernias incisionales. El uso nuevo de este antiguo instrumento sugirió el estudio de la vida y obra de Jaques-Louis Reverdin, el cirujano suizo formado en París y fundador de la cirugía moderna en su país.

MÉTODO: Estudio biográfico y bibliográfico de Jaques-Louis Reverdin y su contribución a la historia de la cirugía.

RESULTADOS: Jaques-Louis Reverdin (1842-1929), nacido en Ginebra, hizo sus estudios médicos en París, y sus prácticas en varios renombrados hospitales como La Pitié (con Goselin), Saint Louis (con Guérin), Lariboisière, and Necker (con Guyon). En 1869 publicó y presentó en varias reuniones, la experiencia pionera de un procedimiento de injerto libre de piel exitoso, que aún se realiza en algunas ocasiones y constituye el primer trasplante de un órgano realizado nunca. En 1870 presentó su tesis doctoral "Etude sur l'uréthrotomie interne" con la experiencia de su maestro Guyon (63 operaciones). Regresó a Ginebra en 1872 para comenzar una larga práctica quirúrgica y de docencia en la Facultad e hizo contribuciones importantes para el conocimiento de las enfermedades del tiroides, en particular sobre la clínica del déficit funcional que sigue a su exéresis (mixedema postoperatorio). Sus hallazgos fueron simultáneos a los hechos en Berna por Theodor Kocher, cirujano que recibió en solitario el premio Nobel por estos estudios en 1909. Junto a Jean-Louis Prevost y Constant Picot, fundó la "Revue Médicale de la Suisse Romande", la más importante revista médica suiza del siglo XX. Es recordado en el campo de la Urología por una aguja especial creada para pasar una sutura, en un tiempo en que el catgut y la seda eran las más empleadas para el control de los pedículos vasculares.

CONCLUSIONES: Reverdin, que pertenece a la época gloriosa en que la cirugía -hecha bajo anestesia y con los postulados de la antisepsia de Lister y Pasteur- alcanzó muchas de su metas, es recordado por el primer trasplante humano (injerto de piel) y, afortunadamente, uno de los instrumentos que diseñó, la aguja de Reverdin, ha tenido una nueva vida en la cirugía laparoscópica actual.

Palabras clave: Historia de la urología. Historia de la cirugía. Historia de la medicina. Laparoscopia.

INTRODUCTION

With the development and rise of abdominal laparoscopic techniques, the old Reverdin needle had had a revival, because it proved to be use-

ful for the endoscopic closure of laparoscopic access ports, in order to lower the incidence of incisional hernias (1,2). Several new closing systems are in the market now, but most of them are in the end, modifications of the Reverdin needle, with different names (3). This new use of and old instrument, suggested a review of the life and work of Jaques-Louis Reverdin, the Swiss surgeon formed in Paris and founder of the modern Switzerland surgery (Figure 1).

Training in Paris

Jaques-Louis Reverdin, was born in Geneva-Switzerland in 1842, and he made his medical studies in Paris from 1862 to 1872. Very early in his studies, just from 1865, he practised in several well-known hospital as "intern des hôpitaux et hospices civils", so to say resident. In those years, the best times of the Paris Hospital as leaders of the world medicine and surgery were passing by, since Vienna and Berlin were gaining its medical protagonism (4), but Reverdin could practised with several of the greatest masters of the Paris surgery of the time, such as (in Hôpital La Pitié), Leon Athanase Gosselin (1815-1887), that followed Dupuytren as teacher of anatomic dissection, and worked and published anatomic studies with Denonvilliers; in Hôpital Saint Louis,



FIGURE 1. Jaques-Louis Reverdin.

Alphonse Guérin (1816-1895), that was the first to apply the ideas of Pasteur about atmospheric germs, has a major interest in urologic surgery and whose name is associated with a valve in the fossa navicularis of the penis; in Hôpital Lariboisière, and, from 1869, in Hôpital Necker with Felix Guyon (1831-1920), the master and father of French urology.

He made his laboratory practise with Louis A. Ranvier, the French histologist that also inspired the work of Joaquin Albarrán on renal infections, several years after (5).

In 1869, while working on the Service of professor Guyon, he published and presented in several meetings, a pioneering experience of successful free skin graft procedure for wound healing. The case was that of a 35-year-old man with an elbow injury during a fall and whose skin of the elbow torn away and underwent complete necrosis. Reverdin removed two small slivers of epidermis from the right arm of the patient with a lancet, and placed them in the middle of the wound. Three days after he repeated the procedure and two weeks after, the implants had united covering the wound with a pale white plaque (6). This work was an important milestone in plastic surgery, it constitutes the first organ transplantation ever and has an instant and important world success (7-9). Claude Bernard, the famous physiologist, made a comment on it, and today it is still performed in several special cases, under the name of Reverdin graft, pinch or punch grafting (10).

He was a superb medical student. In 1869, in his fourth year as intern, he gained the gold medal of the Paris Hospital, a much appreciate prize for doctors in training, and in the next year he takes care of the people from the Swiss colony injured during the Paris siege by the Prussian army led by Von Bismark, as if he wanted to follow the advice of Ambroise Paré, that said that "He who would be a surgeon should find an army and follow it". With that experience, some years later, he could teach military surgery to the Swiss military doctors and write a book on "Lessons de chirurgie de guerre; des blessures par balles des fusils" (1910).

After more than one year as a faculty member in Hôpital Necker, in 1870 he presented his doctoral thesis "Etude sur l'uréthrotomie interne" with the careful experience of his master Guyon (63 operations, no decease), gaining the valuable Civiale prize and the bronze medal of the Paris Faculty of Medicine. His conclusions insisted that the success of this blind way to treat the urethral disease was based on a careful indication, the mastering of the operation and the postoperative care of the patient. By the time, ste-

noses of the urethra was usually treated by dilation or external urethrotomy. Internal urethrotomy, performed with early instruments such as those used by Jean Civiale and Francois Guillon, was highly controversial.

Travelling through Europe

His fame as a consequence of the impact of his graft experiences, led him to embark on a tour of foreign studies, and he travelled to Milan, London, Viena and Berlin. He visited Billroth in Viena, and Thomas Spencer Wells, who was known for his ovariectomies, in London, and he said that for the first time he could see patient operated but also cured after operations. This implies that only a few patient survived to difficult abdominal operations in Paris ("I've seem not only operations, but also patients cured"), because this was a time with a high mortality in surgery due to pain, shock and septicaemia. Only in 1867 Lister published in *The Lancet* his paper on antiseptic principles for surgical practice (rinse hands immersed in antiseptic solution, instruments, gauzes and catgut treated with phenol solution), and his recommendations and that of Louis Pasteur made a complete change in the until then cruel face of surgery. All of his life Reverdin was a supporter of Lister and Pasteur theories of antiseptis in surgery and wrote some papers on anaesthesia with ether in surgery, that he preferred over the chloroform because of the difficulty to administer the correct doses of the last one, with the consequence of frequent dead of the patient (5). Not only pain, but also fever almost disappeared of the natural evolution of the operated patient.

Return to Geneve

He returned back to Geneve in 1872 to begin a long surgical practice in the cantonal hospital and in his private clinic funded with his cousin Auguste Reverdin (11). He was also a Faculty teaching at the University of Geneve (where a faculty of medicine was create in 1876) between 1876 and 1910. He taught on external operative pathology, including pathology of the urinary and genital organs of man (Figure 2).

His contributions. The Reverdin needle

He made seminal contributions to the knowledge of thyroid diseases, that were highly prevalent in Geneve and the neighbour regions, in particular on the clinic of function deficiency following total or partial removal of the thyroid gland (postoperative myxoedema or cachexia strumipriva), in 1882. On a paper presented with his cousin Auguste Reverdin, with beautiful pictures, he remarks that in this operation, "...today [Reverdin] respects the out membrane

or preserve a part of the [thyroid] gland". These observations were made at the same time by Theodor Kocher in Bern, and there was a long dispute between Reverdin and Kocher on who was the first to describe the endocrine function of the thyroid, something that contributed so much to the foundation of endocrinology as a science (12). In the end it was Kocher, having performed over 5000 thyroid operations in his lifetime, who received in solitary the Nobel prize for these studies in 1909.

Reverdin also was interested in and wrote papers on genitourinary problems (urethrotomy, penile fistula, bladder trauma, tuberculous cystitis, prostatitis, vesicovaginal fistula and urethrorectal fistula). With his two friends and colleagues from the Paris times, Jean-Louis Prevost, that was a doctor with an orientation to neurology and physiology-, and Constant Picot that was a general practician and historian, all three of them interns of the Paris Hospitals and doctors in Paris University, in 1880 they were founders of the "Revue Medicale de la Suisse Romande", the most important Swiss medical journal of the late 19th century and the whole 20th century,



FIGURE 2. Reverdin in the years of senior surgeon.

disappeared in 2004 (13). He retired in 1910 and dedicated himself to the study of butterflies, making important naturalistic studies during 18 years (Figure 3). He was a founding member and president of the Lepidopterologic Society of Geneve, wrote some 45 papers on the classification and characteristics of several species of butterflies and he gave his collections of butterflies, his book on the subject and more than 10.000 microscopic preparations of his studies to the Natural History Museum. He died in 1929 at the age of 86.

Reverdin is particularly remembered in the field of Surgery and Urology for a special needle driver that he created in 1879, with a slot eye controlled by a lever, intended to pass a suture to control organ pedicles and vessels, in a time were catgut and silk were the most employed sutures (14,15). This needle is a modification with substantial improvement of some old needles such as the Deschamps needle manufactured by Charrière and that of the German surgeon Victor von Bruns. It was made by the Swiss instrument maker Felix Demareux, and later on, it was modified by his cousin August Reverdin (1848-1908) and nephew Albert Reverdin (1881-1929), and manufactured by the best instrument makers in different angles and forms to allow to perform sutures either in profound or superficial surgical fields (Figure 4).

Dr J. Lucas Championnière, a French colleague and friend of Reverdin, said that about his needle, in 1910:



FIGURE 3. Reverdin retire and his wife.

"After you returned to Geneve, you invented a needle that not good enough has been said about. I love it, not only because I appreciate it for having employed it all my life, but above all because everyday it reminds me about the careful, meticulous, precise and practical comrade. I have used it in all its forms, I have had big ones, small ones, right ones, curve ones, and having needed a soft needle, I've made one of your model" (5).

Nowadays, with the development and rise of abdominal laparoscopic techniques, the old Reverdin needle had had a revival, because it is useful for the closure of laparoscopic access ports, to decrease the incidence of incisional hernias. Several new instruments, with different names, are in the market now for that purpose, and many of them are, in the end, modifications of the old Reverdin needle (3).

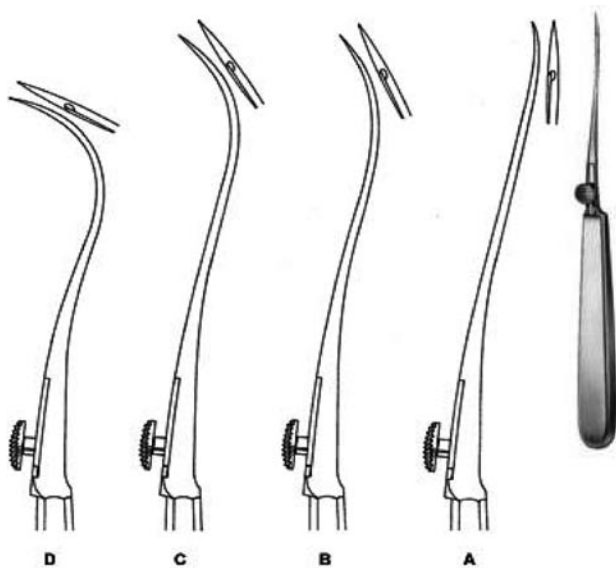
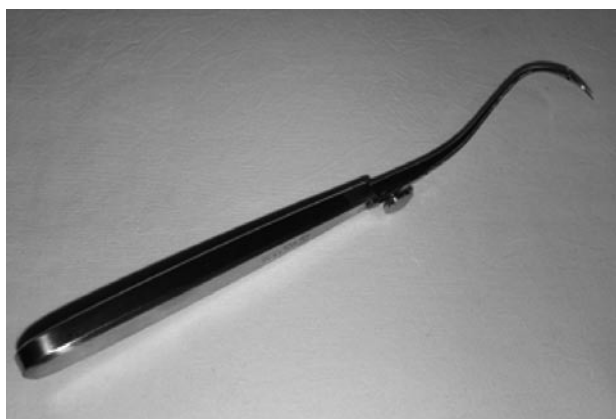


FIGURE 4. Reverdin needle and several different models.

CONCLUSION

Reverdin, the Swiss surgeon trained in Paris and founder of the modern Switzerland surgery, pertains to the glorious epoch where surgery -performed under anaesthesia and with the antiseptics postulates of Lister and Pasteur-, reached most of the goals that the old masters only dreamed about. He is remembered by the first human transplant (skin grafting) and, fortunately, by one of the several surgical instrument he designed, the Reverdin needle, that had a revival in up-to- day laparoscopic surgery.

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