

Daniel Mollière (1848-1890), the French anatomist and surgeon, and his encounters with nosocomial infections in the operating theatre

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SUMMARY

Daniel Mollière, was a French anatomist and surgeon, born in Lyon, who succeeded in his short life in making his mark in surgery. He was a prolific writer who left a series of medical treatises and a committed surgeon who was responsible for various significant innovative apparatuses in the medical sphere. As he lived in an era when the role of microbe had already been recognized, he was among the first to use antisepsis and install extreme measures against microbes, both in the air and on the skin'.

Fountains with fresh clean water, carbonic acid, cross ventilation, medical blouses, combined with Valette's apparatus for the dressing of amputations, were some of his precautions to reduce surgical infections and post-operative mortality.

Keywords: Daniel Mollière, 19th century, surgical infections, microbes, Mackintosh, Dominique Valette's apparatus.

■ INTRODUCTION

From his earliest time man has sought to understand the natural forces and risks factors affecting the patterns of illness and death in human communities. His theories have evolved as our understanding of the natural world that surround us advanced, slowly at the beginning and rapidly soon after the discovery of the microscope and the microorganisms themselves [1].

It was the year 1683 when the Dutch merchant and naturalist Anton van Leeuwenhoek (1632-1723) invented microscope and described how natural elements such as rainwater and human excretions contain microorganisms [1, 2]. When Leeuwenhoek looked through his early microscopes in

the 1600s, he realized that the world was teeming with microbial organisms, invisible to the naked eye. His invention, boosted advances in medicine and enable him to visualize and enlarge the natural world becoming the father of optic microscopy and the precursor of bacteriology [3, 4].

The scientific study of nosocomial cross-infection began during the first half of the 18th century, and from that time started a thorough deliberation towards the terra incognita of the unseen microcosmos. The real understanding of hospital infection followed upon the discoveries of Ignaz Philipp Semmelweis (1818-1865), Louis Pasteur (1822-1895), and Robert Heinrich Herman Koch (1843-1910) at the beginning of the "Bacteriological Era" [5]. In the early period of the 19th century it was far safer to undergo an operation in the patient's bed at home than it was to have the same procedure performed in the controlled environment of the hospital, as there pathological microbes dominated the unclean

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Figure 1 - Daniel Mollière (1848-1890), portrait. Les Biographies Médicales. Paris, France: Librairie J-B Bailliere et Fils, 1937.

hospital's ecosystem [6]. Joseph Lister's (1827-1912) first published account of his use of carbolic acid was in a series of articles inside "The Lancet" journal in the spring of 1867, marking the inception of the antiseptic era during a surgical procedure [7, 8].

It was Semmelweis in the period 1847-1848 in an obstetrical clinic in Vienna that noted the decrease of the puerperal fevers after hand washing and the use of an antiseptic solution for hands and surgical instruments and Lister in 1867 that



Figure 2 - 18th century gravure, Hôtel Dieu, Lyon, 1748.

established antiseptic [8, 9]. However, in France the use of the carbolic acid was already a common practice [6] and in between them among the surgeons that had embraced all the measures possible against infections inside the operating theatre, stood the French anatomist and surgeon Daniel Mollière (1848-1890) (Figure 1) [10].

Mollière's biography

Mollière was born in Lyon during 1848 and soon, at the age of 25, succeeded to become a Major Surgeon, after he had published his first masterpiece treatise "Traité des maladies du rectum et de l'anus" (Treatment for the diseases of the rectum and anus) and appointed in Lyon's renovated "Hôtel Dieu" hospital (Figure 2) [11, 12]. His superior skills gifted him with such a fame, that he had been considered as an equal to the surgeons of Napoleon's army. Even though he was French, he was specialized in London for some months in Saint Mark's hospital. During 1871, and after a short military career as a war surgeon, he had supported his thesis in Paris, "Étude du nerf dentaire inférieur" (Study for the inferior alveolar nerve), a masterpiece in human anatomy, in which he had presented with a unique fashion a study in comparative anatomy of the specific region [10, 13]. He was able to perform a series of different types of surgical operations, from nasal-pharyngeal polyps to skilful amputations, and at the same time to present vividly his methods at his audience inside the operating theatre. Thus, as soon as he returned in Lyon, he had started a series of lectures on clinical surgery, describing in thorough details his operating techniques, the post-operative symptoms, and his new abdominal surgical methods, and his perfected amputation procedure. Despite the progress on anaesthesia, he had strongly believed in the speed of every surgical action, a rapid surgery that needed a deep knowledge in anatomy, castigating the timid and clumsy surgeons, who had named them "surgeons of low speed and skill" [11, 14]. He was the first to use the procedure of rectal ether anaesthesia, which required a smaller amount of anaesthetic [11, 15-17]. He had understood the significance of the strangulation of the tissue after a hernia [11, 18], and proposed some new operating techniques with codified automatic movements of both surgeon's hands [11, 19]. He had perfected the technique for the ruptures of

the urethra, and was the first in France to accomplish an urethroplasty [11]. Mollière's topmost skills allowed him to create artificial vaginas, and on the other hand to understand completely the psychological status of the patient, even to diagnose maniacal furor, something that testifies his magnitude [20, 21].

Mollière was also very fond on the use of apparatus during a surgical operation, as such in the occasion of his manufactured osteoclast for the genu valgum observed in adolescents (Figure 3) [22, 23]. During his notable career published a great number of medical treatises on amputations, on gangrene, on trepanation, on orthopaedics, on cardiac diseases, and on anthrax, on traumatic madness, on cosmetic surgery and many more [24-31]. His unfortunate death in Lyon at age of 42, during his prime, in an influenza epidemic deprived medicine by ne of its finest [10].

Mollière's extensive antiseptic measures

Antisepsis as a concept and as a desideratum in surgery was not in fact at all new. Substances that inhibit or retard putrefaction had been called antiseptics since at least the early eighteenth century. This class of drugs the had been called antiseptics included mostly tonics and antispasmodics and was widely used for diseases with a tendency towards putrefaction and mortification [6]. Since the middle of the nineteenth century Lister tried to promote and communicate germ theories and the principles of the antiseptic system in surgery, as well as the performative aspects of antisepsis itself [8]. Since the antiseptic system had been brought to light and in France the carbolic acid was a very well know drug with antiseptic qualities, Mollière had in his arsenal enough knowledge to perform better in the antimicrobial war.

Figure 3 - Daniel Mollière-Victor Robin's osteoclast, gravure. Les Biographies Médicales. Paris, France: Librairie J-B Bailliere et Fils, 1937.

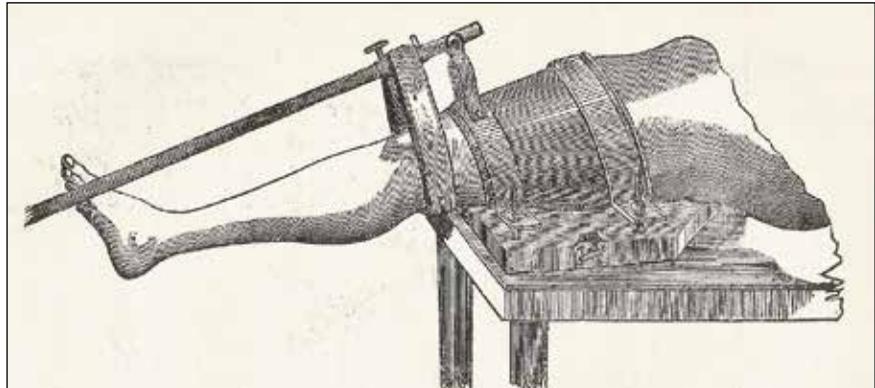
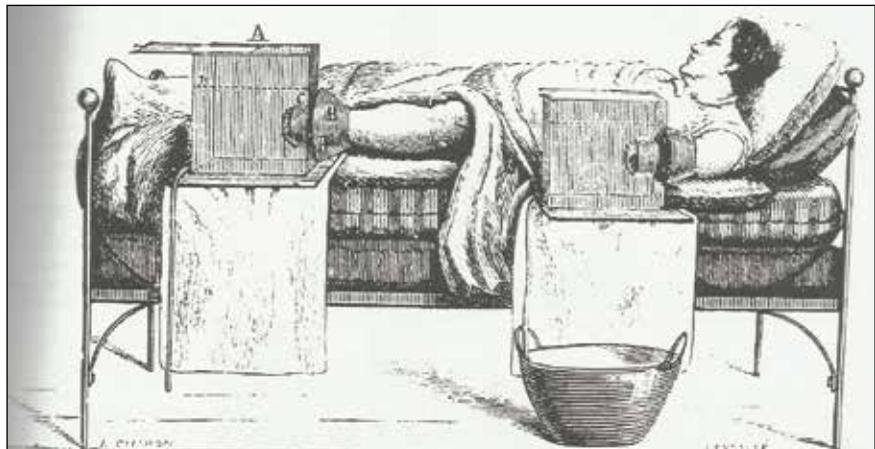


Figure 4 - Vallete's apparatus for the dressing of amputations (Lyon, Thesis, 1855).



At the peak of his kudos, Mollière, introduced his strict antiseptic rules inside his operating parlour.

Two fountains throwing fresh water at high flow for the surgeon and his assistants to clean their hands were installed, fed constantly with fresh water from the river Rhône.

He had used thin strips of surgical dressings impregnated with layer of carbolic or salicylic gauze, inside an impermeable envelop the "Mackintosh" as he had named it. He had also used cataplasms, and a carbolic spray during the operation, and finally he was wearing a black blouse, caoutchouc coated and sprayed with phenique [6]. He was among those that recommended to wear the blouse before entering the surgical hall, a common practise in France, where caoutchouc was considered a preservative against infections alongside with Vaseline [32]. He had proposed cross ventilation with big windows around the operating theatre and in fact was among the first one to promote the concept of the clean air [11, 14], an idea also adopted Florence Nightingale (1820-1910) [6].

For the antiseptis of his amputations, Mollière, had used a pioneer method firstly introduced by Dominique Valette (1821-1876) against contamination and gangrene.

An apparatus with empty wooden boxes surrounding the mutilated human limbs, connected with tubes in a pot containing water and antiseptic fluids, combined with the use of the carbolic acid [Figure 4].

With his combination he had succeeded both a vigorous charge against the aerophobia of the era, and magnificent results for his amputated patients [11].

■ CONCLUSION

Daniel Mollière, one of the ever best anatomists and surgeon of Lyon's medical history, was gifted with supreme operating skills and paramount recognition, left behind a memorable work full of surgical innovations and pioneering treatises. With his confrontation counter to air and skin microbes, he made himself "an exemplar of a new form of professionalism, which made constancy and vigilance in practice a moral duty for surgeons" of the era to come.

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