

HISTORY OF ONCOLOGY

Cervical cancer in the work of the unconventional Samuel Pozzi (1846-1918), pioneer of modern gynaecology

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Summary

Advocate of Lister's antiseptic techniques, promoter of anesthesia, professor of the first chair of gynaecology in Medical School of Paris, academician, successful politician, art collector, friend and lover of the famous, Samuel Pozzi lived a fascinating life. His book "Treatise of clinical and surgical gynaecology" published in 1890 became the gold standard

in medical practice while his approach in the treatment of cervical cancer, including cases of pregnant women, remained in vogue for almost fifty years.

Key words: Pozzi, history of oncology, cervical cancer, cancer in pregnancy

Introduction

In 19th century, cancer was a females' disease. According to the statistical analysis conducted in French state registry by the physician Stanislas Tanchou (1791-1855) between 1830 -1840, death from cancer was three times more often in women than in men while the most affected organs were the uterus and the breast [1]. One of the major challenges in diagnostics and therapeutics was cancer of the cervix uteri described in medical textbooks of that period as sores, projecting spots, ulcerations, vegetations, fungous tumours and fleshy growths. While uterine cancer was

more easily diagnosed due to the typical symptoms of vaginal discharge and hemorrhage, cervical cancer was frequently confused with syphilitic lesions or other venereal ulcers resulting in the late recognition of the disease and a delay in treatment [2]. In 1890, the distinguished gynaecologist Samuel Pozzi (1846-1918) published in his treatise entitled: "Traité de gynécologie clinique et opératoire" (Treatise of clinical and surgical gynaecology) his views on cervical cancer, influencing the physicians for almost half a century [3].

Pozzi's life and work

Samuel-Jean Pozzi was born on October 3, 1846 in Bergerac, a commune of Dordogne department, located in southwestern France [4]. He was originating from a Swiss/Italian family of Huguenots, the Pozzy's. At the age of 10, his mother Inès died from tuberculosis and soon afterwards followed the death of his sister Marie from typhoid [5]. Pozzi passed his childhood with his father Benjamin, the pastor of the community, his grandmother Mélisse and the second wife of his father, the English Mary Anne Kempe [5].

He attended the lyceums of Pau and Bordeaux and in 1864 he was enrolled in the Medical School of Paris. Pozzi was a brilliant student; in 1868 he was appointed intern (registrar) in surgery, initially at the department of Professor Théophile Gallard (1828-1887), specialist of women diseases in the Parisian Lariboisière hospital, later in Saint-Louis hospital at the department of Alphonse Guérin (1816-1895) and finally in Necker hospital at the surgical department of Alexandre Laboulbène (1825-1898) [4] (Figure 1). In 1870 the Franco-Prussian war declared and Pozzi interrupted his studies and participated as second-aid staff of the Military Health Service. In 1871, he was transferred to the department of Alfred Richet (1816-1891), at the hospital des Cliniques for his 4th and last year of internship [4]. One year later Pozzi won the gold medal of the Medical School and thanks to this achievement he had an extra-year of internship in Charité hospital [5]. In 1873, at the age of 27, he presented his thesis entitled "Etude sur les fistules de l'espace pelvi-rectal supérieur" (Study of the fistulae of the upper pelvic-rectal space) [6] and he changed his name in Pozzi [4]. Two years later, he presented his aggregation thesis on the treatment of fibrous tumours of the uterus and soon afterwards he obtained the title of professor in Medical School of Paris [7]. On July 1876, during the Congress of the British Medical Association, held in Scotland, Pozzi met the pioneer of antiseptic surgery Joseph Lister (1827-1912) [4]. Deeply influenced by Lister's doctrines on antiseptis, Pozzi introduced the technique in France and influenced several of his colleagues, contributing thus in the decrease of perioperative infections [8]. In 1877, he was elected "surgeon to the hospitals" and he was appointed surgeon to the public lunatic asylum of the Seine Department [4]. Six years later, in 1883, he became director of the Surgical Department at the Lourcine hospital and he re-organized it profoundly, creating the first gynaecological clinic in Paris, in the modern sense [4]. Furthermore, Pozzi created the first non official



Figure 1. The innovative gynaecologist Samuel Pozzi (1846-1918), who established the first Chair of Gynaecology in Paris.

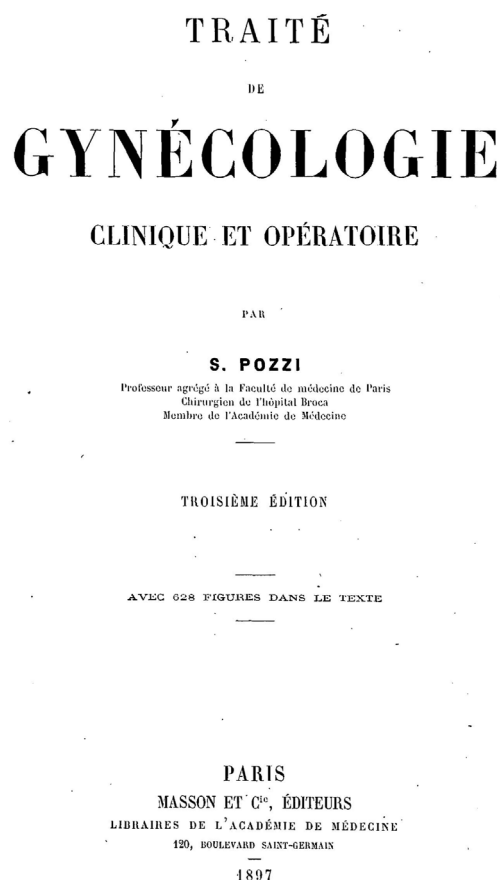


Figure 2. Samuel Pozzi's leading work on gynaecology entitled: «Traité de gynécologie clinique et opératoire».

course of gynaecology in the Medical School of Paris while his masterpiece entitled: "Traité de gynécologie clinique et opératoire" (Treatise of clinical and surgical gynaecology) was translated in six languages and became the first acclaimed book on gynaecology and the most influential manuscript on this field for the next fifty years [4,9] (Figure 2). In his book, Pozzi was emphasizing on the application of the newly introduced methods of antiseptis and anaesthesia, on the importance of clinical examination, on pathological anatomy, describing also meticulously gynaecological operations. His work was also illustrated with several drawings to facilitate learning [3,9]. During his career, Pozzi published more than 400 papers and invented several instruments which bear his name including forceps, curettes, haemostatic clamps and syringes used for the disinfection of the vagina [10] (Figure 3). In 1897, Pozzi founded the journal "Revue de gynécologie et de chirurgie abdominal" which was publishing not only works in gynaecology but also in abdominal surgery, domain in which Pozzi also excelled as he performed several abdominal operations including also the first successful gastroenterostomy in France [4].

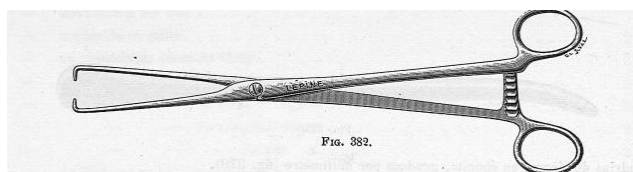


Figure 3. Pozzi's forceps still used in gynaecology.

A man of widely reputation, Pozzi visited for the first time U.S.A. in 1893, followed by a second travel in 1904. During his trips, he met distinguished physicians who influenced his medical practice such as the surgeon William Halsted (1852-1922) who introduced rubber surgical gloves in operations and his compatriot, the Nobel prized surgeon for innovative vascular suturing techniques and transplantation, Alexis Carrel (1873-1944) [10] (Figure 4).

A multifaceted person, Pozzi was also interested on anthropology. In 1870, he became member of the Society of Anthropology and in 1888 he was elected President. Pozzi was also known for the translation into French, with the collaboration of his colleague René Benoît (1844-1921), of the textbook of Charles Darwin (1809-1882) on "The expression of emotions in man and animals" dealing with the biological aspects of emotional life [11]. Favorite pupil of the physician and anthropologist Paul Broca (1824-1880), Pozzi became deputy curator of the Orfila Museum, famous for its huge anatomical collection. After Broca's death,



Figure 4. From left to right: Dr. Vaillard, Prof. Pozzi and Dr. Carrel.

Pozzi assembled the bibliography of his master and published his biography. As a tribute to his teacher, he proposed and succeeded to change the name of Lourcine hospital in Broca hospital [12] (Figure 5).

Patron of the arts, member of the famous Cercle des Mirlitons which brought together aristocrats and artists, Pozzi was friend with Edmond Rostand (1868-1918), Marcel Proust (1871-1922), Anatole France (1844-1924) and Alexandre Dumas, fils (1824-1895) [4]. His belief that art could promote healing, motivated him to commissioned several artists to paint the walls of his hospital, among which the painter Georges Clairin (1843-1919) whose painting "La santé rendue aux malades" (Health restored to the sick) portrays the famous actress Sarah Bernhardt (1844-1923) as Health [4,13]. He was also an admirer of ancient Greek and Roman art and his collection of ancient coins and Tanagra figurines was considered the most prized of his time [5].

In 1896, Pozzi was elected member of the Academy of Medicine in Paris in the chair that was holding the famous surgeon Baron Dominique Larrey (1766-1842) [4]. Moreover, at the age of 52 years, he was elected Senator for his native department Dordogne and represented his district for five years contributing in the reform of the French baccalaureate examination [10]. The period of his political activity was very tense for the French history as the Dreyfus trial was in evolution. Pozzi sided with the politician Georges Clemenceau (1841-1929) and the novelist Emile Zola (1840-1902) defending the innocence of Alfred Dreyfus (1859-1935), and came to the aid of the later when

he was shot in the arm by the journalist Louis Grégori (1842-1910) in the courtroom [5].

In 1901 Pozzi became Professor of the first chair of gynaecology in Medical School of Paris and during the WW1 (1914-1918) he participated, despite his advanced age (he was 68 years old), operating the injured in the hospital of the Astoria Hotel [4].

Despite his important contributions in medicine and politics, Pozzi had a turbulent personal life. In 1879, he married the rich railroad heiress Thérèse Loth-Cazalis (1856-1932) and had three children: the poet Catherine (1882-1934), the diplomat and art collector Jean (1884-1967) and Jacques (1896-1953) [5]. However, his charm, intelligence and humor were irresistible to the ladies and his marriage quickly failed due to infidelities. A real dandy surnamed “the siren” by his pupils, “doctor love” by the socialite Lydie Aubernon de Nerville (1825-1899) and “doctor god” by Sarah Bernhardt, Pozzi had several love affairs including Bernhardt [5]. Their relation begun in 1869 when Pozzi was student and it lasted till his marriage in 1879. Afterwards, they remained friends and Pozzi operated Bernhardt twice; in 1898 to remove an ovarian cyst and in 1915 along with his colleague Jean-Henri Maurice Denucé (1859-1924) to amputate her leg

as she had developed osseous tuberculosis [5]. In 1890, his affair with the wealthy socialite and art collector Emma Sedelmeyer Fischhof (1862-1927) began and lasted almost 25 years, till his tragic death in 1918 [5].

On June 13th 1918, Pozzi was murdered in his consulting room. His murderer, Maurice Machu, was previously operated for varicocele by Pozzi and he wrongly believed that the operation made him impotent. He asked Pozzi to operate him again and when Pozzi refused he shoot him in the abdomen. Soon afterwards, Pozzi was transferred to Astoria Hotel where his pupil Thierry de Martel (1876-1940) conducted laparotomy. He refused general anesthesia and ordered local infiltration as he wanted to supervise the operation. However, he was heavily injured as twelve perforations of the intestine and a wound in the kidney were found and he succumbed. He was buried in his native town, Bergerac [14].

Pozzi's work on cervical cancer

In his treatise on clinical and surgical gynaecology Pozzi dealt extensively with cervical cancer in two chapters. In an attempt to explain its pathogenicity, Pozzi supported the belief of his



Figure 5. Laparotomy operation at the Broca hospital, Paris, 1901. Prof. Pozzi is standing forefront, on the right of patient.

contemporaries that cancer of the cervix was a transformation of connective tissue cells in papillary or cauliflower form. Moreover, he recognized local predisposing factors such as laceration and inflammations of the cervix as well as repeated parturition [9].

Pozzi classified cervical cancer into four types: the papillary, the nodular, the cancer of the cervical cavity and the vaginal. The papillary type is superficial, arising on the part of the cervix below the vaginal insertion and could remain for a long time limited. However, it could spread on the peri-uterine tissues and along the cervical canal. In the

nodular type, several nodules arise in the mucous membrane of the cervix and as the disease progresses, ulcerations appear, the nodules fuse and the whole cervix is involved. In the third form, known as cancer of the cavity, tumour rapidly infiltrates the cervical mucous membrane and the ulceration that appears destroys slowly the cervix. Also the body of the uterus is early involved as well as the vagina. The fourth type, the vaginal one, is considered rare. Cancer arises in the posterior cul-de-sac and invades equally the cervix and the adjacent portions of the vagina, producing ulcerations [9].

According to Pozzi, cervical cancer is insidious, it starts between 40 and 50 years old and at the beginning it produces symptoms such as post-coital bleeding. However, that kind of bleeding may pass unnoticed in peri-menopausal women or it could be seen with satisfaction as a return of menstruation. Leucorrhea could also appear and at that point Pozzi mentions the importance of physical examination for the diagnosis [9]. He states that the touch will reveal the induration of the cervix and the speculum, popularized few years earlier by his colleague Joseph Recamier (1774-1852), will demonstrate the tumour, the vegetations, the oedema, as well as, the ulcerations [15]. As the disease progresses, hemorrhage becomes more frequent and vaginal discharge has a fetid odour. General symptoms appear, such as pain, anorexia, constipation, meteorism and cancerous cachexia [9]. Pozzi mentions that the disease may extend to the vagina, the uterus, the connective tissue of the pelvis, the broad ligaments, the ureters, the bladder, the kidneys, the rectum and the peritoneum. The papillary type usually extends to the vagina and the vulva while the uterus is commonly involved early in the nodular and cervical type [9]. In cases of renal affection uraemia may occur resulting in the appearance of a semi-comatose state. Pozzi describes cases of patients which at the end-stage present uraemia with dyspnoea, peritonitis and septicemia. It is also of interest that he mentions cases of pregnancy with concomitant cervical cancer pointing out the poor prognosis of both pregnancy and cancer: "The prognosis for a woman with cancer is always aggravated by pregnancy, for abortion may cause a fatal hemorrhage or septicemia, and when the case goes on to full term, the labor is dangerous; Herman found forty cases of death in labor in one hundred and thirty seven cases of this kind. The older statistics show an even higher mortality, Chantreuil giving 25 deaths for 60 labors, and West 41 in 75. Among one hundred and twenty-eight children of cancerous mothers only a few were born alive" [9].



Figure 6. Samuel Pozzi at home, painted by John Singer Sargent, 1881.

Therapeutically, he proposes two kinds of approaches according to the stage of cancer: radical and palliative. In cases of cancer of the external os, not involving the vaginal cul-de-sac, he proposes the intra-vaginal amputation of the cervix as it was described by Aristide Verneuil (1823-1895) [9]. However, he mentions that in such cases he would prefer to perform total hysterectomy as: "total hysterectomy is preferable to removal of the cervix, even when the disease is circumscribed, for it alone gives security that the whole of the affected part has been removed, and the mortality of the operation has been so far reduced that it does not materially exceed that of cervical amputation" [9]. Pozzi was persuaded that women with localized tumours were the best candidates for radical surgery, because such surgery offered them a real chance of a cure and as he used to say: "the narrower the limits of the disease, the wider the operation should be". In patients suffering from cancer of the entire cervix, without extension to the cul-de-sac, he mentions that a conical, supra-vaginal excision, followed by cauterization using chloride of zinc could be beneficial [9]. However, in cases with extension to the uterus and the adjacent tissues, Pozzi states that vaginal hysterectomy should be performed. Concerning the pregnant women with cervical cancer Pozzi mentions that it is impossible to recognize a pregnancy, in a woman with cancer of the cervix, before the fourth month, as the volume of the uterus may be attributed to the presence of the neoplasm. In cases that cancer extends to adjacent tissues "we must decide when abortion should be induced, followed by palliative treatment (cauterization)" [9]. In patients who are in labour he proposes the caesarian section as he believes that "we should not sacrifice by craniotomy the living child of a mother who is beyond hope" [9]. Finally, in cases that cancer is limited he

suggests four kinds of operations: induced labor, with hysterectomy after a few days; caesarean operation, with colpo-hysterectomy later; total extirpation of the gravid uterus, with dissection of the vagina, by laparotomy; hysterectomy by the sacral method, after resection of the coccyx and a part of the sacrum if necessary [9]. Palliative measures, such as cauterization of the cervix with nitric or chromic acid, chloride of zinc and an alcoholic solution of bromine, are proposed when cancer is diagnosed in late stages. For the treatment of gastric symptoms, tonics and bitters are administered, such as wine of quinine, wine of Colombo, bitter tincture, and tincture of nux vomica. Milk diet is proposed in renal involvement, as well as, the oral administration of iodine tincture before each meal. Constipation is managed with vegetable diet, orally given glycerin and a large enema each day. In end-stages patients who are suffering from pain morphine and codeine are suggested [9].

Conclusion

In 1976, almost one hundred years after Pozzi's leading publication, the German virologist Harald zur Hausen (1936-) published the hypothesis that human papilloma virus (HPV) plays an important role in the development of cervical cancer while thirty years later, in 2006, F.D.A. approved the vaccine against HPV, developed by Ian Frazer (1953-) and Jian Zhou (1957-1999) at the University of Queensland, Australia [16]. Nowadays, despite vaccination, cervical cancer still remains the fourth-most common cause of cancer and the fourth-most common cause of death from cancer in women [17]. In 19th century Samuel Pozzi contributed in the treatment of cervical cancer, proposing various therapeutic approaches (Figure 6). His work influenced the practice of gynaecologists till 1930's.

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