

History of colposcopy: a brief biography of Hinselmann

Eugenio Fusco¹
 Francesco Padula²
 Emanuela Mancini³
 Alessandro Cavaliere²
 Goran Grubisic⁴

¹ Department of Obstetrics and Gynecology, City Hospital, Urbino

² Institute of Gynecology, Perinatology and Child Health, University "La Sapienza", Rome, Italy

³ Division of Gynecologic Oncology, National Cancer Institute "Regina Elena", Rome, Italy

⁴ Clinic of Obstetrics and Gynecology, University Hospital Sestre milosrdnice, Zagreb, Croatia

Corresponding author: Francesco Padula, MD
 Institute of Gynecology, Perinatology and Child Health, University "La Sapienza"
 Viale Regina Elena, 324 - 00161 Rome, Italy
 E-mail: frpadula@libero.it

Abstract

Objectives: To consider all the historical reasons for the slow growth of colposcopy through a brief biography of Hinselmann.

The history of colposcopy is beginning in March 1924. In the first experiments, colposcopic examination was almost impossible to perform because of the distance from the focus, that was no more than 80 mm. Hinselmann tried to solve this problem by pulling out the uterine cervix. The examined part is anemised by this procedure, which can prejudice the final result and a small amount of blood might leak as well. Beside that, a patient can feel pain if the portio is held by a thin forceps. The colposcopy, established in Germany, had spread throughout slowly its motherland, probably thanks to the many mistakes caused by Hinselmann himself:

- a) a technique proposed and almost exclusively intended for early discovery of cervical carcinoma;
- b) very authoritative imposition of terms, especially histological, which caused resistance by hystopathologists possibly induced by the fear of loosing their prestige who considered them too complex;
- c) his stubbornness in considering leukoplakia as precancerous lesion imposed him a lot of opponents;
- d) until the 1950's there had not yet been any adequate didactic material at the disposal of numerous gynaecologists;
- e) Hinselmann's temper, described by Wespi as a mixture of innocence and missionary eagerness, had not prepared him for dialogue and compromise.

Conclusion: It might seem surprising that colposcopy, accurate in detecting all benign lesions and initial atyp-

ical transformations, and perfectly capable of pointing safe biopsy in cases of suspicious lesions, did not develop as it should have a method whose function is of great importance in the prevention and treatment of CIN.

Despite the role and the importance of cytology in the realization of the population programme of cervical cancer detection, the colposcopy allows the precise diagnosis among women with abnormal pap smears.

Introduction

Why history?

One tries hard to find a meaning for our everyday life in the age in which we live, so rich in many epochal changes.

In Syzif's Myth (1943), Albert Camus reminds us that a modern human being is overflowed with a sense of alienation and confusion due to the loss of remembrance of the past and hope for the future, remembrance of the lost country and hope for the promised land.

It is necessary to fill the gap created between a man and his life, an actor and his stage with heightened consciousness of self by introducing past experience.

A touch with things, belonging to the persons from the past, pulls down, by magic, time barriers and man – incurable Prometheus – by deceiving that he stole the Chronos from gods.

We cannot forget as well John of Salisbury (1120-1180), doctor and philosopher, who establishes, in his *Meta-logicon* (1159) by quoting his great teacher, the main conditions in the relation between a scientist and his glorious precursors: "... *dicebat Bernardus Carotensis nos esse quasi nanos gigantium humeris insidentes, ut possimus plura eis et remotiora videre, non utique proprii visus acumine aut eminentia corporis, sed quia in altum subvehimur et extollimur magnitudine gigantea...*" (...Bernard of Chartres used to say that we are like dwarves on giants' shoulders, so we can see more and far beyond them, not because of our keen sight or our body's height, but because we are carried away and raised by their volume...).

History

Hans Hinselmann, the only child of an old family from Neumuenster (an important textile and leather industrial center in the middle of Holstein), which associated for generations with beer production and selling. He was born on 6th August 1884, son of Hans Peter Gustav (1860-1954), who was son of Detlev (1827-1896) and Augusta Sophie from Goeteborg.

During his high school period, he showed an exceptional brilliance of mind and an unquenchable wish for knowledge, especially in natural sciences.

After his "Abitur" in Hagen's High School, he directed himself toward medicine, which he started in Heidelberg and finished in Kiel in 1908.

He qualified for his practice in Kiel in the autumn exam term.

After getting his certificate, he visited firstly Neurology in Neu-Coswig, a few kilometers from Dresden, in 1908-1909 the Medical Clinic in Heidelberg (directed by Professor Krehl), in 1909 the Gynecological Clinic in Kiel, and in 1909-1910 the Surgical Clinic in the same city.

He went to the Gynecological Clinic in Jena (ruled by Professor Max Henkel) in 1910 and his university career begins in 1911.

He entered the Giessen's Gynecological Clinic in 1911 (directed by Professor Otto von Franqué).

He followed his teacher into the Gynecological Clinic in Bonn in 1912, where he stayed until 1925 and that same year he became Docent (assistant professor), which allowed him to teach.

The title of his first lecture was: "*Die angebliche physiologische Schwangerschaftsthrombose von Gefassen der uterinen Plazentarstell*".

All of his researches and clinical activities were interrupted, from 2nd August 1914 till 28th February 1918, due to the First World War, although he managed to become a chief of department in the Gynecological Clinic in Bonn thanks to his persistence.

This happened in 1917 (according to Wespy) or in 1918 (according to Dietel).

Coming back from the war, he married in Neumuenster's Cathedral nineteen-years old Margaret (his first generation cousin as she was Detlev's daughter, the son of the previous Detlev), who will give birth to 5 sons and 2 daughters.

He became an Associate Professor in 1921 at the University of Hamburg.

He started a very thorough research in order to examine the portio and vulva better: firstly with von Eicken's frontal lens, with magnification of 1,2 and then of 1,7; after that, owing to the help and cooperation of Leitz's technicians, he himself improved the instrument, now called colposcope.

The history of colposcopy is beginning:

March 1924

In the first experiments, colposcopic examination was almost impossible to perform because of the distance from the focus, that was no more than 80 mm. He tried to solve this problem by pulling out the uterine cervix.

The examined part is anemised by this procedure, which can prejudice the final result and a small amount of blood might leak as well. Beside that, a patient can feel pain if the portio is held by a thin forceps.

On the 9th October 1925 Muenchner Medizinische Wochenschrift published his key article, an epochal turnpoint from speculo-macroscopic examination to the speculo-colposcopic examination (1).

The colposcope contains a massive basis without wheels and no pantographic structure; only a person of Hinselmann's determination was able to persevere in its

usage in such difficult conditions.

These reasons forced him to create a colposcope with focal distance of 150 mm (Leitz) and then of 190 mm (Zeiss).

Cases of early detection of cervical cancer were rare, discovered either accidentally or by hystological examination after taking samples. A size of pidgeon's egg was considered to be an early cervical cancer at the time. By means of his instrument Hinselmann was able to dedicate himself to detect the cervical cancer in the form of a point.

He published an article describing the epithelial changes which he called precancerosis and perceived the necessity of establishing a Center for portio carcinoma prevention.

He spent 3-4 years in examining and watching the portio without preparation when acetic acid test as well as iodium application were not proposed.

In 1928 Walter Schiller, hystologist in the II Gynecological Clinic in Vienna, found that dysplastic and carcinomatous structures do not contain glycogen and, led by this thought, created the iodium test as a method for detecting an early portio carcinoma, recommending to smear the portio by Lugol iodium-iodurate solution (Jean Guillaume Auguste Lugol 1788-1851, physician at Saint Louis Hospital in Paris; among the different iodium solutions for tuberculous scrofula treatment he was studying, liquor potassii Iodium comp. has remained as the Lugol solution in usage till today).

It should be remembered that Schiller improved the scraping- technique. He used a little and sharp curette to pull out layers of "skin" from the colposcopic suspicious areas and submitted them to the hystological evaluation. This procedure allowed him a morphological evaluation of cervical epithelium without traumatizing of either biopsy or cervical resection.

Seen in retrospect this method may be considered as the precursor of Pap test. Hinselmann recognized very soon the importance of this method and he appropriated it as the complement, but not permanent at the beginning, to the colposcopy "Erweiterte Kolposkopie" (2).

In 1926 he became the director of the Gynecological department of the Altona City Hospital. Altona is an ancient town established in the 11th century and annexed to Hamburg in 1937, which is now one of the leading city areas.

It was then that he started in his department with the work of the first colposcopic service in the world.

In 1930 he received an official recognition from his teachers: he was invited to write a chapter on early detection of the cervical carcinoma in one of the most famous and prestigious gynecological work of the time by Veit-Stoeckel (3).

His department became the point of reference for many gynecologists willing to learn about the new technique directly from the master.

In 1932 the Allgemeine Ortskrankenkasse from Hamburg was the first clinic in the world to offer to insured women a free colposcopic examination, performed by its specialists, if they asked for it.

From 1933 Hinselmann started to study very intensively his colposcopic findings through rigorous hystological researches; he was trying to find out a constant correlation between colposcopic image and hystological findings, which caused a lot of confusion responsible for

slow propagation and acceptance of this method.

Today we know that such correlation is possible but not constant, and colposcopic diagnosis cannot be based upon each picture, but must be the result of an integration of more images because the basic image is comparable with primary lesion in dermatology. Hinselmann tried out all possible sorts of acids, colors, fluorescent substances and special sources of light, considering that colposcopy could become a sort of hystopathology *in vivo*.

Colposcopy was associated with some difficulties in its early days, due to poor adjustment and adroitness of the machine and that diagnosis based on augmentation or periodical usage of Lugol solution was not satisfactory. Hinselmann was able to distinguish and to describe those pictures fixated definitely after the test (acetic acid test – Essigsauerprobe –). In 1938 he described and introduced this test as the routine test.

In 1939, Helmut Kraatz from the Gynecological Clinic in Berlin, led by Professor W. Stoeckel, pointed out the usage of green filter for precise evaluation of vascular morphology (4).

In the meantime, many different authors tried to remove the lack of didactic material by means of colour aquarelles avoiding the direct presence in the colposcopic practice.

In 1942, F. Treite in Berlin made the first colour drawings of the cervix, and in 1949 Wespi projected first colour slides at the Congress of the Swiss league against cancer.

In 1949, having appropriated Hinselmann's colposcopic method of examination and Papanicolau's cytological examination, Antoine in Vienna, together with his student Grumberger, informed about a special microscope which allowed hystological examination *in vivo* of the cervix and of all other visible parts of the lower genital tract.

With the help and technical cooperation of Reichert Co., it was possible to create a microscope with direct illumination which was able, after the application of some paints, to evaluate different epithelial changes present on the surface. This machine, the result of fortunate cooperation between doctors and technicians, is called colpomicroscope.

In 1951, Kara-Eneff in Hamburg introduced the usage of an electrical flash which finally enables the production of satisfactory slides and photographs.

It should be remembered that Hinselmann tried in 1956 to introduce the application of TV recording in colposcopy.

He was director of the University Department of Gynaecology in Altona from 1933 to 1946. He retired in 1949, at the age of 65.

Reading through Hinselmann's biography, we found a three-year gap from 1946 to 1949.

By consulting different sources, including the Hamburg's Artzkammer, the Goethe Institut, the Wiesenthal Center in Vienna, the Brazilian Embassy in Rome, etc. it was discovered that according to some charges Hinselmann participated in Nazi crimes: since 1935 racial laws in Nuernberg forced Gypsy women to a tragic choice: either be deported to concentration camps or undergo sterilisation. Surgical procedures of this kind were performed at the Institute, directed by Hinselmann.

For these reasons Hinselmann was sentenced by the

English War Court to three-year imprisonment, to a DM 100.000 fine and expulsion from the management of the University Institute.

Hinselmann had also supervised and supported colposcopic researches by dr. Eduard Wirths, infamous leading doctor in Auschwitz, but was not incriminated for that.

All these researches on precancerous portial proliferation seemed to be harmless at the sight. But it should be mentioned that the cervix was removed, even in cases of minimal suspicion.

Very bad health conditions in a prisoner in a concentration camp favoured complications such as serious inflammations and excessive bleeding. This caused the immediate death of the prisoner or weakened her too much, so that she was chosen for the gas chamber.

Reading through the arguments of the defence, it is obvious that by the end of World War II hunting after people or pedantic and individual establishing, especially for the managers enrolled in National-socialistic Party, so called denacification, appeared.

Hinselmann, enrolled in the Party, was removed for 5 months from the clinical department and then incriminated for the listed reasons.

During three following trial, his involvement in the sterilisation of six Gypsy women had been established for he was the responsible manager of the Department. Surgical procedures performed by his assistants, had been performed after the order given by the Ministry of Internal Affairs and Hamburg's Health Department for criminal-biological reasons.

Having served the sentence, which was the last step in the trial, he was allowed to have private practice only.

Although he was rehabilitated, it was too late for him to return to the clinic as chief of staff.

One should also remember that losing his two sons, in the battle of Stalingrad, was a very high price to pay.

After 1949, he travelled a lot, especially to South America (5, 6). He had a gift for languages, so he studied very thoroughly the languages and cultures of the countries he was visiting and he was able to speak and discuss very fluently in local languages. All this tended to increase his reputation.

Travelling was his mission: he was deeply convinced of that, and he gladly tolerated all possible inconveniences, although his love for precision was well known.

He was awarded the Diploma honoris causa for his work- prevention and discovery of early cervical carcinoma- by the University of Rio de Janeiro (7).

During his stay in Hamburg, he was living in an ancient thatched-roof house, on the bank of the river Elbe. The house – which he had called Goethehaus – was surrounded by a vast park with centennial trees. There, he glorified himself: a decent man, an elegant landlord, a brilliant physician.

He died of a myocardial infarction in 1959 in Hamburg, in his home, at 170 Kirchenweg. When he died, he was still deeply involved in his work and it was a great surprise because he had just come back from Zurich and was writing a report for a congress to take place in Vienna shortly.

He left 330 scientific papers, which are related above all, but not exclusively, to colposcopy. Hinselmann was interested in eclampsia, placenta and its diseases, peritoneal fluid in different gynaecological diseases

and sterility with so called *blaue test*, which is able to evaluate the free passage of the fluid through uterine tubes.

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- a) a technique proposed and almost exclusively intended for early discovery of cervical carcinoma;
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- d) until the 1950's there had not yet been any adequate didactic material at the disposal of numerous gynaecologists;
- e) Hinselmann's temper, described by Wespi (8) as a mixture of innocence and missionary eagerness, had not prepared him for dialogue and compromise.

However, colposcopy spread within German cycles at the beginning: Limburg, Mestwerdt (9) and Ganse were first to adopt it; Wespi, Glatthaar and De Wattville in Switzerland; Antoine and Grumberger in Austria, authors of colpomicroscopy, and finally colposcopy covered the area of German language and culture.

In Italy, Cattaneo, professor in Perugia, translated Hinselmann's text (1933), "Einfuehrung in die Colposcopie" into Italian, entitled "Introduzione alla colposcopia" (1940).

Nevertheless it is possible to realize from bibliographical checks that the translation is relative to a later edition, because systemic usage of acetic acid test is already applied.

World War II froze all exchanges related to this method. Palmer, together with many other credits, presented a review in France in 1950. On the hystorical congress in Algeria in 1952, Funck-Brentano and de Wattville, during the discussion about the early diagnosis of cervical carcinoma, presented colposcopy as the key method in the diagnostic procedure.

The first French text on colposcopy by Bret and Coupez was published in 1960 (10). This text, with its Latin intuition, offers vivacity toward the serious colposcopic conception.

The Anglo-Saxon world had not been opened toward colposcopy in the early days because of a new method proposed by Papanicolauin 1943 had been in use. However, in 1931 Emmert wrote an articler introducing the colposcopy to North American physicians (11, 12).

During the 5-year period (1933-1938) many physicians from the area of Anglo-Saxon language and culture visited Altona: i.e. Professor Ries, the president of American Association of gynecologists; Professor Davies (Hinselmann wrote a chapter for his Textbook of Gynecology -Milwaukee, 1933) (13); education organised by British Gynaecological Society in 1937. In 1936 Shaw (England) acquires a colposcope and begins colposcopy in UK.

Australia was more adaptable due to the activity of Copleson (who in 1956 begin his training in Oxford) and Reid.

A colposcopic association was established in 1963 by Schmitt's, Bolten's and Staff's (who was from Pilsen) encouragement. Such an attitude might have been an unhappy outcome of World War II.

In the same year is founded the Argentinian Society.

In 1932 Jakobs (Argentina) visits Hinselmann and returns to establish the first colposcopic clinic in his country.

In 1934 De Morales introduces colposcopy in Brazil where the Society is founded in 1958.

In 1971 is formed the British colposcopy Group.

In Italy Masciotta published his text in 1954 following Cattaneo's initiative (14); in 1960 Marziale and Zichella published a book (15) and so did Mosetti and Russo in 1962 (16). Mario Peroni published his textbook -a colposcopic atlas- in 1980 (17).

On the 2nd of August 1980, the Italian Society for Colposcopy and Cervico-vaginal pathology was established in Ascoli Piceno.

In 1983 in Japan is formed its own Society (while in 1950 Audo e Masobuchi began colposcopic studies).

In 1987 Canada forms its Society.

It might seem surprising that colposcopy, accurate in detecting all benign lesions and initial atypical transformations, and perfectly capable of pointing safe biopsy in cases of suspicious lesions, did not develop as it should have a method whose function is of great importance in the prevention and treatment of CIN (18).

Let us consider all the historical reasons for the slow growth of colposcopy.

1) No didactic material until the late 1950's. Hinselmann offered the address of a paintress called Jacobsen-Lorenzen from whom could be bought printed copies of so precise aquarelles illustrating different colposcopic pictures (19).

2) Hinselmann's German origin. Hardly anyone in our country used to read German scientific papers, so the Germans experienced some cultural decline due to the overwhelming diffusion of papers in English (ever since the Italian Renaissance, German had been the language of enemies, so nobody liked such an expression). The first work about colposcopy in Italian is Masciotta's textbook (1954); it is difficult to read because of the chapter about histology and histogenesis, although a very solid histological basis is necessary for colposcopic practice

3) The latter is the third reason of its limited spread.

4) Colposcopy directly involves a doctor's diagnostic responsibility (20).

5) Unanimous terminology, among different schools, has not been achieved yet, so one could think of the notion of colposcopic as complex or unclear.

The sixth reason should be confirmed in relation to the appearance and wide extension of Pap test. The Pap test experienced the winner's destiny: the success (21, 22).

The last difficulty: too much time spent performing a colposcopic procedure in relation to the Pap test may be understood as a criticism. This could have caused the obstruction for its extension.

An experienced colposcopist needs 5 minutes for the examination and this procedure improves our relation with the patient, so essential in our time, enriched with communication.

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