

Clinical Case doi: 10.37072/JCS.2022.01.02

# RECTAL DYSPLASIA IN WOMEN AFTER HPV INFECTION BY PENILE VECTOR

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## Abstract

In this clinical case, we present the determination of a rectal infection with HPV, after repeated peno-rectal sexual intercourse, for several years, in a 53-year-old woman.

Specialist examinations established the existence of a dysplasia of the rectal mucosa, due to HPV infection, genotypes 16 and 51, both viral strains with high-risk oncogenic potential.

It has to be mentioned that both these genotypes have a significant prognostic value, because a third of the precancerous mucosal lesions are associated with these viral variants, proven to be responsible for the increased level of tissular viral load.

## Keywords:

*HPV, multiple infection (genotype 16 and 51), colonocyte genome*

## Introduction

HPV replication occurs in the stratified epithelium of the rectal mucosa, the initiation of the infection taking place in the basal layer, where, immediately after infection, the number of viral copies is amplified in the nucleus of basal cells.

The initial amplification is rapid and transient, following the stage of viral replication, maintenance, which ensures the duplication of HPV-DNA copies per cell, in which the infected daughter-cells divide and differentiate.

It has to be mentioned that some researches has correlated the severity of the disease with the viral load (number of viral copies/cell), using the quantitative PCR method for HPV genotype 16.

## Case presentation

A 53-year-old female patient (with higher education) presents to our medical department for a gynecological consultation, reporting the existence of vulvar and anal pruritus, especially during the evening, and also the persistence of perianal candidiasis (for which she is being medically treated) and rectal tenesmus. (Fig.1)

The objective examination reveals discreet skin pallor and minimal weight loss in a patient with physical asthenia and loss of appetite, who also intermittently complains of abdominal pain.

Last but not least, the patient states the occasional presence of minimal rectal bleeding, which occurs either at the beginning of the act of defecation or at the same time with the elimination of feces.

## Personal history:

one birth, 3 abortions, viral A hepatitis in 1990, grade I genital prolapse, repeated vulvo-vaginal infections, menopause since the age of 51 years.

She frequently practices anal sexual intercourse, in principle this type of act being her sexual male partner's desire (or reciprocal?). She had peno-anal intercourse with several male partners aged 29-72, without being able to specify the exact number of sexual partners.

Biological samples were collected from the patient's perineal area, the anal orifice and the rectum, a context in which the genotypes 16 and 51 HPV viral infection was highlighted.



**Fig. 1** Perianal candidiasis-under treatment;  
(Case study Prof. Dr. Nițescu Vasile)

## Discussions

Rectal cancer is often asymptomatic at onset. This is why this diagnosis is usually established after thorough investigations, carried out in a specialized medical unit.

Sexually transmitted viral infection by peno-anal intercourse with 2 of the 40 specific HPV genotypes, in a 53-year-old menopausal woman has not only an increased incidence but also a special severity of disease due to high tissular viral load, given the number of „viral copies per cell”, clinically expressed by the presence of multiple dysplastic formations colonoscopically highlighted, that are rectal cancer precursors.

It is also well known that in the presence of HPV infection, cell metaplasia is significantly higher in young people, with the incidence decreasing with age, especially after menopause, when the frequency of sexual intercourse usually decreases.

In this context, a question may be raised about the existence of metaplasia/dysplasia in this particular form, in a 53-year-old woman. It should be noted that most of the cellular changes induced by HPV infection are transient and that, in about 90% of cases, they regress spontaneously in 1-3 years, the virus being „eliminated” by the cellular immune system (Giuliano AR et al. 2002).

The persistence of HPV viral infection may be due to the high degree of viral load, the presence of multiple infections, the coexistence of other sexually transmitted viruses (STDs), herpes viruses, cytomegalovirus or the association of a state of immunosuppression.

The concomitance of most of these risk factors may explain the appearance of rectal

dysplastic lesions, identified in this 53-year-old female patient, who has been menopausal for about 2 years.

Regarding simultaneous infections with several HPV genotypes, they occur in more than 40% of cases (Burd E.M.2003 - quoted by Cernescu). Apart from the present situation, by concomitant infection with 2 HPV genotypes with increased oncogenic potential (16 and 51), it has to be mentioned that in the medical literature were also cited cases of simultaneous infection with 3 or 4 or even 5 HPV genotypes.

HPV viral genotyping reveals not only the importance of the oncogenic risk of anorectal pathology but also the oncogenic potential, which, according to some authors, would be of 2 years in women over 50 years of age. This explains the high prevalence of colorectal malignancies, which have been detected so frequently lately in the elderly, although the incidence of HPV infection is decreasing, at least in theory, in this age group.

In this case, the viral infection with HPV was transmitted by direct, repetitive, peno-rectal sexual contact, the inoculation being facilitated by the production of abrasions of the epithelium of the rectal mucosa, lesions that allowed the direct inoculation of the 2 genotypes of HPV, 16 and 51, in which case it is not an occasional infection.

HPV infection occurs only in the basal epithelium of the rectal mucosa. E6 and E7 proteins disrupt the cell growth cycle by inactivating the anti-oncogenes p53 and pRb, respectively cyclin-dependent kinases.

The oncoproteins E6 and E7, which are under the control of the protein encoded by the E2 gene, determined to the infected per-

son an immune response to the antigens provided by E6 and E7.

Viral proteins become effective in oncogenesis by blocking the p53 gene (tumor suppressor protein), which is responsible for maintaining the integrity of the cell genome, thus producing abnormally mutations that induce malignant cell formation and development (“The incidence of penile cancer – Correspondence”, F.Băcanu-DOI:10.37072/JCS.2021.02.03, Journal of Clinical Sexology, Pg36, 2021).

In both sexes, HPV infection is involved in the genesis of about 90% of all types of anal cancer.

### **Regarding recto-colonic cancer and its molecular genetic basis**

Colorectal malignancy is caused by genetic alterations, as are other cancers. Non-hereditary polyposis cancer, located in the genome of colonocytes, is the consequence of somatic mutations. Cellular mutations in colonocytes or germ cells can occur in some or even all types of genes involved in carcinogenesis.

In this context, the patient was recommended to perform a gastroenterological consultation.

At the rectal examination, the presence of nodularities, of increased consistency, was noticed at the level of the distal rectum.

Colonoscopic examination was indicated both due to patient’s symptoms but also because the patient was over 50 years of age.

The procedure, performed under deep sedation, identified adenomatous lesions such as LST G-H (Laterally Spreading Granular-

Homogenous Tumor - LST G-H), particularly in three locations in the lower rectum (Figures 2 and 3).

LST-type adenomatous tumors are the evolutionary equivalent of flat polyps. They are true precancerous lesions, with significant malignant evolutionary potential in the coming years. If they are resected, healing is recorded.

The surgical approach is the classic route, but in modern medicine, endoluminal excision by endoscopy is the first option, if the tumor process has not exceeded the submucosal layer sm2. In addition, endoscopic resection has the great advantage of leaving the functionality of the rectum almost intact.

#### **The procedure:**

the lesions were injected (Fig.4), which produced their proper elevation and created the premises for the eradication of adenomatous tumors by endoscopic resection. Injection with methylene blue saline solution caused the submucosal lesion to elevate properly (Fig.4). Then, the sequential resection of the first adenomatous formation was performed (Fig.5), followed by the others (Fig.6).

Figures 7 and 8 show a clean submucosa, without any adenomatous remains.

At the 6 and 12 months follow-up evaluations, distal rectal scars are noticed, suggesting the lesion’s complete healing (Fig. 9, 10,11)

The pieces were sent to the morphopathological examination which recorded the presence of low-grade dysplasia, with the presence only of a non-invasive outbreak of high-grade dysplasia.



Fig.\* 2



Fig.\* 3

**Fig.\* 2,3** Lower rectum LST G-H Adenomatous Lesions (Laterally Spreading Granular Tumor-Homogenous - LST G-H)

\* Collection of images belonging to Prof. Dr. Gabriel Constantinescu

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**Fig.\* 4**

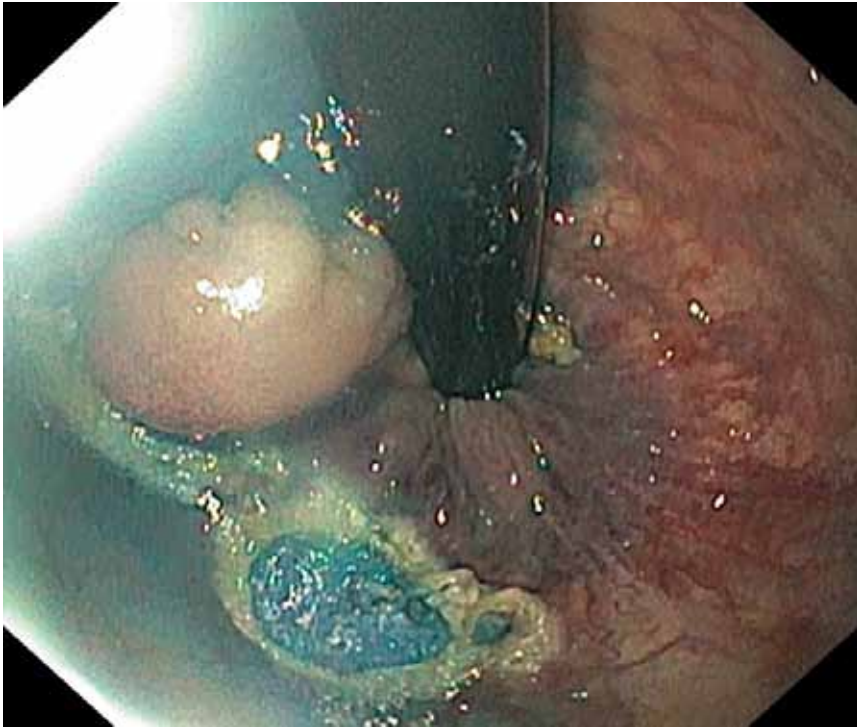
**Fig.\* 4** Proper elevation of the submucosal lesion from the mucosa by methylene blue saline injection;

\* Collection of images belonging to Prof. Dr. Gabriel Constantinescu



**Fig.\* 5**

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**Fig.\*6**

**Fig.\*5,6** Sequential resection of the adenomatous formations;  
\* Collection of images belonging to Prof. Dr. Gabriel Constantinescu



**Fig.\*7**

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**Fig.\*8**

**Fig.\*7,8** Clean submucosa without any adenomatous remains;  
\* Collection of images belonging to Prof. Dr. Gabriel Constantinescu



**Fig.\*9**



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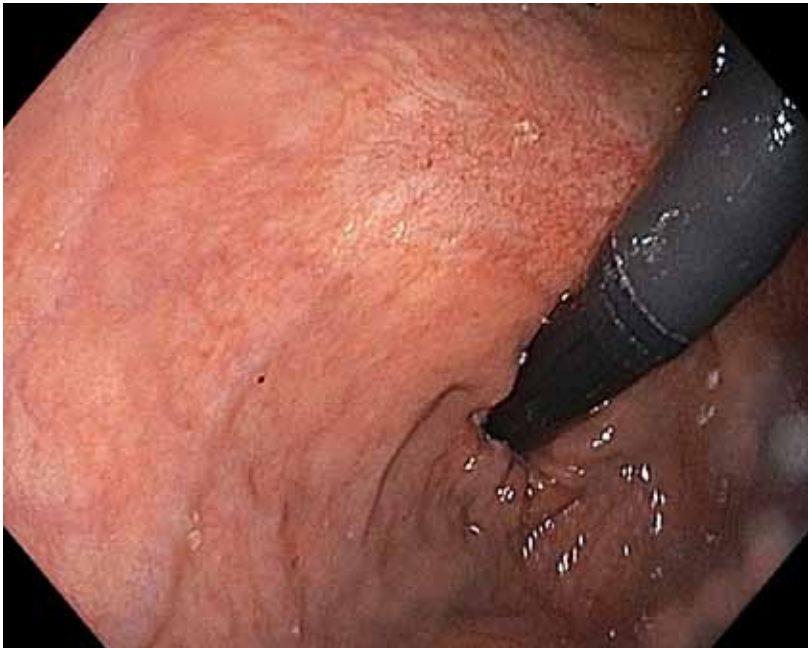


Fig.\*10



Fig.\*11

**Fig.\*9,10,11** Post-resection rectal scars, with complete healing of the lesion;

\* Collection of images belonging to Prof. Dr. Gabriel Constantinescu

## Conclusions

Viral infection with HPV determines more severe consequences in females, while males play a predominant and active role as a transmission vector of the infection, which is easier to occur from man to woman.

This situation is also explained by the higher persistence of genital infection in women, which is 20%, compared to only 6% in men, a phenomenon due to the different morpho-physiology of the two sexes.

Malignancy of the rectocolic formation occurs through a premalignant lesion - dysplasia - by loss of basal nucleus polarity through pseudo-stratification, nuclear and cellular pleomorphism, large nuclei, tachromatic, frequent mitosis and basophilic cytoplasm, dysplasia being a subclinical marker for colorectal cancer identification.

According to some authors, polyps-related cancers account for 94-95% of all malignant tumors.

The paper aims to present some peculiarities of HPV infection after peno-rectal sexual intercourse in a 53-year-old woman, compared to peno-vaginal and peno-oral intercourse (fellatio), (Fig.12,13,14,15,16,17,18).

It has to be mentioned that at present (2020-2022) there are certain medical opinions that claim that HPV genotype 16 infection is not detected and involved in the carcinogenesis and progression of rectal cancer.

The present paper aims to differentiate the pathology generated by HPV infection in the three types of sexual intercourse, with particularities in diagnosis, treatment and prevention, determined by different morphological structure.



Fig.\*12

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**Fig.\*13**



**Fig.\*\*14**

**Fig.\*12,13,14** Peculiarities of HPV infection- **Fig.12**-Anogenital warts-HPV 6, **Fig.13**- The appearance of the cervix with HPV 16 (\*Case study Prof. Dr. Nițescu Vasile), **Fig.14\*\***-Malignant tumor of the lip, onset form - image belonging to Prof. Dr. Alexandru Bucur

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**Fig.\*\*15**



**Fig.\*\*16**



**Fig.\*\*17**



**Fig.\*\*18**

**Fig.\*\*15,16,17,18** Peculiarities of HPV infection after fellatio- **Fig.15**-Onset forms, tongue tumors, **Fig.16**-Jugal mucosa, vegetating form – onset tumors; **Fig. 17,18-c, d** - Malignant tumors of the tongue and floor of the mouth, - images belonging to Prof. Dr. Alexandru Bucur

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Peno-rectal intercourse is a sexual deviation due to using the rectum of a female (or male, in the case of masculine homosexuality).

The very structure of the wall of the recipient organ (ie the rectal wall) is different from that of the vagina, a component of the genital apparatus specialized in human procreation.

This is why the pathology is different and complex in the vulva, vagina, cervix and anus, rectum, oropharynx, hence the rate of detection of sexually transmitted diseases ranging, according to some authors, from 0 to 84% (Sandra F. Martins and colab).

The inaccuracy of these data is confusing, such as that of anal HPV infection, which some authors consider to be more common in women, even though they claim that it is transient, when in fact the highest prevalence is determined by the rectal pathology of homosexual men.

### Conflict of interest

The authors declare there are no potential conflicts of interest.

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