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Vaginal Biological and Sexual Health - the unmet needs

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Abstract
The vagina is a most neglected organ. It is usually clinically considered with a minimalistic view, as a «connecting tube» for a number of physiologic functions: passage of menstrual blood, intercourse, natural conception and delivery. Unmet needs include, but are not limited to: respect of vaginal physiologic biofilms; diagnosis and care of the optimal tonus of the levator ani, which surrounds and partly support it ; care of its anatomic integrity at and after delivery and at pelvic/vaginal surgery; care of long term consequences of pelvic radiotherapy; long term care of the atrophic changes it will undergo after the menopause, unless appropriate, at least local, estrogen therapy is performed; appreciation and respect of its erotic meaning, as a loving, receptive, «bonding» organ for the couple. The vaginal erotic value is key as a *non visible* powerful center of femininity and sexuality, deeply and secretely *attractive* in terms of *taste, scent* (together with the vulva), *touch* and *proprioception*. The most *welcoming:* when lubrication, softness and vaginal orgasm award the woman and the partner with the best of pleasures. Prevention of sexual/vaginal abuse is a very neglected unmet need, as well. Who cares?

Introduction
The vagina is a most neglected organ. In this lightly provocative paper, the vagina's intimate perspective will be considered, as if vagina itself were a «thinking and speaking» organ. With this perspective, the "she" pronoun will be used in the first part.
This light *writing dress* will have a very solid body of evidence, appropriate for a scientific article (1-20).
To give words to vagina's still unmet needs, the paper will concisely discuss critical events in the vagina's life focusing on main vulnerabilities, her usually unappreciated anatomy and physiology (1) with focus on her health needs in terms of hormones (2, 3, 4), biofilms (5), muscle tone (6, 7), coital pain (8, 9, 10) and associate comorbidities (11) , quality of relationships with her neighbour organs, the bladder first (12, 13), impact of aging on her well-being, with special attention to the early menopause and postmenopausal years (3, 4, 14).

Critical events in the vagina's normal life
Vagina has a number of reasons to be disappointed. First of all, her identity is not clear at all for the majority of people. She is usually so discrete, and hidden, and silent that even her name is stolen or misplaced: indeed, the majority of women call «vagina» the vulva.
The vulva is her best friend: they share a very special part, very sensitive, very delicate, very rich of sensitive (and pain fibers): the vestibulum, her highly specialized entrance (1), a site of pleasure or of excruciating pain («vestibulodynia», a subtype of vulvodynia, either spontaneous or provoked) (15, 9). Anatomically speaking, the vestibulum is part of the vulva: the boundary between the two is a strategic little circular area, a kind of tissue ring, call hymen. It is the remnant of the fusion line of the vagina with the vulva (1). A very special meeting point, when at the beginning of the fetal life the vagina was a really solid tube,

resulting from the fusion of the lower part of the two Mullerian ducts, and the external genitalia. Location can be strategic: this is true in the great world as in the delicate vagina.
The hymen, *per se* an insignificant embriologic remnant, because of its strategic position turned out to be the keeper of women' intimate sexual integrity («virginity»), as it is usually «broken» during the first intercourse with a variable blood loss (1). For centuries, and still today in many countries, the integrity of the hymen at the moment of the official marriage determined (and dramatically still may determine) the life or death of a woman. With total ignorance of the fact that the structure of the hymen could be so loose to allow penetration without bleeding, or so tight that the vagina (and the woman) can be devastated when the partner insists on very aggressive attempts of penetration.
On a lighter note, vagina is not always silent. Sometimes she sings and smiles during intercourse, when she is very lubricated: «*garrulitas vulvae*» as ancient Romans used to define it. A gentle voice, by the way. Men usually enjoy her, use charming erotic names, but without specific questioning about her needs. When she is soft, lubricated, elastic, welcoming («receptive») and therefore enjoyable, that's enough for most of them.
Physicians themselves usually have a very minimalistic view. Most of them read this organ just as a «connecting tube» for a number of physiologic functions: the passage of menstrual blood, intercourse, natural conception and delivery. These functions are certainly expression of a reasonably healthy vagina. But her needs requires a much more comprehensive and deeper perspective (Tab. 1).
Her anatomy is far from been completely understood and is currently a matter of hot controversy (1). Anatomy, a credited solid science, has not yet resolved the enigma of the G spot (16, 17, 18). So, instead of scientists, physicians are «G-spot believers» or «not believers»: who trust, or not, the yet non definitely proven existence of this highly erogenous area (16, 17, 18). At least for the happy women (and partners) who really enjoy it.

Vagina's neglected vulnerabilities

On the dark side of her life, vagina is more than disappointed. She is desperate. On different situations, she is brutally abused.
In rape, when she is aggressed physically but also biologically, with different dangerous sexually transmitted diseases (19), as genital traumas increase the probability of being infected.
During delivery, she is often devastated when uncaring attendance, violent manoeuvers (such as the Kristeller'), abrupt operative deliveries (forceps and vacuum), unnecessaries episiotomies, incompetent episiorraphies, overall lack of understanding and respect for the perfect biodynamic and timing of a gradual and smooth progression of the child in the vaginal canal lead to dramatic and irreversible disruption of her deep and complex structure, with often undetected damages extended to the anus (20).
After delivery, lack of professional recognition of obstetric damages, leading to introital coital pain, is a serious problem (8): 53% of women complain of introital, coital pain eight weeks after delivery, and 49% of them still have pain one year afterwards (8). Lack of professional recognition of damages and pain is still an issue in the majority of countries. In a very recent Australian study (10), 24% of primigravidae report persisting coital pain («dyspareunia») 18 months after delivery, with a figure overlapping with Glazener data, eighteen years afterwards. Prevention of vaginal traumas at delivery is still a dramatic unmet need.
At surgery, vagina undergoes important, and sometimes under-recognized anatomic modifications, when iatrogenic damages further alter, and sometimes devastate, her structure (9).
When pelvic radiotherapy (RT) is necessary (after anal, cervical or bladder cancer), the lack of care of serious vaginal consequences is amazing. After RT, young desperate women may consult the medical sexologist, months or years later because of a severe introital dyspareunia, and/or impossibility to intercourse, to discover that a seriously stenotic, scarred, retracted vagina is anatomically unable to accomodate penis anymore. Not one physician had clearly instructed the woman on how to prevent the retraction, during and soon after RT. Who cares?

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After the menopause, vagina's health need are even more neglected : without periods and deliveries, for many physicians she turns out to be a useless organ. The minimalistic view suggests to use lubricants to ease penetration: with the logic of putting oil on a lesioned, cracked system, instead of correctly repairing it, until it will be completely broken. With the pejorative aspect, that vagina is a living, sensitive, loving organ, not a gear.
This minimalistic view, often overlapping with frank neglect of vagina's needs, translates into the parallel neglect of the woman's genital health and sexual needs (Tab. 2).

The unmet needs

The biological health of vagina requires a number of requisites. Most of them are still neglected in the majority of women, contributing to really unmet needs:

Anatomic health

Anatomic health is important in terms of morphology, shape and lenght. Besides congenital Mullerian anomalies, the biological health requires respect of the vaginal «cytoarchitecture» (mucosa, submucosa, vessels, muscles, nerves, glands). The respect of the vagina's anatomic integrity is still neglected in a significant percentage of cases, during delivery (8, 10), gynecologic or pelvic surgery, and radiotherapy (14).

The trophic role of sexual hormones

Serene appreciation of the trophic role of sexual hormones in the lifespan is important, at least when locally applied. Only a minority of women are prescribed vaginal estrogens, and only for the shortest period of time: a biological nonsense.
Hormonophobia, in women and in physicians, still prevents the majority of women (who do not have major contraindications) to use postmenopausal, lifelong vaginal estrogens.

Lifelong maintenance of healthy biofilms

Estrogens are essential to maintain the normal vaginal trophism, with low pH (4.0-4.0), lactobacilli and a well structured protective biofilm (5). The maintenance of healthy vaginal biofilms is a most neglected need, as only a minority of postmenopausal women use vaginal estrogens in the long term (3- 5). Pathogenic biofilms facilitate recurrent vaginitis and cystitis from Uropathogenic Escherichia Coli (UPEC) (13, 12, 5). Abuse of antibiotics, frequent in case of recurrent cystitis (12) or other infections, devastates the intestinal and vaginal ecosystems, contributing to recurrent vaginal Candida, worsened vulvar vestibulitis (provoked vestibulodynia) and progressively severe introital coital pain (9).

Functional and anatomic integrity of neighbourg organs and muscles

Vaginal health is poorly respected also in the context of the pelvic organs. Pelvic floor disorders rapidly translate into prolapse, cystocele and rectocele, when the levator ani structure is broken during delivery. A hyperactive pelvic floor narrows and squeezes the vaginal introitus. It is currently understood as the strongest predisposing factor to both coital microtraumas, contributing to introital dyspareunia, the invalidating tip of the iceberg of vulvar vestibulitis/provoked vestibulodynia, recurrent candida vaginitis, and recurrent post-coital cystitis, usually complained of 24-72 hours after intercourse (13, 12).

Respect of vagina's sexual meaning

Only a few physicians really care about the "erotic health" of the vagina. The asexual, aseptic medical vision prefers the objectifyied reading. This is all the more true after the menopause, when the vagina is a matter of clinical attention only when the woman complains of a severe prolapse, or of dryness and pain. Finally, special sexual vaginal needs are in play, and are very neglected, when young women undergo iatrogenic premature menopause caused by chemo and/or radiotherapy. This is particularly bothersome when

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women cannot use hormone replacement therapy, or menopausal hormone therapy, because of a hormone dependent cancer, such as breast cancer or adenocarcinoma of the cervix, endometrium or ovary. Most of them complain of a dry vagina, of excruciating introital pain, of the impossibility to have sexual intimacy. The progressive frustration of sex drive and desire for more intimate closeness may precipitate a major couple' crisis: this is one of the leading reasons why, after breast cancer, 23% of couples separate/divorce, whilst only 7% do, when he has a cancer.

The need of physicians with a comprehensive vision

Physicians need to have a comprehensive vision: courageous, smart, vital and caring. Courageous, because it takes courage to use and recommend sexual hormones in conformistic, politically corrected and ideologically distorted times, when sexual hormones (for women) are considered to be as bad as evil. Smart, because it requires a solid pathophysiologic knowledge to get over the minimalistic «tube» reading for a comprehensive vision of the multiple vagina's functions and need. Vital, because only physicians, men and women, who enjoy the multiple pleasures of a healthy vagina (scent, taste of sexy secretions, temperature, tone, receptiveness, coital orgasm) do really know what women want, and need, to be sexually happy. Caring, because only physicians who really care about their patients consider that maintaining a healthy vagina (also to enjoy a better sex, if the woman desires to do so) is an intrinsic part of their professional medical intervention.

Conclusion

Vagina is still a very really neglected organ. The almost universal minimalistic approach, and disregard of her basic needs, translates into many symptoms and signs that can go unrecognized for years. Estrogen first, but also testosterone and DHEA, may contribute to a better vaginal health, biological and sexual. The sooner, the better, when oncologically appropriate.
After the menopause, either spontaneous or iatrogenic, when the woman does not want oestrogens, DHEA and/or testosterone can be precious. When the woman cannot use them because of major contraindications, biophysical approaches, such as laser techniques, may at least give her the possibiliy to enjoy (again) her femininity and sexuality.
A major cultural progress is necessary to appropriately meet vagina's need in the lifespan, to offer women a longer *health expectancy*, also from the vaginal, and sexual, point of view.

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Tab. 1 - Functions of the vagina

1. The «connecting tube» for
    - The passage of menstrual blood
    - Intercourse
    - Natural conception
    - Vaginal delivery
2. The living house of a multiethnic, dynamic population
    - Physiologic biofilms
    - Pathogenic biofilms
3. The responsive target of sexual hormones
    - Estrogens, progesterone, testosterone
    - Dehydroepiandrosterone sulfate
4. The vital erotic body, as:
    - *Non visible* powerful center of femininity and sexuality
    - Erotic «*bonding factor*» of the couple
    - The most *receptive* sexual organ (besides mouth and anus)
    - The most deeply *attractive* part of the body in terms of *taste*, *scent* (toghether with the vulva), *touch* and *proprioception*

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- The most *welcoming:* when lubrication and vaginal orgasm award the woman and the partner with the best of pleasures

5. The «princess» supporter of women's:
   - Sexual identity
   - Sexual function
   - Sexual relationship

Tab. 2 - Disruptors of vaginal biological and sexual health

1. **Neglect of vulnerabilities:**
   - **Anatomic**:
     - ✓ Delivery related damages
     - ✓ Surgery and radiotherapy (iatrogenic damages)
     - ✓ Traumas and genital mutilations/modifications (concomitant with damages to the vulva)
   - **Infectious:**
     - ✓ Antibiotic abuse = Recurrent Candida
     - ✓ Sexually trasmitted diseases
   - **Hormonal,** to loss of**:**
     - ✓ Estrogens, progesterones, testosterone
     - ✓ Dehydroepiadrosterone sulfate
   - **Sexual,** to:
     - ✓ Unprevented, undiagnosed, untreated abuse
   - **Lifestyles:**
     - ✓ Inappropriate hygiene
2. **Fear of :**
   - **Hormonal therapies («hormonophobia»)**
     - ✓ In physicians
     - ✓ In women