# **UC San Diego**

# **Independent Study Projects**

# **Title**

The biopsychosocial evaluation of female sexual dysfunction

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# **Focused Clinical Multidisciplinary ISP**

## Title:

The Biopsychosocial Evaluation of Female Sexual Dysfunction

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Flibanserin

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### INTRODUCTION

## **Background:**

It is reported that more than 10-20% of women in the United States have sexual health problems involving desire, arousal, orgasm, and/or pain associated with personal distress or bother. Historically, these issues were managed primarily by mental health professionals and were largely ignored by the medical community. Male sexual dysfunction, on the other hand, found its place within the field of urology. With the advent of the FDA approved sildenafil as a safe and effective treatment for men with erectile dysfunction in 1998, women began seeking medical attention and demanding equal therapies for their own unaddressed sexual health concerns.

Female sexual medicine is a field that lends itself extremely well to a multidisciplinary model, though its current place within the traditional realm of medicine is largely undefined. While it has become acceptable for a man to present to his primary care physician or urologist with an issue regarding his sexual health, women are often misdiagnosed or ignored by medical professionals who are unfamiliar with management strategies for female sexual dysfunction. This divergence might stem from the fact that sexual medicine is not currently included in most medical school curricula. As a result, general medical practitioners are often not trained in or comfortable with managing sexual health issues, especially for their female patients.

While this exciting new field is continuously evolving and expanding, standards of care are already being implemented where the need for such a field has gained favor. A gynecologist, primary care physician, internist or psychologist is the current first line of intervention for women seeking initial management for their sexual health issues. The sexual medicine physician may be an appropriate second line of intervention if further management or expertise is needed. Some sexual medicine treatment facilities have even evolved to incorporate sex therapy and physical therapy under the same roof in order to evaluate the complex and multifactorial origins of these presenting problems comprising a biopsychosocial model.

Primary care physicians may be an appropriate first stop for women with a sexual health concern. These physicians often have longitudinal relationships with their patients and can review medications and overall health, screen for diabetes or depression, ask lifestyle questions and test blood levels that could be contributing to sexual health problems.

For a woman seeking medical attention regarding her sexual health, however, the gynecologist is a popular first choice. Within this field, gynecologists with a special interest in vulvar and sexual health issues may have extensive experience in diagnosing and treating vulvar conditions, including vulvodynia, vulvar vestibulitis, vulvar itching and chronic vaginitis, along with pain during intercourse or lack of desire. Additionally, gynecologists with a focus on menopausal women often hear concerns related to sexual dysfunction from their patients.

Referral to a sexual medicine specialist may be indicated if further expertise in diagnosing a sexual health concern is felt appropriate. Sexual medicine physicians, usually board-certified in urology or OB/GYN and specially trained in sexual and reproductive dysfunction, approach sexual concerns mainly through the biopsychosocial model. This line

of thinking suggests that almost all concerns are a combination of psychological and physical factors; psychological issues will eventually have physical ramifications and physical problems will have psychological ramifications. Management of these concerns require the multidisciplinary model, in which the sexual medicine specialist will provide a comprehensive evaluation, follow-up and surgical intervention if needed. Female sexual health problems treated by a sexual medicine specialist may include libido, lubrication or orgasm problems, and sexual pain disorders.

Sex therapists are often part of the multidisciplinary team in sexual medicine. These specialists may address the sexuality, relationship and intimacy concerns of individuals or couples who may visit a sexual medicine physician. If indicated, psychotherapy for individuals, couples and families may be used.

Pelvic floor physical therapists are also often vital in helping to diagnose a sexual health issue. Common problems seen by these specialists include urinary incontinence, pelvic pain, dyspareunia and vaginismus, vulvodynia and vestibulodynia, pudendal nerve pathology, endometriosis, and prenatal and postpartum care.

## **Description of project/goals/objectives:**

Sexual medicine, a field dedicated to human sexuality and its disorders, derives its clinical success from a multidisciplinary approach to care. Treatment facilities focusing solely on sexual medicine are rare, so the opportunity to dedicate my summer exploring the biopsychosocial model for women in this setting is quite unique.

My overall goal for this ISP is to explore the physiological, musculoskeletal and psychological aspects of female sexual medicine from varying perspectives and management approaches in order to better care for a woman with sexual health concerns. As a first-year medical student with a passion for exploring a field not yet well defined within the traditional medical realm, I believe this unique opportunity will provide me with an experience that I would not otherwise be exposed to during my time in medical school.

My specific aims for this project are as follows:

- 1) To understand the biopsychosocial origins of a woman presenting to a sexual medicine specialist or OB/GYN with a sexual health concern
- 2) To gain insight into the different perspectives and management approaches provided by a multidisciplinary team
- 3) To compare the different practices providing care for female sexual dysfunction
- 4) To understand the path that female patients take to seek care for their sexual dysfunction
- 5) To understand the barriers of discussing female sexual health with a given provider and seeking care from the patient's perspective
- 6) To understand what a comprehensive evaluation for a woman presenting with a sexual health concern entails
- 7) To gain insight into what role a woman's partner may play in the initial presentation, diagnosis and management of female sexual dysfunction
- 8) To assess what the female patient's goals and expectations are for treatment
- 9) To evaluate the female patient's perception of her experience based on management by a multidisciplinary team including physician, sexual therapist and physical therapist at a single site

10) To gain insight into the novel techniques and evaluation methods being utilized for diagnosing female sexual dysfunction

## Personal background & motivation

Female sexual health is a relatively new and widely unexplored area of medicine. Growing up in an open-minded Brazilian family, the subject of sex was not considered taboo and as a result I have always felt comfortable openly discussing this topic. It was not until I became the confidant with friends about their sexual concerns at a young age that I realized many women do not feel comfortable bringing up these issues with their healthcare providers. During my first year of medical school at UC-San Diego School of Medicine, I was able to begin exploring this field professionally. I began shadowing Dr. Irwin Goldstein, an expert on the topic of male and female sexual dysfunction, at San Diego Sexual Medicine during the winter and spring term. I was especially interested in the topic of female sexual dysfunction, a branch of medicine not yet well defined within the traditional medical realm.

Through my clinical exposure to the multidisciplinary biopsychosocial evaluation of a woman presenting with a sexual health concern, I will be able to better understand the biopsychosocial origins and manifestations of women presenting with sexual health concerns. I hope to gain insight into the barriers that prevent women from initially seeking care, the path they take to finally receive care, and what resources and are currently available for women with sexual dysfunction.

## **RESULTS/CLINICAL EXPERIENCE**

To complete my FCM-ISP, I spent the summer of 2015 with Dr. Irwin Goldstein at San Diego Sexual Medicine (SDSM), Dr. Kathryn Macaulay at UCSD's Menopause Health Program, and Dr. Erin Gross at UCSD's Vulvar and Sexual Pain Clinic. I gained clinical exposure with a multidisciplinary team including a sexual medicine urologist, sex therapist, pelvic floor physical therapist, and nurse practitioners for the comprehensive evaluation of women presenting with sexual dysfunction.

The most common patient presentations across these three sites were perimenopausal or menopausal women seeking care for vasomotor and/or sexual dysfunction symptoms. In an effort to compare the varying treatment approaches, I will first provide background for the hormonal explanation of Genitourinary Syndrome of Menopause (GSM), followed by summaries of my experience with each provider and a representative case presentation at each site. In addition, I will present the research I completed during my time at San Diego Sexual Medicine studying the vulvoscopic findings of menopausal women presenting with sexual dysfunction pre- and post- hormonal treatment. I received the 2016 Sexual Medicine Society of North America (SMSNA) Scholars in Sexuality Research Grant to complete this research project, and became the primary author of a podium presentation at the SMSNA 2016 Annual Fall Scientific Meeting in Scottsdale, Arizona, with my abstract published in The Journal of Sexual Medicine.

Through my experience at SDSM with Dr. Goldstein, I also gained exposure to the surgical management of sexual dysfunction. To describe the impact of surgical intervention once medical management options were exhausted, I will present a patient testimonial.

## **Background of GSM:**

Serum estradiol values vary widely in a woman's life. Prior to puberty, serum estradiol values are low. Post-puberty, during reproductive ages, women have variations in serum estradiol that range from approximately zero to approximately 500 pg/ml every 28 days. Two estradiol peaks are noted: at ovulation and in the mid-luteal phase. During pregnancy serum estradiol values rise to approximately 2,000 - 3,000 pg/ml. In the peri-menopausal transition starting at age 40 years, there are progressive reductions in peak serum estradiol during increasingly irregular menstrual cycles. The overall decline in peak serum estradiol leads initially to hot flashes and night sweats. Menopause is characterized by the cessation of ovarian estradiol synthesis. Typically occurring in women in midlife, during the early 50s, natural menopause is defined as beginning a year after their last menstrual period in those women who have not had a hysterectomy. Surgical menopause occurs after women have had bilateral oophorectomy. Over time, continuous estradiol loss causes up to 45% of menopausal women to experience symptoms of vaginal atrophy, including dryness, dyspareunia, involuntary urination, soreness, itching, burning and pain.

Serum testosterone values (ng/dl) in women decline progressively after age 30, so there are no distinct changes at the perimenopause in serum testosterone comparable to estradiol. Sex hormone binding globulin values increase during aging and following exposure to medications such as hormonal contraceptives and oral estrogens. Free or calculated free testosterone thus falls more progressively at a steeper slope than serum testosterone. Perimenopausal and menopausal women also experience a decline in serum testosterone, in part a result of the declining production of testosterone pro-hormones, dehydroepiandrosterone, by the adrenal glands. Despite a contribution to serum testosterone levels by the ovaries in post-menopausal women, the ovaries are not usually able to correct the deficit in the adrenal glands' production. Symptoms of "female androgen insufficiency syndrome" include diminished sense of wellbeing or dysphoric mood, reduced muscle and bone mass, and decreased sexual desire, arousability, and pleasure.

Serum progesterone values (ng/ml) during the reproductive years increase post-ovulation as progesterone is synthesized in the corpus luteum during the luteal phase. When ovarian ovulation begins to fail in perimenopausal women, serum progesterone values approach zero ng/ml.

The collection of symptoms and signs associated with a decrease in serum sex steroid hormones, estradiol, progesterone and testosterone, involving physical changes to a woman's genitourinary region is now described by the comprehensive term, GSM.

The prevalence of female sexual dysfunction in menopausal women, low desire, low arousal, poor orgasm and dyspareunia, has been estimated to vary from 25% to 63% of women. In the community, treatments for the various female sexual dysfunctions in menopause have varied widely, from use of local vaginal creams to systemic estradiol and progesterone administration.

## **UCSD Menopause Clinic - Dr. Kathryn Macaulay**

During my time with Dr. Macaulay, I gained exposure to peri- and menopausal women seeking treatment for vasomotor symptoms. Oftentimes, these women admitted to concomitant dissatisfaction with their sexual life related to low libido, vaginal dryness or pain with intercourse. Sexual function was screened for during intake of menopause consultations, and areas of concern were discussed openly during visits. In addition, Dr. Macaulay has extensive experience with hormone replacement therapy, and spends the necessary time with patients to discuss the indications, benefits and risks so that they can make a shared and educated decision.

The unexpected findings of the Women's Health Initiative (WHI) study in 2002 demonstrating an increased risk of stroke, heart attack, blood clots and breast cancer radically changed physicians' understanding of the benefits and risks of hormone therapy. Prior to that, several published observational studies, reviews, and meta-analyses suggested that postmenopausal hormone replacement therapy (HRT) actually reduced the risk of coronary heart disease, in that estrogen was found to raise HDL and reduce LDL. Many women are still cautious to use HRT after the WHI trial came out, with hormone therapy use by women in their 50s declined by 60% from 2001 to 2009.

However, subsequent evidence has demonstrated that these findings may be limited to the certain formulations of HRT used in the WHI trial. These include the effects of oral conjugated equine estrogens (Premarin) rather than transdermal estradiol and oral medroxyprogesterone acetate rather than oral micronized progesterone. Using transdermal estrogen would bypass the first-pass effect of oral formulas, inhibiting the undesirable metabolic effects including elevated triglycerides, decreased LDL particle size, and increased production of coagulation factors and CRP which could be factors contributing to heart disease in the WHI. According to the most recent position statement from the North American Menopause Society (NAMS), oral estrogen +/- progesterone therapy increases the risk for ischemic stroke by about 1/3 in relatively healthy postmenopausal women. Transdermal estradiol at a dose of 50 micrograms or less did not increase stroke risk. Furthermore, growing evidence suggests that women with a history of VTE or those with Factor V Leiden mutation are at increased risk for VTE with HT use. Limited observational data suggest lower VTE risk with transdermal versus oral ET, but no comparative RCT data are available. Finally, several studies have shown that oral micronized progesterone has an overall better risk profile than other progestins with regard to thrombotic and breast cancer risks.

The debate regarding hormone replacement therapy has brought about the importance of individualized therapy to treat menopausal symptoms, considering a patient's risk factors with the goal to use the lowest effective dose for the shortest period of time. Currently, NAMS advises that indications for using systemic hormone replacement therapy are for treatment of moderate to severe vasomotor symptoms that are bothersome to the patient. Hormone therapy initiation by women aged 50 to 59 years or by women within 10 years of menopause to treat typical menopause symptoms does not seem to increase the risk of coronary heart disease events; and in fact, started early in menopause may reduce the risk. There is a general consensus within the medical community that HRT may be helpful in preventing osteoporosis, reducing the risk of colon cancer and benefiting urinary health.

## Case Study C.R.

## Subjective

48 year old G3P2 referred for a new menopause consultation. Patient reported a history of menorrhagia with endometrial ablation in 2007. Menopausal symptoms began within the past year, including hot flashes every 1-2 hours, night sweats and insomnia (only sleeping 4-5 hours/night). She complains of increased vaginal dryness and pain during intercourse, but otherwise denies issues with partner with sex. Patient reported depression and poor mood since the beginning of the year. Has been followed by a therapist which has been somewhat helpful but has not started medications and not interested in starting any. Tried testosterone cream for libido last year for 3 months. Tried a "hormonal pill" unsure the name for 2 days but stopped secondary to palpitations. No risk factors for osteoporosis, or breast cancer other than age. Father has had 4 myocardial infarctions, first at age 55. Pap testand Mammogram both had normal findings. She never had a DEXA or colonoscopy performed.

## **Objective**

Labs showed normal CBC, CMP, low serum testosterone (3 with range 8-48), free testosterone 0.6 (0.0-2.2 F), estradiol < 6.0, LH 41.2, FSH 121.5, TSH 1.28, FT4 1.05

#### Assessment

Patient is a candidate for postmenopausal hormone therapy for treatment of moderate-severe vasomotor symptoms. Discussed with patient current indication for using HT is for treatment of moderate to severe vasomotor symptoms that are bothersome to patient and to use lowest effective dose for relieving symptoms. The need for continuing use of hormone therapy will be reassessed periodically, at least annually. Discussed studies showing increase in risk of breast cancer with combination E/P use, particularly if used for longer duration (>5 yrs). Also increased risk of DVT/PE and small increase in risk of stroke was discussed.

#### Plan

Rx given: transdermal estrogen patch, Vivelle 0.05 mg 2x/week—start for 4 weeks then add in progesterone. Prometrium 100 mg/d po daily to start 1 month after using patch for endometrial protection. F/U in 3 months

#### Follow-up at 3 months:

Improvement in hot flashes since starting estradiol patch, denies vaginal bleeding and uses lubricants for vaginal dryness

No libido or sexual desire and no sex for 2 months—new symptom for her since menopause. Testosterone cream in the past led to no improvement in libido. Has tried therapy in the past, stress over low libido and worried how it's affecting her relationship. Living together with her boyfriend and interested in trying flibanserin, doesn't drink alcohol. Assessment was hypoactive sexual desire disorder causing personal distress with no other identifiable reasons for low sexual desire. Rx flibanserin 100 mg. Advised patient of side effects including hypotension, syncope which is increased with interaction with alcohol. Signed REMS program patient-provider agreement form regarding interaction of flibanserin with alcohol.

### UCSD Vulvar Pain Clinic - Dr. Erin Gross

Dr. Gross provides special care for patients experiencing vulvar pain or issues related to sexual desire or function. It is important to note that many women with chronic vulvar pain are told their symptoms are "all in their head." Lack of diagnosis can further increase distress and delay access to more specialized medical care.

Vulvodynia is a common chronic pain disorder localized to the vulvar region, lasting at least 3-6 months, and thought to affect 15-20% of adult women. It is often associated with varying pain intensities and triggers, and can sometimes be episodic, intermittent or unremitting. If vulvar pain is localized to the vestibule, it is commonly called vestibulodynia or vulvar vestibulitis syndrome. The origin is thought to be either hormone-mediated or neuroproliferative, meaning it is a problem of too many skin nerves in small zones. Theories include increased local inflammation factors like histamines and substances, which keep the capillaries dilated and increase the nerve endings. Another theory is that estrogen receptors disappear and this somehow signals the extra nerves to grow.

On physical exam of the pelvic floor, women with vulvodynia have increased spasm and tone of the levator ani muscle in response and compensation to vulvar pain. Biopsies have shown more areas of chronic inflammation and more pain nerve fibers. The underlying cause may be attributed to inflammatory and infectious disease processes, neurologic conditions, genetic factors, stress factors and hormone factors. Known medical causes include vulvovaginal candida or yeast infections, endometriosis of the vulva, lichen sclerosis or lichen planus, contact dermatitis of the vulva, vulvar atrophy from low levels of sex steroid hormones, pudendal nerve entrapment syndrome, referred pain from tender pelvic floor muscles, post-op pain after perineal surgery, or following perineal radiation therapy. Risk factors for the development of vulvar pain include irritable bowel syndrome, interstitial cystitis or oral contraceptive pills.

Dr. Gross utilizes a multidisciplinary approach in the management of vulvodynia, utilizing referral to pelvic floor physical therapy, pain clinic, or sexual therapy. Central nervous system sensitization is often center to visceral and somatic hypersensitivities and hyperalgesias, so attention to the neuromuscular system is central to management. Treatment for vestibulodynia may include lidocaine ointment (applied just before intercourse with a cotton ball), tricyclic or SNRI antidepressants (Elavil 10 mg tablets daily increasing up to 50 mg q week), anticonvulsants (gabapentin 300 mg increasing up to three pills TID), steroid cream, biofeedback, pelvic floor physical therapy or nerve blocks. Typically, vulvar or vestibular "pain" indicates a likely contribution from low levels of sex steroid hormones whereas "itching" may be more related to inflammation and thus may respond better to localized steroid treatment. Only in menopause is estrogen therapy really helpful, as younger women have estrogen, but the tissues cannot sense it.

## Case Study: D.B.

### *Subjective*

56 yo F with history of lichen sclerosis who presents with itching and burning of the vulva. Diagnosed with lichen sclerosis 1.5 years ago by vulvar biopsy. Has tried clobetasol intermittently, but complains of the sensation of "tearing" with sexual intercourse. She has

not looked in the mirror to assess skin changes. Denies vaginal bleeding or trauma to the perineum. Not on any hormone replacement therapy, denies hot flashes or night sweats.

## **Objective**

Vulva Exam: Persistent pale plaques with evidence of fissuring most prominent at the posterior fourchette.

Anus/Perineum: perianal involvement consistent with lichen sclerosus

### Assessment

Lichen sclerosus is a skin disorder that affects the vulvar skin. It may occur in any age group of women and girls. The exact cause is unknown but it is not a contagious disease. Lichen sclerosus is characterized by small white patches that give the skin a crinkled appearance, looking like parchment paper. The skin can become red, thin, irritated, sore and typically itchy. Affected skin may involve the entire vulvar area from the clitoris to the anus. Eventually, scarring of the vulvar foreskin hides the clitoris. The labia minora may disappear almost completely at times. Not uncommonly, splitting of the skin in the midline is seen. Tears may also develop in the natural folds of the vulva. The vaginal opening may become smaller, interfering with intercourse. Scratching may lead to erosions. Itching and pain are the primary symptoms. Lichen sclerosus is associated with destructive architectural changes, difficulty voiding and inflammation. In addition, patients with lichen sclerosus typically have a higher risk of developing vulvar dysplasia. The difference between treatment for a symptom flare and maintenance therapy was also discussed. A biopsy is usually necessary to make the diagnosis.

Lichen sclerosus is a chronic skin condition. Symptoms can be managed, but not cured. The goal of treatment is to eliminate symptoms and protect the skin from damage. Commonly, the anatomic changes of lichen sclerosus will not completely resolve despite persistent and aggressive treatment. Treatment usually requires the use of high potency topical steroids or other anti-inflammatory medications.

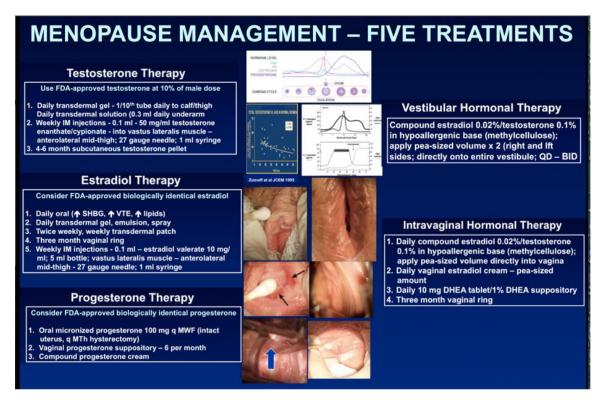
Due to the chronic nature of the disease, diligence to treatment is important to protect the skin from further damage and to help control symptoms. Treatment will help prevent further changes in anatomy and preserve normal elasticity. Reexamination of the skin at least every six to twelve months is necessary to track changes and progression or regression of the disease. It is important for the women with lichen sclerosus to do vulvar self-examinations. This will allow her to track changes and monitor if any areas are not responsive to treatment or are chronically eroded.

## Plan

- -Continue clobetasol twice daily for 1 week then taper to nightly for maintenance therapy
- -Stressed the importance of six month interval visits given chronicity of disease
- -Begin using a vaginal estrogen, Estrace, twice weekly at night to restore vaginal moisture, flexibility and skin integrity
- -Discussed careful care of the vulva to help alleviate some symptoms of itching, burning and irritation including avoiding contact with irritating chemicals such as soaps, wearing 100% cotton underwear, not using sprays or powders on the vagina, not douching

# San Diego Sexual Medicine – Dr. Irwin Goldstein Biological Female Sexual Medicine Evaluation

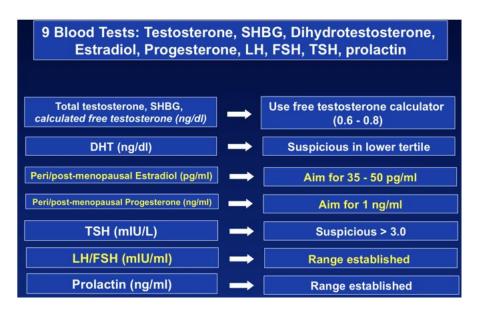
At San Diego Sexual Medicine, treatment of women in menopause with female sexual dysfunction is based on a comprehensive evaluation of biopsychosocial contributors, including physical therapy, sex therapy and biology. Specifically, within biologic factors, hormonal managements of menopausal women are based on individual symptoms, patient reported outcomes, physical findings including vulvoscopy and regular monitoring of sex steroid hormone blood test values. The goal is to utilize biologically identical sex steroid hormones to achieve and maintain ideal values of: 1) serum testosterone (0.8 ng/dl), 2) serum estradiol (35 – 50 pg/ml), and 3) serum progesterone (1 ng/ml). In addition, hormonal management engages: 4) local estradiol and testosterone treatment to the vestibule and 5) local estradiol and testosterone treatment to the vagina. In total there are five hormonal-based treatments in menopausal management.



Systemic biologically identical estradiol therapy that meets the goal of 35-50 pg/ml in our clinical experience has been shown to successfully improve hot flashes, night sweats, and sleep disturbances that negatively affect body image, mood, and sexual desire. Systemic biologically identical progesterone therapy that meets the goal of 1.0 ng/ml may add additional cognitive, bonding and wellbeing benefits and should always be used to oppose the effect of systemic estrogen in women with an intact uterus.

Systemic biologically identical testosterone is not FDA approved for women but has been reported in the treatment of menopausal women for more than 50 years. Nevertheless, recent randomized double-blind, placebo-controlled clinical trials in women in menopause have demonstrated that systemic biologically identical testosterone therapy significantly improves sexual desire, arousal, orgasm frequency and sexual satisfaction compared to

placebo. In addition, local vestibular testosterone and estradiol therapy have been shown to relieve symptoms of vulvovaginal atrophy and hormonally-mediated vestibulodynia. The vestibule is of endodermal embryology and has high concentration of androgen receptors. It is hypothesized that the improvement in vestibular pain after systemic and local testosterone therapy is seen in part because minor and major vestibular gland health and lubrication relies upon testosterone and other androgens.



<u>Case Study</u>: M.G. *Subjective* 

45 year old G3P1021 perimenopausal female presents at initial consultation with symptoms of depression, low libido, fatigue, mood changes, forgetfulness, and hot flashes. History of total hysterectomy in 2013, and multiple prior surgeries for endometriosis, fibroids, and ovarian cysts. Following hysterectomy, she was put on oral premarin which she recently stopped taking. Reports an intercourse success rate of 10%, engages in intercourse twice per week with low arousal and orgasmic capabilities.

## VALIDATED OUTCOME SCALES

Total Desire Domain score: 1.2.

Total Arousal Domain: 2.1.

Total Lubrication Domain: 3.6.

Total Orgasm Domain: 1.6.

Total Satisfaction Domain: 2.4.

Total Pain Domain:6.

FSFI score: 16.9.

SDS-R score: 29 /52.

PHQ-9 score: 21.

PSS score:28/40.

Sensory score: 19 /33.

Affective score: 5/15.

PPI score: 0 /5.

V-Q: 10.

## *Objective*

Labs show vitamin D of 25.9, TSH of 0.926, total T of 11, SHBG of 240.3, prolactin of 9.7, progesterone of 0.3, FSH of 52, LH of 64.7, estradiol of 47.3, DHT of 7.4, and calculated free T of 0.0418.

## **Vulvoscopy**:

Her right labia majora was normal. Her left labia majora was normal. The right interlabial sulcus was normal. The left interlabial sulcus was normal. The clitoris was 1/2 size. The clitoral hood was normal. The frenulum on the right side was normal. The frenulum on the left side was normal. The width of the labia was 15 mm on the right and 20 mm on the left. There was 50% resorption of the right minora in the posterior aspect of the vestibule. There was 25% resorption of the left minora in the posterior aspect of the vestibule. Both labia minora did not meet at the posterior fourchette. The urethral meatus was normal. The minor vulvar vestibular glands at 1 o'clock, 3 o'clock, 5 o'clock, posterior fourchette, 7 o'clock, 9 o'clock and 11 o'clock revealed erythema with the 1 o'clock, 3 o'clock, and 11 o'clock areas with 5/10, 5/10, and 2/10 discomfort to cotton swab testing, respectively. Speculum examination was performed. Vaginoscopy revealed minimal rugae. The color of the vaginal wall was normal. There was normal discharge. The vaginal pH was 4.5 as measured by pH paper. This study revealed clitoral atrophy, labial resorption, and mild provoked vestibulodynia.

#### Assessment

Discussed M.G's elevated SHBG likely due to oral premarin use leading to a low calculated free testosterone (1/20 the ideal value of 0.8 ng/dl), consequences of which include low libido, pain during intercourse, mood changes, low energy, and inability to achieve orgasm. Discussed the five treatments for menopausal management, including systemic testosterone, estradiol, progesterone and local vestibular and intravaginal hormonal therapy. Options for testosterone therapy include a daily topical gel, intramuscular injections weekly into the thigh or a subcutaneous pellet placed every 4-6 months. For estradiol therapy given E2 values below goal of 35-50, M.G. is considering transdermal patch, IM injections or a vaginal ring. For progesterone therapy given goal of 1, we discussed use of oral micronized progesterone. Concerning hormone mediated provoked vestibulodynia and vulvovaginal atrophy, M.G will use daily compounded formula of estradiol and testosterone topical gel.

Concerning low sexual interest, the problem seems to be, in part, related to an imbalance of excitatory and inhibitory neurochemicals in the portions of the brain where the sexual reflexes are regulated. We discussed high inhibition, low excitation sexual dysfunction and general strategies to improve libido. Specific strategies to manage low libido include dopamine agonists, oxytocin, amphetamine, PDE5 inhibitors, serotonin antagonists, opioid antagonists, and progesterone. As there are no current FDA-approved therapies for this sexual disorder, we discussed that these therapies vary by the individual, so it may take some experimenting to find a therapy that works for her. These strategies often work synergistically with other therapies, so we will follow M.G's hormones to find balance.

## Plan

- 1. Testosterone replacement: 1 testosterone pellet (75 mg Testopel) placed subcutaneously, midway between right iliac crest and right sacroiliac joint
- 2. Estradiol replacement: Systemic biologically identical estradiol replacement with Femring 0.05 mg

- 3. Progesterone replacement: Biologically identical micronized progesterone 100 mg twice weekly, on Monday and Thursday
- 4. Vestibular and intravaginal therapy: Administer daily low dose biologically identical compounded estradiol 0.03% and testosterone 0.1% gel to the vestibule.
- 5. Vitamin D supplementation: Start vitamin D3 5,000 IU daily
- 6. Get labs (testosterone, estradiol, progesterone, SHBG, DHT, Vitamin D) redrawn in 4-6 weeks, with follow-up 1 week after labs done
- 7. For low sexual interest, consider sex and physical therapy, along with experimenting with bupropion 75 mg daily in the morning to raise dopamine, oxytocin 250 IU lozenge an hour prior to intercourse, Viagra 25 mg one hour prior to intercourse or Buspar 10 mg daily to lower serotonin

## Psychological Sex Therapy

Sex therapy provides a forum where all of the contributions to sexual difficulties can be identified and addressed with the woman alone or with her partner. While diminished sexual desire or sexual apathy is the most prevalent sexual complaint of women, orgasmic problems are common as well. Women with these difficulties may experience more sexual guilt, be less sexually assertive, and endorse more negative attitudes towards sexual activity and masturbation. Therapy is typically brief, often no more than 10-12 sessions, but focused on individualized care.

Dr. Hartzell at San Diego Sexual Medicine is a marriage and family therapist who focuses on relationship issues that may be preventing an individual or couple from having a more fulfilling sex life. She helps patients to gain a deeper understanding of their own sexuality and how it affects their lives and relationships. In addition, she helps individuals and couples learn how to communicate their sexual needs and desires to deepen their sexual lives.

There are several predisposing, precipitating, maintaining, and contextual factors that come into play when evaluating sexual discontent and difficulties. Negative early life experiences, including sexual, physical or emotional abuse may predispose to later sexual problems. Precipitating factors include repetitive or traumatic sexual experiences that may damage self-confidence such as repeated criticisms from a spouse or discovery of a partner's infidelity. Finally, maintaining factors such as relationship distress, inadequate sexual stimulation, anxiety and depression, or impaired self-image or self-esteem may prolong and exacerbate problems, irrespective of the original predisposing or precipitating conditions. Contextual factors are included in maintaining factors, in that they can interfere or interrupt sexual activity such as anger or resentment towards a partner.

### Case Study: M.G.

M.G. states that 6 months after starting premarin in 2013 after a total hysterectomy she noticed mood changes including depression, low libido, fatigue, forgetfulness and feeling "off balance". These symptoms have worsened in the past year. Regarding psychological treatment in the past, she has a short history of taking Lexapro for 2 years during the postpartum period. Felt this was helpful at the time, but was able to wean off without issue.

Currently feels that these hormonal changes are emotionally distressing, including weight gain, dry skin, and body aches. She uses Xanax occasionally for anxiety, minimal social alcohol use and denies recreational drug use.

Regarding her sex life, she feels no sexual urges. She has a loving husband of two years, and they engage in intercourse but only because she wants to help participate (husband with erectile dysfunction). She admits to a history of molestation by her uncle as a child. In addition, her current husband's ex-wife is harassing her and patient's ex-husband was emotionally abusive.

Provided supportive counseling for patient, and discussed possible contribution of patient's abusive past to current sexual dysfunction. Recommend continued counseling to work through trauma from past. The technique of cognitive behavioral therapy (CBT), may be especially helpful to understand if and why she is avoiding sexual activities, what role she and/or her partner play, and exploring potential solutions or options for physical intimacy.

## Pelvic Floor Physical Therapy

Pelvic floor physical therapists provide personalized treatment to restore function, improve mobility relieve pain and prevent or limit permanent physical disabilities of patients suffering from injuries or disease. Their specialization is in pelvic floor disorders, including urinary dysfunction such as incontinence and organ prolapse. Physical therapists provide education, anatomical and physiological information and give specific exercises with the goals of decreasing vaginal pain and sensitivities of painful tissues. Pelvic floor hypertonus or high muscle tone may also contribute to sexual pain and an important part of physical therapy is teaching the patient how to normalize muscle tone.

Debbie Cohen is a pelvic floor physical therapist, and is certified in exercise science, orthopedic manual therapy of the spine, and women's pelvic health. Her evaluation and therapy intervention generally consist of education, pelvic floor strengthening exercises, and utilizing the modalities of pelvic floor biofeedback and electrical stimulation. Ms. Cohen also has a personal interest in preventive health and advocates for healthy lifestyle changes in her patients, including regular aerobic exercise, practicing daily pelvic floor relaxation and good urinary habits, along with eating a whole foods diet to promote a healthy microbiome.

### Case Study: M.G.

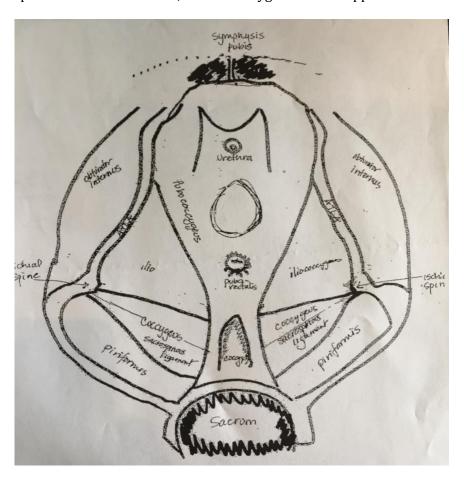
Goal of consultation to establish mind-body awareness. Approach from abdominal muscles, feeling mobility of scar tissue, relaxing transverse abdominal and internal oblique muscles. Inside vagina, identified areas of restriction from scar tissue and areas of sensitivity. Feel for pelvic floor prolapse, laxity of tissue not supported by uterus. Discussed that shallow muscles inside the vagina are responsible for stopping the urine stream.

Educated patient regarding the pelvic and structural anatomy for a better understanding of the functions of each muscle and how malfunction may lead to pain or sexual dysfunction. The perineum is a diamond-shaped area, subdivided into an anterior part, the urogenital triangle (UGT) and the posterior part, the anal triangle.

The UGT contains the superficial muscles of the perineal region, known as the first layer. These include the superificial transverse perineal (stabilizes the perineal body), bulbocavernosus (functions as a vaginal sphincter and assists in erection of the clitoris), ischiocavernosus (clitoral erection). The anal triangle consists of the external anal sphincter (part of voluntary sphincter of anal canal).

The second layer of the UGT is enveloped by the superior and inferior fascia, and contains the urogenital diaphragm (UGD). The UGD consists of 3 layers, the inferior layer of fascia known as the perineal membrane, a muscle layer containing the sphincter urethrae and the deep transverse perineal muscles. The UGT and UGD are innervated by the pudendal nerve, 3 branches in the superficial and deep layers including the dorsal nerve of the clitoris, the perineal branch and the inferior hemorrhoid nerve or inferior rectal nerve.

The third layer involves the levator ani consisting of the pubococcygeus (pubovisceral, pubovaginalis) which supports the pelvic viscera, puborectalis which acts as the voluntary sphincter of the anal canal, and iliococcygeus which supports the viscera and lateral coccyx.



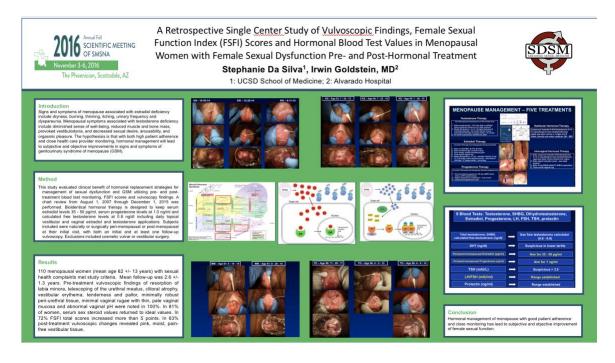
Performed surface EMG muscle biofeedback, in which a sensor is placed in the vagina and the muscle activity of the pelvic floor is recorded and displayed on a computer monitor. With this visual feedback, the woman is able to see how tense or weak her muscles are and this allows her to learn the proper methods to relax and strengthen her muscles. Established a baseline at rest then isolated different muscles with a series of contractions and relaxations. From shallow to deep, targeted muscles include the bulbocavernosus, ischiocavernosus, superficial transverse perineal, deep transverse perineal, levator ani (pubococcygeus, puborectalis, iliococcygeus) and coccygeus muscles.

#### Research

# Specific Aims and Hypothesis

The primary objective of this study is to evaluate the clinical benefit of hormonal strategies for the management of sexual dysfunction and Genitourinary Syndrome of Menopause utilizing pre- and post-treatment vulvoscopic findings with photographic representation correlated with hormonal blood values.

Vulvoscopy has been shown to be a useful tool in assessing the health and integrity of various genital organs including the glans clitoris, minor vestibular glands, labia minora and majora, peri-urethral tissue and vaginal mucosa. Women in menopause deprived of critical sex steroid hormones, estradiol and testosterone, often present with vulvoscopic findings of labial resorption, urethral meatal prolapse or telescoping of the urethral meatus, clitoral atrophy, vestibular erythema and tenderness, vestibular pallor, vestibulodynia and minimally robust peri-urethral tissue. It is hypothesized that with adherence and close monitoring, the hormonal menopausal management consisting of five strategies utilized at San Diego Sexual Medicine will lead to visible improvement on vulvoscopy. Secondary objectives are to evaluate subjective responses to hormonal therapies using validated patient reported outcome score questionnaires.



## **Abstract**

**Objectives:** Signs and symptoms of menopause associated with estradiol deficiency include dryness, burning, thinning, itching, urinary frequency and dyspareunia. Menopausal symptoms associated with testosterone deficiency include diminished sense of wellbeing, reduced muscle and bone mass, provoked vestibulodynia, and decreased sexual desire, arousability, and orgasmic pleasure. The hypothesisis is that with both high patient adherence and close health care provider monitoring, hormonal management will lead to subjective and objective improvements in signs and symptoms of genitourinary syndrome

of menopause (GSM).

**Materials and Methods:** This study evaluated clinical benefit of hormonal replacement strategies for management of sexual dysfunction and GSM utilizing pre- and post-treatment blood test monitoring, FSFI scores and vulvoscopy findings. A chart review from August 1, 2007 through December 1, 2015 was performed. Bioidentical hormonal therapy is designed to keep serum estradiol levels 35 - 50 pg/ml, serum progesterone levels at 1.0 ng/ml and calculated free testosterone levels at 0.8 ng/dl including daily topical vestibular and vaginal estradiol and testosterone applications. Subjects included were naturally or surgically perimenopausal or post-menopausal at their initial visit, with both an initial and at least one follow-up vulvoscopy. Exclusions included cosmetic vulvar or vestibular surgery. **Results:** 110 menopausal women (mean age 62 +/- 13 years) with sexual health complaints

met study criteria. Mean follow-up was 2.6 +/- 1.3 years. Pre-treatment vulvoscopic findings of resorption of labia minora, telescoping of the urethral meatus, clitoral atrophy, vestibular erythema, tenderness and pallor, minimally robust peri-urethral tissue, minimal vaginal rugae with thin, pale vaginal mucosa and abnormal vaginal pH were noted in 100%. In 81% of women, serum sex steroid values returned to ideal values. In 72% FSFI total scores increased more than 5 points. In 63% post-treatment vulvoscopic changes revealed pink, moist, pain-free vestibular tissue.

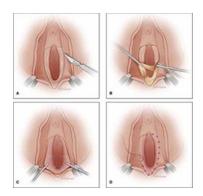
**Conclusion:** Hormonal management of menopause with good patient adherence and close monitoring has lead to subjective and objective improvement of female sexual function



KN age, 69 years, presented on 10/20/14 with vulvoscopic findings of labial resorption, telescoping of the urethral meatus, clitoral phimosis, vestibular erythema and tenderness, vestibular pallor, vestibulodynia and minimally robust peri-urethral tissue. After use of the five biologically identical hormone treatment strategies, 10 months later, most of the vulvoscopic findings had changed, specifically the loss of the urethral telescoping, loss of pallor, loss of erythema. In its place, pink moist pain-free vestibular tissue was noted.

## Surgical Therapy for Vestibulodynia:

Vestibulectomy is a procedure to remove the tender areas of the skin within the vestibule, typically the superficial layer. The hymen flap is then used to cover the small area where the involved skin surface was removed. Surgery has the best results for vulvar vestibulodynia, with reported cure rates around 85% for those refractory to other therapies. This procedure can be done in the office with local anesthesia or as a same day surgery. Usually physical therapy is necessary after surgery.



### Patient testimonial

"I am a 41 year old female who first experienced sexual pain at the age of 26 after taking OCP. Sensuality became a huge part of my identity after discovering sex at the age of 20. Initially pain was intermittent and I only experienced it prior to my period. I went to see a multitude of doctors, who inevitably diagnosed yeast or bacterial infections and gave me antifungals or antibiotics. Sometimes the medications seemed to work but the pain always returned. I was tested for every STD known multiple times and the results were always negative. Once, out of frustration, I made an appointment with two different doctors in the same day and got two different diagnoses: yeast vaginosis and bacterial vaginosis. Several healthcare providers said there was nothing wrong with me, and seemed disgusted when that answer frustrated me. A nurse would ask, "Did you want something to be wrong?" as I replied, "No, but something IS wrong and all you've told me is that you haven't found it." One doctor suggested I spend more time on foreplay, another put his hand on my knee and earnestly said, "This is very important. I want you to go home tonight and have a glass of wine and have sex." It was clear that her doctors believed the problem was primarily caused by a psychological issue. I developed a routine: make an appointment with a new doctor, feel hopeful, see the doctor, sit in the car afterwards and cry.

At the age of 30 I saw a gynecologist who put me on a local topical estrogen, after which I had temporary relief of my symptoms for about 10 months. When a regimen of 200 mg of progesterone daily was added to regulate my menstrual cycle, within a month I developed severe, persistent vestibular pain. The pain did not go away even after stopping the progesterone. I started HRT but the pain remained constant. I began struggling with bitterness and despair, grieving the loss of intimacy and even my identity. I tried a variety of treatments: antifungals, antibiotics, steroid creams, amitriptyline, tegretol and Neurontin, cervical cryotherapy, acid treatment for HPV (which I didn't have), HRT, local estrogen, vestibular biopsy for cancer (negative though showed inflammation), topical lidocaine, biofeedback, acupuncture, herbal remedies and emu oil. Over a span of 10 years I had spent more than \$30,000 and seen more than 15 doctors.

Finally, a physical therapist sent me to see Dr. Goldstein, who was found through a community of women with similar symptoms who found a cure. Dr. Goldstein explained that the vestibular pain was a result of neuroproliferation, an overgrowth of pain-receiving nerves. The partial vestibulectomy hadn't worked because my vestibular tissue needed to be removed in its entirety. In 2010, I underwent a total left and right anterior and posterior vestibulectomy with vaginal flap advancement. Remarkably, within 3 weeks the pain was lower than it had been pre-operatively even with stitches in place. Six months after surgery and beginning PT, the persistent and provoked vestibular pain was entirely gone. I was able to be intimate with my husband without pain."

### Flibanserin

*Tuesday, August 18, 2015.* Flibanserin, a drug for acquired, generalized hypoactive sexual desire disorder (HSDD) developed by Sprout Pharmaceuticals, was approved by the FDA on August 18, 2015. This follows the June 4, 2015 meeting of their Advisory Committee whose members voted 18-6 for approval.

This historic event marks the availability of the first pharmacologic treatment for women suffering from HSDD. It should be noted, and applauded, that the FDA recognizes female sexual disorders as one of their top 20 conditions for which there is unmet medical need and for making their decision to approve flibanserin based on science. I am optimistic that this approval will stimulate more research and drug development for HSDD and other female sexual disorders for which therapeutic options are greatly needed.

Flibanserin will be marketed with the trade name Addyi. As of October 5, 2015, healthcare prescribers and pharmacies can complete training to become certified to prescribe or dispense the medication through the Addyi Risk Evaluation and Mitigation Strategy (REMS) Program. A REMS is a strategy to manage known or potential serious risks associated with a drug product and is required by the FDA to ensure the benefits of a drug outweigh its risks. The purpose of the Addyi REMS Program is to inform prescribers, outpatient pharmacies, inpatient pharmacies, and patients about the increased risk of hypotension and syncope due to an interaction with alcohol. Before prescribing Addyi, prescribers must review and complete the Addyi REMS Patient-Provider Agreement Form with every patient, and keep the form in the patient file.

Currently, SDSM is performing an unblinded study of flibanserin for 8 weeks with responders randomized 1:1 to receive study medication alone vs. study medication and sex therapy for an additional 12 weeks. Responders will be determined by a score of 1-3 on the Patient Global Impression of Improvement at 8 weeks from baseline. The primary objective of the study is to determine whether efficacy of flibanserin as determined by changes in the desire domain of the FSFI in women who respond to the study medication is greater when sex therapy is performed concomitant with the use of the medication.

#### SUMMARY AND PERSONAL REFLECTIONS

The primary focus of my ISP was to gain clinical exposure on the multidisciplinary biopsychosocial evaluation of a woman presenting with a sexual health concern. Not only was I able to achieve this goal, but I also gained unique insight into the path that female patients take to seek care for their sexual dysfunction and the different perspectives and management approaches provided by a variety of specialists – ob/gyns, urologists, nurse practitioners, pelvic physical therapists, and sex therapists.

My experience working with Dr. Goldstein, Dr. Macaulay, and Dr. Gross fueled my passion to explore the field of sexual medicine further throughout my medical training. As I enter the field of Obstetrics and Gynecology, I am passionate about bringing a humanistic, multidisciplinary approach to women's reproductive health, destigmatizing sexual health topics and encouraging positive lifestyle habits. I feel a strong sense of purpose in treating the root cause of disease rather than focusing on symptomatic management, as I witnessed through my experiences. I look forward to working with a team of specialists to better identify the sources in a patient's life which may be causing inflammation and address diet, nutrition, exercise, and meditation with my patients to optimize their health. Finally, I plan to advocate for sexual health education beginning early on in adolescence and ongoing education to physicians in training, with the additional goal of bringing awareness to a historically underserved patient population.

I will conclude with a touching reflection that was shared with me by a patient. These powerful words highlight the necessity of our medical community to become aware about the prevalence of female sexual dysfunction and collaborate efforts to develop the field further.

"What patients with sexual dysfunction need is to be treated with dignity. We need the medical community to do research with a scientific approach, or use professional networks to refer patients to a specialist. We need the medical community to take these patients and their sexual health concerns seriously. The kinds of diseases these women are dealing with are not just quality of life issues, but lethal conditions. Imagine for a minute that you, you who are intelligent, of a sound mind and good mental health, you who love your body and maybe even a partner, you who love sex and can't imagine life without it – imagine that you might never be able to have or share the sexual experience again because your vagina or penis burns with a constant, searing pain, as if with acid. Imagine that it hurts to sit, or wear jeans, or walk or dance. What if you could no longer work because you couldn't tolerate sitting at a desk? What if your marriage were on the rocks? What would the face you presented to the world look after 5, 10, 20 years of this existence? Would you feel depressed, hopeless, angry? Would you feel like an outsider? Would you be suicidal? Would you think that it might perhaps be your best option, and the kindest to your long-suffering partner, if you were to take your own life? Those bothered by sexual pain have thought seriously about suicide. Please never doubt that this is a lethal, devastating condition."

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