

5-1-1935

Primary dysmenorrhea

Frederick F. Ackerman
University of Nebraska Medical Center

This manuscript is historical in nature and may not reflect current medical research and practice. Search [PubMed](#) for current research.

Follow this and additional works at: <https://digitalcommons.unmc.edu/mdtheses>



Part of the [Medical Education Commons](#)

Recommended Citation

Ackerman, Frederick F., "Primary dysmenorrhea" (1935). *MD Theses*. 564.
<https://digitalcommons.unmc.edu/mdtheses/564>

This Thesis is brought to you for free and open access by the Special Collections at DigitalCommons@UNMC. It has been accepted for inclusion in MD Theses by an authorized administrator of DigitalCommons@UNMC. For more information, please contact digitalcommons@unmc.edu.

A
Senior Thesis
Presented
to the
Faculty of the University of Nebraska
College of Medicine
in
Partial Fulfillment
of the
Requirements
for the
Degree
of
Doctor of Medicine

1914

480335

PRIMARY DYSMENORRHEA

By

FREDERICK F. ACKERMAN, B.Sc.

1935

P R E F A C E

Throughout my clinical years a remark often repeated by clinicians has been impressed on my mind to the point where I decided that some day I would make a study of the referred subject. The remark was, "You won't be out in private practice very long before some woman will come to you complaining of dysmenorrhea--which is probably the commonest complaint of women." My contact with patients though meager, both in my hospital and dispensary work soon corroborated the fact that dysmenorrhea was a very common female complaint.

Therefore, when the time came for me to choose a subject for my thesis required of a senior student by the faculty of the University of Nebraska College of Medicine before granting the degree of Doctor of Medicine. I decided that dysmenorrhea would make a topic not only very interesting and very practical on which to write, but also a subject regarding which I wanted to have a thorough knowledge.

T A B L E O F C O N T E N T S

1.	Introduction.....	1
2.	Historical Facts.....	3
3.	Definition of Terms.....	6
4.	Incidence.....	8
5.	Clinical Picture.....	10
6.	Etiology.....	12
7.	Treatment.....	27
8.	Conclusions.....	44
9.	Bibliography.....	46

I N T R O D U C T I O N

Of the many diseases to which women are subject by reason of sex, perhaps none is so common, and at the same time so little understood, as dysmenorrhea. The repeated monthly occurrence of menstruation and the profound symptoms which characterize dysmenorrhea often being of such severity as to incapacitate young women and girls for one or more days, renders it a subject well worthy of the most serious consideration by the medical profession. (1)

Dysmenorrhea is one of the everyday problems in the work of the general practitioner as well as the specialist. It is commonly relegated to the category of "minor gynecological disorders" by the doctors and yet the patients themselves would scarcely acquiesce in its designation as a minor disorder, for it is, in the aggregate, the cause of more suffering and invalidism than many conditions dignified by the appellation of "major". (2)

Novak (2) states that primary dysmenorrhea is one of the important "unsolved problems" in gynecology. He adds, "Its great frequency, the inadequacy of all the many theories of its causation which have been offered and the general unsatisfactoriness of

its treatment have made it one of the bugbears of gynecology."

In reviewing the literature on the causes and treatment of menstrual pain, one is impressed with its mass and the widely divergent opinions as to etiology and treatment. One point, however, upon which there is a general agreement is that there is still much to be learned about this important problem.

H I S T O R I C A L F A C T S

Pain associated with the menstrual function appears to have been recognized from the earliest times. In the Ebers papyrus and also in the Brugsch papyrus-- both compiled about 1500 B. C. from writings which were extant when the Pyramids were constructed some 3000 years before the Christian era--considerable attention is paid to gynecological disorders, among which the management of menstrual disturbances has a conspicuous place. (3)

Since Gynecology had reached so high a level in those far-off days as to require specialists in the practice of this branch of science, as was indeed the case, it is easy to presume that even many thousands of years previously the menstrual function and disorders thereof aroused curiosity, if nothing more, in primitive man. Of the almost pre-historic beliefs and practices it is only necessary to say that they can have been no more extraordinary than those prevalent in the fifteenth and sixteenth centuries after Christ. Time does not permit to dwell on the superstitions and rituals of the ancients or on the more enlightened views of such comparatively modern authorities as Hippocrates and Aristotle; nor to burden

this brief historical survey with a vast array of names and exponents, commentators and compilers who flourished in the first thousand years of the present era, although special regard by the gynecologists must be paid to the works of Galen, Soranus, Aetius and Paul of Aegina. (3)

After that epoch came the well known darkness and superstition of the middle ages, with the complete stagnation, if not retrogression of medical science. It is, therefore only during the last 100 years that knowledge concerning dysmenorrhea has advanced at all.

The first appearance in the literature of descriptions of the different types of menstrual pain may be said to mark the transit of the knowledge from the empiricism of the past towards an appreciation of cause and effect.

Churchill (4) and Bennet (5) in the middle of the nineteenth century clearly recognized three varieties, or types of menstrual pain: namely, the neuralgic, the congestive and the mechanical. A few years later, 1886 Sins (6) insisted that painful menstruation "is almost wholly due to mechanical causes", in which he included a "contracted os and a narrow cervical canal or a flexed." Many have since followed along the same lines.

The progress that has been made during the past thirty years in the knowledge of the morphology of the genitalia and the physiology of menstruation has enabled gynecologists to consider the pathology and treatment of dysmenorrhea on scientific lines, and as a result to assert with Sims (6) that dysmenorrhea is a "sign or symptom" and not a disease. It is owing to the fuller recognition of this conclusion that to-day gynecology can present a clear account of the causes of dysmenorrhea, even though in the matter of treatment no finality has yet been reached.

DEFINITION OF TERMS

Dysmenorrhea according to the modern conception of the term, signifies not only the colic-like pains which accompany the menstrual flow, but, in its broader sense, includes all those disturbances of function which accompany and which go to make up the symptom complex of pathological menstruation. Dysmenorrhea is, therefore, in a strict sense, not a disease, but is a term used to designate a group of characteristic symptoms classed as a distinct entity, the predominating feature of which is pain accompanying menstruation. (1)

Since it occurs in patients with very definite pelvic pathology, as well as in those whose pelvic organs, so far as it is possible to ascertain, are perfectly normal, it is evident that there are probably many causes, widely different, and in some instances difficult to determine. (15)

From the above facts it is only logical to divide dysmenorrhea into two classes: (1) (3) (13) (17) (19) (24)

1. One group in which there is an absence of any definite gross pathological disease of the pelvic organs. This form has been variously termed by differ-

ent authors as primary, idiopathic, essential or functional dysmenorrhea.

2. The other group contains all those in which some gross pathology of the pelvic organs can be demonstrated as the cause for the condition. This form has been popularly called secondary or extrinsic dysmenorrhea.

It is interesting to note here that Rothrock (1) states that the primary type constitutes by far the larger proportion of cases.

It is the purpose of this paper to consider especially that form called primary dysmenorrhea. The group in whom the most painstaking examination fails to disclose any pelvic pathology.

INCIDENCE OF DYSMENORRHEA

Analyses which have been made of the incidence of dysmenorrhea show a great diversity of opinion. Reports of patients seen in private practice give a much higher incidence than reports based upon college women. This is probably a natural difference as women consulting a gynecologist do so because of some complaint, while a group of college women are a more or less unselected group of supposedly healthy individuals. The findings of various compilers follow:

Jacobi (7), one of the pioneers in the study of dysmenorrhea, in 1877 reported on the incidence of painful menstruation in 128 cases of school girls and older women to whom questionnaires were sent and found it to 47%.

Saves (8), in 1916, reported on 4,500 menstrual histories of office patients. Of this group he found 47.4% who complained of dysmenorrhea.

Meredith (9), in 1920, published a report on functional menstrual disturbances of 749 college girls. She found a incidence of 17%.

Sturgis (10), found that 34.9% of 2077 women employed, in a department store had menstrual pain.

Bell (3), found 46% dysmenorrhea in 400 private patients and 43% in 600 hospital patients.

Clow (11), studied the menstrual histories of 2,050 girls. Of the entire group 22% had dysmenorrhea.

Van Duyne (12), reported on records of 3,072 women entering Goucher College from 1900 to 1924. She reports the incidence of dysmenorrhea as follows:

1900--1907 -----37.4%

1907--1923 -----26.0%

1923--1924 -----13.4%

Miller (13), in 1930 reported on the incidence of dysmenorrhea in 785 college women and nurses found 47% of the group to have painful menstruation.

Boynton (14), in 1932 gives the findings in the menstrual histories of 2,282 women at the University of Minnesota as 20.38%.

With the exception of Miller's recent report, the amount of dysmenorrhea found among college women has been much less than that reported for hospital or office patients.

These statistics on the incidence of dysmenorrhea showing such a great percentage certainly makes this condition an important economic and medical problem.

C L I N I C A L P I C T U R E

The patients that complain of dysmenorrhea are generally unmarried and nulliparous and the onset of the complaint usually dates from two to three years after the menarche, though in some cases it coincides with the first menstruation. (1) (15) The most prominent symptom of dysmenorrhea is pain, as the definition clearly indicated. The intensity of the pain necessarily varies with individuals, but the symptoms are sufficiently characteristic to classify the condition as an entity. (16)

Apart from the critical time the patient feels well, but some days or hours before the onset of each period strong pains commence in the mid-line of the lower abdomen and radiate to one or both iliac regions, to the sacrum, to the loins, and down the thighs. The pain at first is of a dull, aching character but it commonly becomes paroxysmal, resembling colic. The pain reaches its greatest intensity at or just after the beginning of the flow, and then commonly subsides during the next twenty-four hours. It may, however, occasionally continue throughout, and even for one or two days after the period. The pain is

often so severe as to cause the patient to writhe and sometimes faint. It is, many times, accompanied by greater or lesser degrees of malaise, anorexia, vomiting, headache, and sometimes manifestations of reduced vasomotor control as evidenced by cold hands and feet or perspiration. These symptoms usually send the patient to bed for one day, some two or three, and in exceptional cases even four or five days each month. After the acute exacerbations have passed off, the patient is left with a general soreness which persists for a varying length of time. The periodicity may be either regular or slightly irregular, with a tendency for the internenstrum to be short and the loss to be rather excessive. The pain usually does not occur at every period in the same patient and, even if present, its severity varies within considerable limits. (1)
(2) (15) (16) (17) (18)

From the above description of the symptoms it is obvious to understand that menstruation for such patients constitutes a monthly torture, which, aside from the immediate pain, leaves the patient worn and weak for many days afterwards, and she lives in constant dread of the next menstrual period. Even in the milder cases the constant recurrence of the pain and physical and mental depression may gradually induce a serious condition of malnutrition and neurosthenia.(17)

ETIOLOGY

The etiology of dysmenorrhea long a point of conjecture and opinion has made primary dysmenorrhea a "reproach" to modern gynecology. (19) While it is one of the more common conditions met with by the gynecologist its etiology to a great extent is, as Sims (6) said in 1886 "yet to be written".

Many theories have been advanced to explain the cause of this condition yet not one seems to be accepted by all as the definite adequate etiologic factor in primary dysmenorrhea.

It would be well, at this time, to discuss some of the theories more widely followed throughout the years of modern Gynecology:

I. Mechanical Obstruction

The oldest theory is due to obstruction to the exit of the menstrual blood from the uterine canal, most often because of anteflexion of the uterus. Over two thousand five hundred years ago Hippocrates, the Father of Medicine, recognized this theory and recommended dilatation of the cervix as the treatment. (19), (20). This theory achieved quite general acceptance for many years and became

the basis for the treatment of the disease. It was strongly endorsed by the early leaders of gynecology such as Mackintosh (21) 1832, Simpson (22) 1872, and Sims (6) 1886. In fact it was Sims (6) who wrote, "I am fully of the opinion that (dysmenorrhea) is simply a sign or symptom of disease to be found in some abnormal organic state. But whether the cause be inflammatory or not, its action is mechanical. I lay it down as an axiom, that there can be no dysmenorrhea, properly speaking, if the canal of the neck of the womb be straight, and large enough to permit the free passage of the menstrual blood."

It is surprising that even today many gynecologists accept this theory. Sellers (23) in 1932 formulated a questionnaire on the subject and sent out copies to one thousand gynecologists of the United States and Canada. Three hundred and nineteen answered and of those a little over 60% considered stenosis and abnormal position of the uterus, such as anteflexion and retroflexion, as the cause of the pain. However, with the passage of years this theory has generally been abandoned as explaining possibly no more than perhaps a very small minority of cases. (18) (24) (25)

The following arguments all mark the fallacy of the hypothesis of mechanical causes in the production

of dysmenorrhea :

1. Antelexion is often observed in the absence of dysmenorrhea, and severe dysmenorrhea is observed in uteri who show no antelexion. (24)

2. Experience has proved that in the absence of gross pelvic lesions attempts at permanent relief by mechanical means, such as correction of antelexion, dilatation and curettage and operations on the cervix to relieve a hypothetical stenosis of dysmenorrhea are worse than useless. (26)

3. Novak (24) has shown that even at the height of menstrual pain, a probe can easily be passed into the uterine canal with no evidence of obstruction of any kind.

4. It has been computed that the rate of discharge of menstrual blood in the normal woman averages only about two-thirds of a drop per minute, and it is difficult to believe that antelexion could produce sufficient obstruction to interfere with the exit of such small amounts. (24)

The only point in favor of this theory is that some patients do get relief following cervical dilatation, however, of only temporary duration. (23)

It is well to remember, though, that in an occasional case a genuine obstructive dysmenorrhea

may occur from such a cause as a ball valve polyp or a fibroid that may perhaps choke the uterine or cervical canal.

II. Hypoplasia

Some thought that the chief factor in the production of primary dysmenorrhea is a hypoplasia of the pelvic organs, more particularly the uterus. Some have linked the two factors of obstruction and hypoplasia together, asserting that anteflexion is in itself an evidence of hypoplasia, and that it in turn gives rise to obstructive dysmenorrhea.

While it is certainly true that in fetal and early postnatal life the uterus is often anteflexed, this is not invariably so, nor is there any evidence that the occurrence of anteflexion in adult life means that uterus is congenitally hypoplastic, for often it is of perfectly normal size. Even when the uterus is markedly hypoplastic as in uterus infantilis, there is often no menstrual pain whatsoever, while, on the other hand, one frequently observes severe primary dysmenorrhea when the uterus is of normal size. (18) Nor is there any satisfactory explanation of the mechanism of the pain available even if the role of hypoplasia is granted. (24)

Novak and Reynolds (24) state that after all, perhaps the chief evidence against the importance of

the developmental theory lies in the fact that primary dysmenorrhea is often an acquired disorder. They feel that a careful history of such cases often reveals the fact that the patient, after the onset of puberty, menstruated without pain for a short or perhaps a long time, after which severe menstrual colic made its appearance. Such a history was rated in nearly one-half of a hundred cases studied by Novak. (24)

III. Psychogenic

It is a common accepted fact that the mind frequently is an important factor in the production and perpetuation of menstrual pain. There are some gynecologists, notably J. Novak and M. Harnik of Germany, (27) who believe that all cases of primary dysmenorrhea are explainable on this basis. These authors believe that a careful investigation will practically always reveal that a psychic trauma of one sort or another lies at the bottom of the first attack of dysmenorrhea, and that the recurrence of monthly attacks is the result of the anxiety or fear thus subconsciously associated with function. Most often these authors believe the psychic trauma has a sexual basis, but in other cases its character is quite different. Edelberg and Galant (31) reported four cases of dysmenorrhea which began after psychic traumas such as loss of the house or police investigations.

For example, any mental shock at the menstrual period may thus start the patient on a dysmenorrhic career. Such factors as repugnance at the offensiveness of the menstrual discharge may also bring about a similar result.

As with other psychoneuroses, the cure is accomplished as soon as the patient appreciates that her monthly attacks are conditioned on her subconscious reflexes rather than on any organic disease of the generative organs. These authors (27) reported a series of 168 cases treated along these lines with complete cure in 71 and marked improvement in 89.

That many cases of dysmenorrhea are to be explained in this way there is no doubt, but this certainly is no explanation for all patients. Merely to stigmatize all these patients as "hysterical" or "neurotic" is unfair to many.

Whitehouse (18) in a study of 50 consecutive cases of severe dysmenorrhea has come to the conclusion that too much stress has been laid on the so called "neurotic tendency". He has made the following observations:

"1. Severe dysmenorrhea occurs in the stolid apathetic individual just as in the highly strung nervous type, and that every period in either type is not painful."

"2. Unsuitable occupation and environment are not essential factors in the production of true dysmenorrhea. They lower the bodily and mental resistance to pain, but do not cause it. "

"3. The so-called "neurotic" type occurs much more frequently over the age of 30 in single or sterile women and is the result rather than the cause of prolonged severe menstrual pain."

If the gynecologist does come across a patient where he feels that the psychogenic factor is very strong he should win the patients confidence to such an extent that she herself will grasp the logic of the explanation which the physician must take the time to give. Once the patients mind is properly ventilated in this way, the mischief-provoking fears and anxieties lurking in her subconscious mind will die a natural death. (24)

Women have undoubtedly been led by tradition to expect a certain amount of pain attached to the menstrual function. While a large number of women seek advice for severe menstrual pain, many strong-minded individuals put up with the symptoms of true dysmenorrhea without going to a doctor for advice. (18) Now it is a known fact that painful stimuli of any type, whether dysmenorrhea or otherwise, if repeated, cannot fail in the long run to leave their impression

upon the mental state of the individual. Therefore, from this it would follow that it would be a great value to the young girl if she were given simple instruction as to the naturalness of the menstrual phenomenon, and particularly that it should cause no worthwhile interference with her normal activities. While the mother is the logical instructor in this respect, she is often illfitted for the purpose. Indeed, if she herself has suffered with menstrual pain, a powerful suggestive factor is at once brought to play on the daughter, who may easily get to look forward to the menstrual period as a time to expect suffering and discomfort.

IV. Allergy

In the study of twelve cases Smith (28) made in 1931, after making skin tests for the common foods by the scratch method, omitted all the substances that gave a positive reaction from the diet beginning one week before the expected date and during menstruation. Of the twelve studied, eight state that they are free of all pain at the menstrual period and go about their business as usual. Four have received only partial relief although they are now able to continue their usual work. For this group he believes that his tests have not been extensive enough. He feels that

Tests should be made for inhalant and many other substances that are undoubtedly responsible for allergic manifestations.

The literature is very scanty regarding the relationship of allergy to essential dysmenorrhea. Duke (29) in his monograph on asthma and allergy makes a statement to the effect that he has rather frequently seen primary dysmenorrhea completely disappear or partially disappear after such appropriate dietetic treatment for allergy. Rowe (30) in an article on food allergy confirms the opinion of Duke (29) that menstruation can be disturbed and may be irregular and painful by food sensitization.

V. Posture

Miller (13A) in 1930 came out, in a preliminary report of study, with an assumption that poor posture is one of the many causes of primary dysmenorrhea. However, there has been no real basis for such belief. In his series he found a decrease in the occurrence of dysmenorrhea coincident with improvement in posture and muscle tone. He attributed this improvement to the effects of improved muscle tone on the circulation. As his group of cases without dysmenorrhea showed as much improvement in posture as those with dysmenorrhea, Miller stated that the explanation of dysmenorrhea on

a basis of posture is complicated and believed that muscle tone is more fundamental than posture.

In 1932 Boynton (14) showed in a study of 746 cases, with posture ratings given by the Department of Physical Education for women and were based upon shadow pictures and a careful examination of the student by a member of the department, that there was a constant decrease in the percentage of dysmenorrhea as the posture became poorer. Therefore, she concluded that in this group of cases, it seemed evident that posture has no relationship to dysmenorrhea. And since her methods of study were fully as careful as those of Miller's she certainly had a definite right to come to that conclusion.

In 1934, however, Miller (13B) made his final report on "Posture and Dysmenorrhea". This report covered a study of four consecutive years started in 1927 and the collection of data completed in 1931. His work was begun on college women for the purpose of determining what, if any, relationship exists between posture and common gynecologic symptoms. Although initial examination was made in 785 young women, it was found at the end of the four year period on only 302. Improvement in posture was demonstrated which occurred quite as consistently among those with

no dysmenorrhea at any time as it did among those with pain at each period. Whether this improvement was real or only apparent could not be positively determined. He noted no unusual change in the subjective or objective characteristics of the menstrual period.

He states, "Since we cannot be positive concerning the actual improvement in posture, any conclusions drawn from this study must be qualified."

Therefore after taking for granted that the improvement in posture noted in this study is real he comes to the following conclusions:

1. That there exists no cause and effect relationship between poor posture, based on present-day standards of posture, and dysmenorrhea.

2. That the presence of desirable posture is no indication that the individual is less likely to be afflicted with dysmenorrhea.

3. That the attainment of desirable posture carries with it no assurance that an existing dysmenorrhea will be relieved.

4. That so far as the single symptom, menstrual discomfort, is concerned there is nothing to indicate that good posture is any more desirable than poor posture, both based on present-day standards.

VI. Constitutional Factors

There is no doubt that in some cases dysmenorrhea is merely the reflection of a condition of constitutional or nervous depravity producing a lowered threshold of pain. In other words there is a heightened sensitivity to the pain stimuli because of psychogenic or constitutional factors. In such patients the slight discomfort which might be associated with normal menstruation is magnified into actual pain.

(24) (25)

Many cases of dysmenorrhea can be cured without any direct treatment of the pelvic condition, simply by building up the patient's general health and insistence on proper general hygiene, especially exercise with little or no limitation of the latter because of the menstrual periods.

VII. Endocrine Theory

The latest theory as to the etiology of dysmenorrhea, and the one which will probably solve the "problem" is the endocrine theory. Although the treatment of the condition with hormones is as yet unsatisfactory the perfectly good explanations for the cause of the pain makes this a most promising theory.

To understand this theory it would be well to consider the nature and explanation of the pain. Whatever the underlying cause of the pain in pri-

mary dysmenorrhea may be, there is much reason to believe that the immediate cause is a spasmodic contraction of the uterine muscle. (24) (25) (27) (32) (33) The very nature of the pain would suggest this.

Recent investigations (24) (25) (27) (33) (34) (35) upon the question of hormonal regulation of uterine contractibility have yielded the first results which seem applicable to the clinical problem of dysmenorrhea. Reynolds (34) has found, by an ingenious method of study, the following facts:

1. That the uterine muscle exhibits a normal rhythm of contraction.

2. That all uterine contractions disappear after castration.

3. That uterine contractions are again restored by the injection of Folliculin or Theelin.

4. That the Folliculin produced contractions are inhibited by the injection of Progestin or of the urine of pregnant women, presumably because of their prolactin content.

And from those facts he came to the logical conclusion that the normal excitant of uterine contractibility is the follicle hormone, while the corpus luteum principle, progestin, is an inhibitor.

From the above study certain explanations fol-

low to explain the progress of events during a menstrual cycle. The pain commonly begins a day or two before the onset of menstruation and, this is at about the time that the corpus luteum begins to degenerate and when the follicular hormone stimulation comes into its own. Therefore, the height of corpus luteum is several days before the onset of menstrual flow, not at the time of flow. An illustration of this belated effect of progestin withdrawal is seen by the excision of the corpus luteum well before the expected menstrual period; the menstrual flow occurs, but not until 24-48-hours after the excision. (24)

(25)

Female sex hormone, the sole known excitant of uterine rhythmic contractions, is present throughout the cycle, and, according to investigations by Frank (35), is present in great concentration in the blood during the premenstrual and early menstrual phases. During the phase of activity of the corpus luteum, extending from ovulation up to a short time, at most a few days, before the menstruation occurs, the effect of female sex hormone on uterine contractions are inhibited by progestin, as explained by experimental observations that have been described. With the withdrawal of the influence of the corpus luteum, pro-

gestin, the uterus, which has been lying in a quiescent state from ten days to two weeks, is whipped into marked activity by the action of the follicular hormone. (24) (25)

The fact that the usual onset of menstrual pain coincides with the withdrawal of the corpus luteum influence must, in view of the physiologic observations, suggest that the cause of the pain is due to a disturbance involving primarily the uterine motility. (24) (25) (33) (34) (35)

That this hormonal sequence occurs in all normal women is undoubtedly true, but yet in only a comparatively small proportion is the heightened contractibility of the uterus at the menstrual period registered as a real dysmenorrhea. (24) (25) Two explanations are offered by these two authors:

1. A heightened sensitivity to the pain stimuli because of psychogenic or constitutional factors.

2. A real endocrine imbalance acting on uterine motility. This imbalance may be a quantitative factor, marked uterine contractions resulting from excessively large amounts of the follicular hormone over progesterin; or it may be due to a chronological factor, the follicular stimulation coming on too abruptly, not a gradual stimulation, after the withdrawal of the corpus luteum influence.

T R E A T M E N T

From time to time during the past one hundred years many new procedures and treatments of primary dysmenorrhea have been proposed. Probably most of those have added something to the knowledge concerning this subject, but no method has fulfilled the expectation of its originator.

The management of cases of primary dysmenorrhea must obviously be directed toward two objectives:

1. The treatment of the attacks themselves.
2. The permanent relief of the condition.

Therefore the discussion will now be considered along these lines:

I. The Dysmenorrhoeic Attack Itself.

When a physician confronted with a patient suffering the often excruciating pains of primary dysmenorrhea his immediate concern is with the relief of pain.

Cases of moderate severity are, of course, often relieved by the simpler analgesics, such as codeine or coal tar products, together with rest in bed, hot applications and hot drinks. This is of common knowledge.

From what has been said as to the causative role

of exaggerated and painful muscle contraction, the administration of anti-spasmodic drugs would seem to be called for. Many such drugs are used, and here some of the more notable ones are mentioned:

1. Atropine

Atropine sulphate administered by mouth in doses sufficient to cause mild saturation symptoms. An average dosage of gr. 1/200 every four hours beginning from a day to several days before the period depending on the usual time of the onset of pain. In a large proportion of cases, great and often complete relief is obtained. (24) (32)

2. Benzyl benzoate or benzyl succinate

Five grains of benzyl succinate given three times a day for three days before the expected period and every two hours on the first day of the period. This therapy has been advocated in dysmenorrhea especially by Litzenberg. (36) Benzyl compounds are known to have an anti-spasmodic effect on smooth muscle.

3. Ephedrine Sulphate

Grains $\frac{1}{4}$ of ephedrine sulphate three times a day for two or three days before the expected period and during the first day of the period. Ephedrine either alone or combined with other drugs is prescribed by

many physicians for immediate relief of dysmenorrhea. If, as has been suggested by Smith (28) and others (29) (30), primary dysmenorrhea may be on an allergic basis, ephedrine, in its action of preventing spasm of smooth muscle might be expected to be effective.

4. Calcium gluconate

Calcium gluconate and viosterol in a dosage of 120 grains daily for ten days preceding the expected period is given. Boynton and Hartley (37) reported that 67% of a small series of cases of dysmenorrhea were definitely benefitted by calcium gluconate. Just what the action of calcium is in dysmenorrhea is not definitely known. The above authors (37) explain the action this way: a decreased calcium concentration tends to increase the excitability of smooth muscle, and conversely, an increased amount of calcium decreases the contractibility of smooth muscle.

5. Oleum Ricini

This is given, in capsules of 19 minims, three times a day throughout the month. This dosage produces no laxative effect. This type of therapy presented by Boynton (38) who states that it was suggested to her by a gynecologist that this dosage of oleum ricini had given relief in many cases of severe primary dysmenorrhea. She further states, "Just what the

action may be is problematical." If there be an allergic cause for certain types of dysmenorrhea, the action of unsaturated fatty acids in the oleum ricini may be responsible for its value.

6. Viburnum Compound

Diasio (39) got some good results with the use of Viburnum Compound tablets. Two tablets prior to onset and two tablets every four hours during the period. This drug, according to Diasio, exerts anti-spasmodic action on the smooth muscle of the uterus. It relieves pain as well as acts as a uterine sedative.

Certain facts should be borne in mind in the treatment of dysmenorrhea and those are: First, to refrain from the administration of morphine, for not a few women addicts date their affliction from the use of morphine for this condition. Second, that alcohol should be prescribed with equal caution; while of undoubted benefit, in the form of either whisky or some of the alcohol-laden proprietaries, there is danger in its use. (11) (24)

II. The Permanent Relief of the Condition

The treatment which in many cases is adopted at present, namely dilatation of the cervix is essentially what was recommended over two thousand five hundred years ago by Hippocrates himself. In the Hippocratic

writings bougies or leaden instruments to dilate the os of the uterus are recommended for the painful menstruation. (19) (20) Incisions of the cervix, which is another method of achieving the same result, were practiced by Simpson (22) and Sims (6) in the days of infancy of gynecology.

1. Operations on the Cervix

Since the days of Sims (6) many men have followed along similar lines, and many new variations of operations have been devised--all consisting primarily of dilatation of the cervix and incisions of the os to prolong the dilated effect. Some of the more famous operations are: the Dudley (40) operation, the Bell (41) operation, the Frank (42) operation, and Cleland (16) operation. All the above have found that dilatation alone gives only temporary relief while incisions of the internal os of the uterus gives a more prolonged or permanent relief. Other men (43) (44) (45) using some of the above operations have reported very good results.

This form of treatment is, of course, based on the older idea of the obstructive etiology of dysmenorrhea, now rather generally abandoned. It is an established fact by the immediately above referred authors that this type of treatment is effective in some cases, but a doubt arises in try-

ing to determine the mechanism of its effect. In view of the above explanation of the nature and cause of the pain, a mere dilatation should not give relief. With this fact in mind Novak (2) asks the question, "Is it entirely psychic, or is it based upon a real virtue, dilatation?"

"One cannot be dogmatic," he adds, "but there can be little question that in many cases the operation is a form of psychotherapy, at times, successful, although not infrequently only temporarily."

With such a point in mind the physician should never forget the psychic factor so that a careful history should be obtained, especially as to the time of onset of the dysmenorrhea, and a possible correlation of this event with a psychic trauma of one sort or another. As already stated when discussing the psychogenic points as an etiological factor, such an etiology can be demonstrated in some cases.

2. Nasal Mucosa Treatment

In certain cases menstrual pain has been relieved by cocainization of particular areas of normal nasal mucosa. The fact was first brought to the attention of the profession by Fliess (46), a German rhinologist, who in 1897 presented to the Berlin Obstetric Society a paper detailing his experiments

in that direction. He found that in some cases of dysmenorrhea the pain disappeared within a few minutes after the application of a 20% cocaine solution to certain areas of the nose, and did not reappear during that menstruation. These areas were the anterior end of the inferior turbinate of each side and a spot just opposite this on the septum.

To eliminate "suggestion" as a factor in the case, the application of cocaine was made to other intranasal areas, instead of those mentioned, and there was no result. Again, in those cases in which temporary relief followed the application of cocaine to the intranasal "genital spots", cauterization of those areas produced a cure, either permanent or lasting several months.

This form of therapy has not been followed to any extent since that time. Crossen (17) reports some favorable results using this method of treatment.

It is very difficult to explain the mechanism of relief here gotten.

3. Radium

Polak (47) has found that after the cervical canal is thoroughly dilated and 50 mg. of radium properly filtered are introduced high in the uterine cavity and allowed to remain there for a period of

four hours, making a dosage of 200 mg.-hours, that this gives permanent relief in dysmenorrhea. He found that this amount of irradiation, does not stop menstruation, but for some reason, that he can't explain, relieves the pain at succeeding menstrual periods. He has treated thirty-six such cases with absolute relief of their menstrual pain; nine have subsequently become pregnant. Many of these women had a history of having been invalided for two weeks out of every month and had previously been treated by dilatation and four had been accustomed to taking large quantities of morphine for relief of their pain.

4. Exercise, Hygiene, and Baths

Clow (11) in nearly 20 years of practice treated over 400 cases of dysmenorrhea of varying degrees of severity which have been cured or relieved by treatments with baths and exercise. She has studied the effect of the practice of continuing games and other activities throughout the period on 2,300 school girls, and found out of that number only six have reported that games at the period did not suit them, but in not one case has she heard of any ill effect either at the time or subsequently.

From these facts she has presented a method of

treatment dealing with proper Hygiene, Baths, and Exercise for patients suffering with primary dysmenorrhea :

A. Hygiene

The patient should be told that menstruation is a natural function and should be as free from pain and internal discomfort as are the other functions of the body. Insist that normal routine of life should not be interrupted during menstruation. The diet, daily bath, and action of the bowels should be as usual. There should be no reduction in the amount of exercise taken at other times. Active work is beneficial, as are outdoor games such as tennis, walking, riding, and rowing. No extra rest is necessary during the period; it may even do harm, as it is important to keep up a good circulation of the blood. The sensation of fatigue felt by some on the first day of the period is, in most cases, quickly dispelled by a warming exercise, whereas it is prolonged by rest, although the recumbent position produces an initial feeling of relief.

B. Baths

The complete daily wash is a necessary hygienic measure, but immersion in a warm bath at night is not only salutary, but checks or helps to prevent the on-

set of aching and discomfort. Many patients are still under the impression that it is unsafe to take a bath during the period, therefore they should be told that baths are not only harmless but beneficial. There is no harm in the cold morning bath or cold sponge during the period. For women subject to severe dysmenorrhea, who are nervous or otherwise unfit for muscular exertion, immersion of the whole body in a hot bath (100°F.) for ten to fifteen minutes just as the period begins is a good prophylactic against pain, and will often relieve a patient already in pain. Its effect, being quicker, is more striking than that of exercise, but it has relative disadvantages in that it must be followed by rest in bed for at least an hour, and, unless the patient can keep thoroughly warm afterwards, preferably by muscular effort, the pain is to return.

C. Exercise

Explain to the patient that to prevent or cure the pain, the circulation of the blood must be stimulated by muscular exertion. If there is not time or opportunity for sufficient exercise in the open air, it should be supplemented by extra exercise done at home.

These are some of the movements recommended to be done for 15 minutes daily for two days before and of the first two days of the period:

- I. Movements simulating floor polishing.
- II. Bending, twisting, and swaying.
- III. Movements simulating rowing.

5. Hormones

The treatment of dysmenorrhea with hormones is unsatisfactory in spite of perfectly good theoretical explanations for the cause of the pain. In some instances relief is given the patient but this is far from the general rule. (48)

As has been shown, in the above discussion, female sex hormone or theelin is an excitant and corpus luteum hormone, progestin, or urine of pregnant women, because of prolactin content, is an inhibitor of uterine motility. Therefore the aim of this treatment would be to counterbalance the excess of the follicular hormone by substituting additional corpus luteum influence, progestin, or a prolactin-containing substance prepared from the urine of pregnant women is prepared in aqueous glycerin solution by several of the large drug houses. R. E. Squibb's & Sons call their's Follutein, Parke, Davis & Co. call call their's Antuitrin S, and

Winthrop & Co. put out a solution called Antrophysin. The method of treatment is to inject the number of Rat Units, varying in each of the above named substances, intramuscularly from three to four days during the flow. After three month course of treatment all hormonal therapy is stopped. (25) The results have been as a rule unsatisfactory. (48)

The factor of hypoplasia, considered so important by some gynecologists, (11), and undoubtedly present in some cases, is properly supposed to be aided to development by the administration, by mouth or hypodermically, of follicular hormone. (2) (48)

This hormone will cause hyperplasia of the endometrium and hyperemia, and thereby will cause growth of an infantile or juvenile type of uterus. (2) (48) Theoretically this sounds like a satisfactory method of treatment, but Meigs (48) points out the fact that this increase in amount of follicular hormone will disturb the balance between follicular hormone and progestin. Therefore he advises to stop this therapy several days before the expected period. Both he and Novak (2) have gotten some good results with this form of treatment, and is therefore worthy of trial.

In August 1934 Bauer (33) presented a new form of treatment for primary dysmenorrhea. He had notice-

ed for a long time that the action of whole posterior pituitary extract in contracting the uterus after the third stage of labor was not as vigorous or as prolonged as the action of the oxytocic factor alone. This latter substance, called pitocin, he concluded, apparently possesses a potency that is increased or antagonized by some other fraction of the whole posterior extract. With this thought in mind he wondered if the other fraction of the posterior pituitary, called pitressin, might not bring about in the non-pregnant uterus a decrease in the excessive contractions that cause dysmenorrhea. Pitressin was therefore administered to patients with dysmenorrhea the drug being given hypodermically in doses of 20-40 units (1 to 2cc) at the beginning and during the period of pain. Immediately after injection there is present a temporary increase in the cramp which he thinks is probably due to the small amount of the oxytocic fraction in the preparation. No other untoward results have been noticed. He has used this substance in six cases and in five of them there has been partial or complete relief from the pain. He feels that this is too small a number to report any definite results, but expects to continue this clinically and make an extended report when suffi-

cient cases have been treated to warrant definite conclusions.

6. Child-birth

The time-honored view that primary dysmenorrhea is cured by the first pregnancy is, as a rule, correct, although some exceptions are encountered. (2) (17) (18) Marriage, however, cannot be prescribed as one does an operation or medicine, but if the patient is married pregnancy may be advised with fairly good chance of permanent relief from dysmenorrhea following child-birth.

7. Resection of Presacral Nerve

There will remain to be dealt with, however, a large group of dysmenorrhea cases where it is impossible to get good results with any measures, and it is in such cases that this form of treatment has its value. This operation, popularized by Cotte (49) in 1925, is the resection of the presacral nerve, the nerve which collects the preaortic branch and descends from the angle of bifurcation of the two common iliac arteries towards the promontory.

The indications for this operation should be clear, and the procedure undertaken only when other, more usual methods already discussed, have proved a failure. (49) (50) (51) (52)

Frenchmen, Jaboulay, Ruggi, and Leriche, quoted by Adson and Masson (52) were pioneers in this type of treatment to relieve pelvic pain by interrupting the afferent pathways in the sacral sympathetic chain. This procedure was adopted and used by Cotte (49) and in 1925 he introduced the operation of resection of the presacral nerve for primary dysmenorrhea. This was a simpler operation, more easily performed, and gave more excellent results.

Since that time Fontain, Rene, and Hermann (51) have carried on studies regarding this form of therapy and they stated their belief that the presacral nerve, hypogastric plexus, carried the important pathways of sensation from the internal genital organs to the medullary center, and that resection of this nerve was a safe, simple, and effective way of interrupting these pathways in the treatment of primary dysmenorrhea. Since that time De Courcy (50) and Adson and Masson (52) have agreed with this view.

Since this mode of treatment gives such excellent results it is well deserving to give a thorough discussion of the technique of the operation.

Technique of operation (after De Courcy)(50)

The patient being anesthetized and placed upon the table, the cervix is dilated. She is then placed

in the Trendelenburg position, and a left rectus incision made close to the midline, extending from the pubic bone to a point about one inch above the umbilicus. Packing is placed to keep the intestines upward, but the sigmoid is retracted to the left. The uterus and ovaries should be inspected, and if any pathologic conditions, such as cysts or retroversion, are in evidence, correction is undertaken before proceeding with the nerve section. Usually, as soon as the promontory of the sacrum is uncovered, it is possible to see the fibers of the presacral nerve crossing the left iliac vein. The posterior parietal peritoneum is next opened by an incision bisecting the pelvic triangle which lies between the right iliac artery and the left iliac vein. All the fibers in this triangle are picked up upon a ligature carrier or other suitable implement, and entirely stripped away, care being exercised not to omit any fiber however insignificant. There is little or no bleeding, but any points which are evident should be ligated. The peritoneum is then closed and the abdomen is sutured in the usual manner.

Post-operative Results--as reported by men who use this treatment. (50) (51) (52) (53)

The immediate results of this procedure have

been excellent, and in no instance has the pain failed of relief. Menstruation regularly takes place within 48-72 hours after operation, no matter what time in the menstrual cycle it has been performed. Most of the patients have had to be catheterized for two or three days, but inhibition of bladder function has been "no more marked than after any other gynecologic operations." None of the many cases have had any difficulty with the bladder afterward, although the possibility of some interference with vesical function has always been kept in mind by operators. Several of the patients so treated have since become pregnant demonstrating that there is no interference with child bearing.

Therefore, from the above findings, the conclusion is drawn by its users as a good procedure for the relief of obstinate cases of dysmenorrhea which have proved resistant to ordinary measures.

C O N C L U S I O N S

Many theories have been offered to explain the etiology of primary dysmenorrhea, and many plans of treatment have been suggested. None up to the present time have seemed adequate, although the importance of constitutional, psychogenic, and other factors in the causation of many cases is undoubted.

The immediate cause of the pain, on the basis of the physiologic studies reported in this paper, is a disturbance of the normal motility factors of the uterine muscle. In general, female sex hormone or theelin, is an excitant and corpus luteum influence, progestin, is an inhibitor of this motility. Preparations of the urine of pregnant women, because of their prolan content, likewise act as an inhibitor of uterine activity. The inhibitory influence of progestin on uterine motility is removed a day or two before the menstrual onset, and the withdrawal of this restraining factor produces dysmenorrhea in some women, possible those with such predisposing factors as constitutional subnormality or psychoneurosis. In other cases it would seem that there is an actual imbalance between the follicular hormone

and the corpus luteum influence, either quantitative or chronological or both.

Treatment resolves itself around antispasmodics such as atropine, ephedrine, benzyl compounds, etc., and hormonal substances. The treatment with hormones have as yet been unfavorable. The prolan-containing fraction made from the urine of pregnant women is put out for commercial use as: Antuitrin **S**, Follutein, and Antophysin is used with moderate success. Progestin, the other uterine motility inhibitor, is as yet not on the market for human use. General hygiene, baths, and exercise help the dysmenorrheic patient. Education of young girls at the age of puberty as to the phenomenon of menstruation is very necessary and may save the patient a dysmenorrheic career.

When all other forms of therapy have been tried with no success, resection of the presacral nerve, thus cutting of the afferent sensations of pain from the generative organs to the medullary center, gives excellent permanent results to patients with dysmenorrhea.

B I B L I O G R A P H Y

1. Rothrock, J.L. : Dysmenorrhea
Minn. Med. 6:314-319 May 1923
2. Novak, E. : Treatment of Primary Dysmenorrhea
with Especial Reference of Organ-
otherapy.
Am. J. Med. Sci. 185:237-243
Feb. 1933
3. Bell, W. B. : Intrinsic Dysmenorrhea
Jour. Obst. & Gynec. British Emp.
30: 119-161 1923
4. Churchill, F. ; The Diseases of Females
Lea & Blanchard P.102-109 1847
5. Bennet, J.H. : A practical Treatise on Inflam-
mation of the Uterus
Lea & Blanchard P.202-208 1852
6. Sins, J.M. : Clinical Notes on Uterine Surgery
J.H.Vail & Co. P. 141-174 1886
7. Jacobi, M.P. : The Question of Rest for Women
During Menstruation
C.P. Putnam's Sons 1877
8. Sanes, K.I. : Menstrual Statistics
Am. J. Obst. 73:93-112 1916
9. Meredith, F. : Functional Menstrual Disturbance
Surg, Gynec, & Obst. 31 :382-386
1920
10. Sturgis, M. : Dysmenorrhea Occurring in Women
Employed in Large Department Stores
J. Industrial Hygiene 5:53 1923
11. Clow, A.S. : Treatment of Dysmenorrhea by Ex-
ercise, Baths, Hygiene and Drugs
Brit. Med. Jour. 2:558-566 Sept.
1924
12. Van Duyne, S.E: Dysmenorrhea
Am. J. Obst & Gynec. 9:234 1925

13. Miller, N.F. : Posture and Dysmenorrhea
 A. Jour. A.M.A. 95:1796 1930
 B. Am. J. Obst, & Gynec. 27:
 684-691 May 1934
14. Boynton, R.E. : A Study of Menstrual Histories of
 2,282 University Women
 J. Obst. & Gynec. 23:516 1932
15. Kennedy, W.P. : Endocrine Therapy in Dysmenorrhea
 Bit. Med. Jour. 1:746-748 1932
16. Cleland, F.A. : Method of Treatment of Severe Types
 of Dysmenorrhea with Report of
 Results in 230 Cases
 Am. Jour. Obst, & Gynec. 8:
 337-345 Sept. 1924
17. Crossen, H. S. : Diseases of Women
 Saunders IV Edition P.846-864
18. Whitehouse, B. : Pathology and Causation of Dysmen.
 Jour. Obst. & Gynec. Brit. Emp.
 33:607-619 1926
19. Johnstone, R W : Intrinsic Dysmenorrhea
 Jour. Obst. & Gynec. Brit. Emp.
 30:226-229 1926
20. Ezell, C.V. : Treatment of Functional Dysmenorrhea
 Texas State J. Med. 21:296-299 1925
21. Mackintosh, J. : Principles of Pathology and
 Practice of Medicine
 Lindsay and Blakiston P.792-798 1844
22. Simpson, J.Y. : Diseases of Women
 Adam and Charles Black P225-255 1872
23. Sellers, T.B. : Pain Associated with Menstruation
 South. M.J. 25:67-175 Feb.1932
24. Novak, E. and Reynolds, S.M.R. : Cause of Primary
 Dysmenorrhea with Special Reference
 to Hormonal Factors
 Jour. A.M.A. 99:1466-1472 Oct.1932
25. Witherspoon, J.T. : Cause of Primary Dysmenorrhea
 and its Treatment by Hormonal Therapy
 New Orleans Med. & Surg. Jour.
 86:726-729 May 1934

26. Hertzler, A.E. : Relation of Dysmenorrhea to
Interstitial Thyrotoxicosis as
Proved by Therapeutic Measures
Am. J. Obst.&Gynec. 9 :783-797 1925
27. Novak, J., and Harnik, M. : Med. Klin. 25:251 1929
Ztschr. f. Geburtsh u. Gynec
96:239 1929
Quoted by E.Novak and S.M.R.Reynolds
J.A.M.A. 99:1466 1932
28. Smith, D.R. : Essential Dysmenorrhea and Allergy
J. Mo. Med. A. 28:382 Aug. 1931
29. Duke, W.W. : Asthma, Hay Fever, Urticaria, and
Allied Manifestations of Allergy
C.V.Mosby & Co.
30. Rowe, A.H. : Food Allergy: Its Manifestations,
Diagnosis, and Treatment
Jour. A.M.A. 91:;623 1928
31. Edelberg, H and Galant, J., : Psycho-traumatic
Dysmenorrhea
Jour. A.M.A. 84:1312 April 1925
32. Dunn, B.V. : Treatment of Dysmenorrhea
Brit. Med. Jour. 1:971-973 1931
33. Bauer, L.E. : Treatment of Primary Dysmenorrhea
J. Mich. M. Soc. 33:459-462 1934
34. Reynolds, S.M.R. :Studies on the Uterus
Am. Jour. Physiology
92:420 March 1930
94:696 Sept. 1930
97:706 Sept. 1931
35. Frank, R.J. : The Female Sex Hormone
Charles C. Thomas 1929
36. Litzenberg, J.C. :The Use of Benzyl Benzoate in
Dysmenorrhea
Jour. A.M.A. 83:472
37. Boynton, R.E., and Hartley, E.C. : Calcium in the
Treatment of Dysmenorrhea
Am. J. Obst. & Gynec.
27:253 Feb. 1934

38. Boynton, F.E. : A Controlled Study of the Treatment of Dysmenorrhea
 Jour. Lancet 55:84-87 Feb. 1935
39. Diasio, J.S. : New Therapy for Essential Dys.
 Am. Med. 39:5 Feb. 1933
40. Dudley, E.E. : Principles and Practice of Gynec.
 Lea Bros, & Co. P.690-696 1902
41. Bell, W.B. : New System of Gynecology
 McMillan & Co. P.351-355 1917
42. Frank, J. : Obstructive Dysmenorrhea & Sterility
 Abstract. J.A.M.A. 70:985-986 1918
43. Andrews, C.J. : Severe Dysmenorrhea with Report
 of Case Treated by Cleland Opt.
 Virg. Med. M. 56: 593-596 1929
44. Kennedy, C. : Surgical Relief of Dysmenorrhea
 Minn. Med. 6:507-510 1923
45. Ganssbauer, J. : Treatment of Dysmenorrhea by
 Cervical and Cavum Uteri Dilatation
 Jour. A.M.A. 80:442 Feb. 1923
46. Fliess, : Quoted by H.S. Crossen P.846-864
 Diseases of Women Saunders IV Ed.
47. Polak, J.O. : Fifteen Years with Radium in
 Treatment of Fibroids, non-malignant
 Bleeding and Dysmenorrhea
 Am. Jour. Surg. 6:684-654 1929
48. Meigs, J.V. : Female Sex Hormonology--An Interpretation
 Medical Clinics of North America
 18:1167-1170 Jan. 1935
49. Cotte, G. : Periarterial Sympathectomy in Gyn.
 Jour. A.M.A. 84:712 Feb. 1925
50. DeCoursey, J.L. : Resection of Presacral Nerve
 Based on Favorable Results in
 21 Cases
 Am. J. Surg. 23:408-412 1934
51. Fontaine, Rene, and Hermann : Clinical and
 Experimental Basis for Surgery of
 Pelvic Sym. Nerve in Gynec.
 Surg. Gynec. & Obst. 54:133-168 1932

52. Adson, A.W., and Masson, J.C. :Dysmenorrhea :
Relieved by Resection of Presacral
Nerve.
Jour. A.M.A. 102 :986-990 1934
53. Craig, W.M., and Counseller, V.S. : Resection of
Presacral Sympathetic Nerves
(superior Hypogastric plexus)
Evaluation of end-results
Am. J. Obst.&Gynec. 28:161-172 1934