SPOROTRICHOSIS IN MAN

WITH A SUMMARY OF THE CASES REPORTED IN THE UNITED STATES AND A CONSIDERATION OF THE CLINICAL VARIETIES AND THE IMPORTANT FACTORS IN THE DIFFERENTIAL DIAGNOSIS*

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Following the publication by Hektoen and Perkins¹ of a report of the second authentic case of sporotrichosis in the United States in 1900, four years elapsed before the third American case was reported. In contrast to the infrequent finding of the disease in this country is the striking rapid accumulation of cases in Europe which followed Beurmann's original report from Paris in 1903. Up to the present more than 200 cases have been put on record from all over the civilized world. As a result there has accumulated a growing mass of pathologic and clinical data, facts which show, among other things, that sporotrichosis is not alone a local skin disease, but under certain conditions becomes a generalized systemic infection similar to the other granulomas. These reports contain examples of the localization of

interesting to note that in 1910, following R. L. Sutton's report² from Kansas, eleven cases, or nearly one-third of all those reported in this country, were published from the same state during the succeeding twelve months.

REPORT OF A NEW CASE OF SPOROTRICHOSIS

History.—In January, 1910, C. A., aged 28, a native of Wisconsin, journeyed to Cresbard, S. D., to engage in farming. In October of the same year, after nine months' residence in the state, he noticed a small "pimple" on the calf of his right leg. He remembered no preceding trauma and believed there had been none. He described the lesion as a small, firm nodule about the size of a split pea, lying beneath the skin surface. In the course of the following week two similar nodes appeared immediately above the first. These small tumors gradually became harder and larger and ultimately—in six or eight weeks—softened and broke down, discharging a small quantity of viscid, bloody pus.

On consulting his physician, he was told he had probably contracted glanders, although as far as could be ascertained there was no evidence of this disease among the horses on his farm.

Within the succeeding few weeks several more nodules, exactly similar in character and in a direct line above the

Fig. 1.—Appearance of leg on entrance into hospital, Jan. 31, 1911, four months after initial lesion.

Fig. 2.—Appearance of leg Feb. 20, 1911, fourteen days after curettement and carbolicizing with 95 per cent. phenol.

the *Sporotrichium* in muscles, joints, bones, kidney, lung, etc., the organism being recovered from the bloodstream by the usual methods of blood culture.

It would seem highly probable, therefore, that sporotrichosis is a wide-spread prevalent disease, particularly in the country and farming districts, and that many unhealed chronic ulcerative processes now passing under the caption tuberculosis, syphilis, glanders, blastomycosis, actinomycosis, etc., are in fact unrecognized sporotrichosis.

In the belief that with greater familiarity with the clinical picture will come earlier and more general recognition of the disease, I present this paper; for it is my conviction that the history of the development of sporotrichosis will parallel that of actinomycosis and blastomycosis as soon as the attention of the profession, particularly those practicing in the farming districts, is directed to the infection. In this connection it is

* From the surgical service of Dr. Arthur Dean Bevan and the Morris Institute for Medical Research.

¹ Preliminary report read before the American Association of Pathologists and Bacteriologists, Chicago, April 13, 1911.

Fig. 3.—Appearance of leg on leaving hospital, March 6, 1911, after one month of local surgical dressing.

Fig. 4.—Appearance of leg March 18, 1911, after six weeks of local surgical dressing.

others, appeared; on the advice of his physician he returned to Wisconsin to seek further medical aid. During December and January the disease gradually traveled up the leg, along the inner aspect of the thigh in a line corresponding to the course of the deep lymphatics, the nodules beginning deep in the subcutaneous tissues, becoming larger and softer as they approached the skin surface and then breaking down to form deep necrotic foul-looking ulcers. There were no subjective pain, little if any tenderness to pressure, no febrile reaction and no constitutional disturbance.

Examination.—In January, 1911, the State Hygienic Laboratory of the University of Wisconsin secured some pus from a freshly formed ulcer, and subjected it to the usual bacteriologic examinations, including the injection of a portion into the peritoneal cavity of a male guinea-pig. The results of this examination were completely negative for all organisms, in spite of which, however, a probable diagnosis of glanders was made. Sporotrichosis was not considered.

The patient entered the service of Dr. Bevan at the Presbyterian Hospital, January 31. The appearance of the leg at that time is best given in the words of the hospital history. "On the posterior surface of the calf of the leg (right) beginning about half way between the ankle and knee and running upward, are a series of slightly elevated, sharply defined, deep

red areas, about the size of a dollar. These bleed readily when injured. On the posterior side of the knee just over the tendons of the semimembranosus and semitendinosus muscles are two or three nodules which are not so large as those mentioned above but are more elevated or dome shaped. From these a bloody serum is discharging. Farther up on the inner anterior part of the thigh are three nodules which can be felt under the skin as hard lumps the size of hickory nuts. In all there are nine nodules making a straight series from the middle of the calf running toward the groin" (Fig. 1).

On entrance, his appearance was that of a robust, well-developed, well-nourished young man. Except for the leg lesions there was no evidence of organic disease. His temperature was 98 F.; leukocytes 8,900; hemoglobin 84 per cent. (Dare); urine negative. He complained of slight tenderness on pressure over the lesions on his leg, but of no subjective pain. He was isolated and placed under infectious precautions.

February 2, Dr. Bevan incised one of the unopened nodules, allowing a small quantity of greenish-gray, blood-streaked, slightly viscid pus to escape. Cultures and smears were prepared, and a portion of the pus obtained in an aspirating syringe for animal inoculation. The smears stained with methylene-blue, Gram and carbol-thionin showed many pus cells but no organisms of any kind. The culture tubes at the end of

formed scar tissue and crusts, underneath which were some bluish discoloration and induration (Fig. 4). The patient was placed on potassium iodid for the first time, 10 grains three times daily.

Subcultures were made of the growth which had subsequently appeared on the second series of tubes in pure culture, white rats and guinea-pigs were inoculated and the organisms studied in more detail at the Morris Institute.

The laboratory study of the organism showed it to be identical with the sporothrix described first by Schenck³ in 1898, by Hektoen and Perkins¹ in 1900, and by Hyde and Davis⁴ in 1910, its cultural characteristics, morphology, results of animal inoculation, etc., agreeing closely with the excellent description in the report of Hyde and Davis.

GROWTH AND CULTURAL CHARACTERISTICS

The first growth of the organism was exceedingly slow, eight days elapsing after inoculation of the culture tubes before the first small gray-white colony appeared on the plain agar-slant in the incubator. The growth of the second and third generations, following transfers to fresh mediums, appeared within from forty-eight to seventy-two hours. The importance of this slow initial growth should be emphasized, as it shows the need for repeated observations of the culture

Fig. 5.
Seven-day
growth on 2
per cent.
glucose agar.

Fig. 6.
Sixteen-day
growth on 2
per cent.
glucose agar.

Fig. 7.
Litmus glucose
agar; sixteenth
day; room
temperature.

Fig. 8.
Sixteen-day
growth on blood
agar showing
pigment.

the fourth day appeared sterile. Subcutaneous and intraperitoneal injections of the pus into male guinea-pigs produced no orchitis. At this time the probable clinical diagnosis of sporotrichosis was made.

February 6, the two upper nodules were dissected out under ether-anesthesia. The nodules which had broken down were carefully curetted and cauterized with 95 per cent. phenol (carbolic acid) followed by alcohol (Fig. 2). Fresh culture mediums, including glucose and blood-agar, were inoculated and placed at 37 C. (98.6 F.) and a duplicate set of tubes inoculated and placed at room temperature. February 10 an agar-slant tube of the first series, eight days after inoculation, showed a single, small, slightly elevated, gray-white colony, which on examination proved to be a pure culture of sporothrix.

The patient remained in the hospital until March 6, during which time the curetted and phenolized areas under dry iodoform dressing became covered with granulation tissue and gradually healed (Fig. 3). March 18 he returned to the hospital for examination. The areas were covered with newly

Fig. 9.—Four-day-old colony in plain bouillon; methylene-blue; low power.

tubes for a considerable period of time, in order that the slow-appearing colonies might not be overlooked. Had this been done in this case when cultures were first made, it is probable that the diagnosis would have been made months earlier, thereby saving the patient useless worry and expense.

Growth was abundant on all mediums after the organism had been under cultivation for some time, but particularly so in mediums containing sugar. In testing out various mediums, it was found that the organism grew best and with equal vigor on 2 per cent. glucose, levulose and maltose agar, less luxuriously on lactose and saccharose agar, and poorly or not at all on mannite and inulin agar. The small gray colonies rapidly germinate and coalesce to form a slightly elevated pale gray layer, which later becomes corrugated with a sticky, moist-appearing surface resembling soft putty (Figs. 5 and 6). In the stab cultures this central coral-like mass becomes surrounded with fine needle-like radiating lines on the surface of the mediums (Fig. 7).

In liquid mediums, growth was readily obtained in plain broth of an acidity of 1 per cent. and in so called "whey" mediums of an acidity of 0.5 per cent., as a delicate downy growth at the bottom of the tube.

Pigment Formation.—In certain of the older cultures, and particularly in cultures on blood agar and in glucose agar containing from 3.5 to 4 per cent. glucose, a brownish-black pigment appeared, as has been noted by Davis and others (Fig. 8).

Morphology.—The organism consists of an abundant branching septate mycelium with clusters of pear-shaped spores within the meshes of the interlacing filaments (Fig. 9). A single colony of mycelium fished out of a broth-culture, mounted and stained with methylene-blue, suggests somewhat the contour of a crushed granule of actinomyces (Fig. 10). The detail of the periphery of such a mycelial colony shows the typical branching filaments with occasional clinging spores (Fig. 11). With the oil-immersion lens, the refractive borders and septa of the filaments may readily be seen (Fig. 12).

The oval, pear-shaped spores are typical of sporothrix, the protoplasm staining for the most part evenly with

Fig. 10.—Four-day-old colony in plain bouillon; methylene-blue; low power; showing similarity to actinomyces.

Fig. 11.—Four-day-old colony in plain bouillon; methylene-blue; high power; detail of periphery, showing branching, mycelium and spores.

Gram, although some spores contain clear unstained apices which Davis thought resembled vacuoles (Fig. 13). Mycelial production was more abundant in broth and in 4 per cent. glucose agar; spore formation in 2 per cent. glucose agar.

Histology.—Microscopic section of the excised nodules showed a chronic inflammatory tissue consisting of round and epithelioid cells with occasional plasma cells. One portion contained a considerable number of large giant-cells with nuclei

Fig. 13.—Three-day growth on 2 per cent. glucose agar; Gram; oil immersion.

Fig. 12.—Four-day-old colony in plain bouillon; methylene-blue; oil immersion; showing septa in mycelium.

arranged at the periphery. In the center of two giant-cells was a short, poorly stained oblong rod resembling a thick, short bacillus. These are probably modified tissue forms of the organism as described by Beurmann and Gougerot.

Another area of the section contained a considerable number of eosinophils. I could find no reference in the American literature to a similar finding nor in the recently published monograph by Beermann and Gougerot.⁵ However, de Massary, Doury and Monier-Vinard⁶ described in 1907 an infiltration of polynuclear eosinophilic leukocytes in the periphery of a sporothrix nodule.

Animal Experiments.—Pure cultures of sporothrix inoculated intraperitoneally into white rats and guinea-pigs produced in some instances small subcutaneous abscesses about the point of injection and multiple abscesses in the parietal and visceral peritoneum and in the liver and spleen. Smears from these abscesses showed many spores, some apparently within the leukocytes, but no budding forms or myceliums. In tissue sections, oval spores were found in large numbers within and between the fixed tissue cells. No giant-cells were found. Numerous eosinophils were present.

SPOROTRICHOSIS IN AMERICA

As the result of a rather careful search through the American literature, I have found that twenty-eight cases (including the present one) of undoubted sporotricho-

sis (as proved by positive cultures of the organism) have been reported during the thirteen years following Schenck's original publication. In addition, I have collected thirty cases of highly probable sporotrichosis, cases clinically identical with the twenty-eight positive cases, but without positive cultures. The first group of cases is tabulated in Table 1, the second in Table 2.

A summary of the findings in these cases is as follows:

Geographic Distribution.—Fourteen states are represented* from various localities in the United States, divided as follows: North Dakota twenty-two cases; Kansas, thirteen; Nebraska, five; Illinois, two; Missouri, three; New York, two; Minnesota, two; California, one; Iowa, one; Indiana, one; New Jersey, one; South Dakota, three; Montana, one; Wisconsin, one; total, fifty-eight cases.

* This probably does not indicate the relative frequency of the disease, for, as already mentioned, eleven of the twelve Kansas cases were reported in the twelve months immediately following the report of the first Kansas case by Sutton.

TABLE 1.—DIAGNOSIS BY CULTURES

Case	Author	Year	Location	Patient			Primary Infection	Nature of Trauma
				Sex	Age	Occupation		
1	Schenck ³	1898	St. Louis.	M.	36	Ironworker.	Index-finger of right hand.	Nail on keg of red lead.
2	Hektoen and Perkins ¹	1900	Shenandoah, Iowa.	M.	5	.....	Left index-finger.	Blow by hammer.
3	Quain ²⁶	1904	North Dakota.	F.	35	.....	Inner side leg.	
4	Burlew ¹³	1909	San Juan Capistrano, Cal.	M.	..	Farm hand.	Left cheek and ant. surface right leg.	
5	Trimble and Shaw ¹⁴ ..	1909	Kansas.	..	..	Report not available.	.....	
6	R. L. Sutton ²	1910	Ottawa, Kan.	F.	30	Housewife.	Ball of right thumb.	
7	Hyde and Davis ⁴	1910	North Dakota.	M.	24	Farmer.	Back of left hand.	
8	Zuraski ¹⁵	1910	Chicago.	M.	25	Packer for express company.	.....	
9	R. L. Sutton ¹²	1910	Independence, Mo.	F.	18	Farmer's daughter.	Back of right hand.	Feeding kaffir corn to dog.
10	Gifford ²⁷	1910	Omaha, Neb.	F.	..	.....	Eyelids.	
11	J. M. Sutton ¹⁶	1911	Halstead, Kan.	M.	52	Laborer.	Palm of left hand.	Puncture wound by small nail.
12	J. M. Sutton ¹⁶	1911	Halstead, Kan.	M.	40	Farmer.	Index-finger of right hand.	Disk harrow.
13	J. M. Sutton ¹⁶	1911	Halstead, Kan.	M.	36	Farmer.	Second phalanx of thumb.	Cut.
14	J. M. Sutton ¹⁶	1911	Halstead, Kan.	M.	28	Farmer.	Pimple opened with pin.	
15	Ruediger and Miller ²⁸	1911	North Dakota.	M.	45	Farm laborer.	Middle finger of left hand.	
16	R. L. Sutton ¹²	1911	Earlton, Kan.	M.	44	Farmer.	Right wrist.	Piece of baling wire.
17	Hamburger	1911	South Dakota.	M.	28	Farmer.	Calf right leg.	
18	Turrell ²⁰	1911	Smithtown Branch, N. Y.	M.	12	Inmate children's home.	Top of great toe.	
19	Turrell ²⁰	1911	Smithtown Branch, N. Y.	M.	..	.....	Back of hand.	
20	Ruediger ²⁰	1912	Morton County, N. Dak.	F.	20	.....	Pimple on elbow.	
21	Ruediger ²⁰	1912	McHenry County, N. Dak.	M.	32	.....	Hand.	
22	Ruediger ²⁰	1912	Poplar, Mont.	M.	41	Farmer.	Tip of index-finger.	
23	Ruediger and Smith ²¹	1912	North Dakota.	F.	3½	.....	Index-finger left hand.	Cut.
24	Armstrong ²²	1912	St. Paul.	M.	50	Handler of green hides.	Pimple back of right hand.	
25	Thabes ²⁹	1912	Frazee, Minn.	M.	50	Woodman.	Back of hand.	
26	Adams ²³	1912	South Dakota.	M.	27	Farmer.	Index-finger.	
27	Foster and Thearle ²⁴ ..	1912	Fort Leavenworth, Kan.	M.	..	U. S. Army.	.....	
28	Olson ²⁵	1912	Tappen, N. Dak.	M.	19	Farm laborer.	Pimple back of hand.	Probable infection from gophers.

Sex.—In the reports in which sex is mentioned, there were thirty-two males and twenty-one females.

Age.—All ages are represented, the youngest patient being 3 years, the oldest 70; twenty-seven cases occurred in persons between the ages of 15 and 45.

Occupation.—Infections occurred in farmers and farmers' children fifteen times; in florists two times; once each in an iron-worker, a berry-picker, an express-company packer, a laborer, a housewife, a school-teacher, a potato-peeler, a woodman and a soldier.

Seat of Primary Infection.—Back of hand five times; index-finger four times; palm of hand twice; thumb twice; once each in wrist, arm, thigh, anterior surface of leg, knee and calf.

Trauma.—Occurrence of preceding trauma is mentioned nine times; no history of trauma in nine cases; of the nine cases mentioning trauma, two were caused by nails; two by wire; one each by hen bite, blow by hammer, disk harrow and knife.

Duration of Disease.—From three weeks to eighteen months.

There has been no case of systemic sporotrichosis reported in this country, so far as I am aware.

CLINICAL VARIETIES

The classification of the clinical varieties is that given by Beurmann:⁷

1. Localized sporotrichosis with sporotrichotic chancre and ascending lymphangitis and local lymphadenitis (present case).

2. Disseminated gummatous sporotrichosis; multiple subcutaneous nodules distributed without systematic arrangement throughout the body; early small hard painless round masses; late small and large soft cold abscesses. *No ulceration.*

3. Disseminated ulcerative sporotrichosis; multiple polymorphic ulcerations of the nature of tuberculous, syphilitic, ecthymatous, rupial or furuncular lesions or a mixture of these.

4. Extracutaneous sporotrichosis, with localization in mucous membranes, muscles, bones, joints, ocular tissues, synovial membranes, kidney (one case) and lungs (two cases).

DIAGNOSIS

The features which are helpful in the differential diagnosis of sporotrichosis may be grouped as follows:

TABLE 2.—DIAGNOSIS BY CLINICAL FINDINGS

Case	Author	Year	Location	Patient			Primary Infection	Nature of Trauma
				Sex	Age	Occupation		
1	Brayton ¹⁹	1900	Indianapolis.	M.	30	Florist.	Index-finger left hand.	Wire prick.
2	Quain ²⁶	1904	Bismarck, N. Dak.	F.	..	.....	Dorsum of hand.	Bruise.
3	Quain ²⁶	1904	Bismarck, N. Dak.	F.	18	School-teacher.	Left thumb.	Cut.
4	Quain ²⁶	1904	Bismarck, N. Dak.	F.	40	.....	Back of left hand.	
5	Quain ²⁶	1904	Bismarck, N. Dak.	M.	70	.....	.....	
6	Quain ²⁶	1904	Bismarck, N. Dak.	F.	48	.....	Right forearm.	Bruise.
7	Quain ²⁶	1904	Bismarck, N. Dak.	F.	3	Granddaughter of patient No. 6.	Wrist.	Scratch bandaged with sporothrix-infected dressings.
8	Quain ²⁶	1904	Bismarck, N. Dak.	..	..	.....	Forearm and arm.	
9	Stickney ³⁰	1905	Dickinson, N. Dak.	..	..	.....	Hand and forearm.	
10	Stickney ³⁰	1905	Dickinson, N. Dak.	..	..	.....	Arm and upper arm.	
11	Stickney ³⁰	1907	Dickinson, N. Dak.	..	..	.....	Right shoulder, left neck and face.	
12	Stelwagon ²⁰ (Stout)	1910	New Jersey.	F.	67	Berry picker.	Palm of left hand.	
13	Pinney ²¹	1910	Chicago.	F.	..	Florist.	Arm.	
14	R. L. Sutton ¹² (Chadwick)	1910	Tyro, Kan.	M.	11	Farmer's boy.	Back of right hand.	Hen bite.
15	R. L. Sutton ¹²	1910	Highpoint, Mo.	F.	16	.....	Index-finger.	Kraut-cutter.
16	Gifford ²⁷	1910	Omaha, Neb.	F.	14	.....	Right lower eyelid.	
17	Gifford ²⁷	1910	Omaha, Neb.	M.	10	.....	Left lower eyelid.	
18	Gifford ²⁷	1910	Omaha, Neb.	F.	32	.....	Left lower eyelid.	
19	Gifford ²⁷	1910	Omaha, Neb.	M.	4½	.....	Right lower eyelid.	
20	Gifford ²⁷	1910	South Dakota.	F.	4	.....	Right lower eyelid.	
21	Harker ²²	1911	Horton, Kan.	M.	5	Farmer's son.	Back of right hand.	Scratch.
22	Beam ²⁸	1911	Willsey, Kan.	M.	17	Farmer's son.	Left knee.	Indolent ulcer opened with needle.
23	Steward ²⁴	1911	Denison, Kan.	F.	42	.....	Inner surface right thigh.	
24	Henderson ²⁸	1911	Erle, Kan.	M.	19	Farmer.	Dorsum left hand.	Pimple opened with pin.
25	Ritchie ³⁷	1911	Wisconsin.	F.	..	Potato peeler.	Middle finger.	Knife cut.
26	Hanson ³⁰	1912	Charlson, N. Dak.	M.	4	.....	Back of hand.	Scratch.
27	Hanson ³⁰	1912	Charlson, N. Dak.	M.	48	.....	Pimple dorsum right hand.	
28	Hanson ³⁰	1912	Charlson, N. Dak.	M.	7	.....	Back of hand.	
29	Ruediger ³⁰ (Johns)	1912	Adams County, N. Dak.	F.	42	.....	Pimple inner surface forearm.	
30	Ruediger and Smith ³¹	1912	Bismarck, N. Dak.	F.	43	.....	Pimple back of hand.	

Clinical.—The occurrence in men between the ages of 15 and 45, in the country and farming districts (but also in the cities).

The occurrence in farmers, fruit and vegetable dealers, berry-pickers, florists, etc.

A history of preceding trauma by nails, wire, knife, hammer, bite of animals (rat, hen), pin-prick, etc.

The slow period of incubation, following the initial trauma; the insidious onset and slowly progressing course; the slow ascending infection following the course of the deep lymphatics.

The production of characteristic small, round, hard, subcutaneous nodules, and their uniform evolution into softened cold abscesses or cutaneous ulcers.

The long-drawn-out clinical course of the disease, with little or no pain or temperature and little or no effect on the general health.

Laboratory.—The local and general eosinophilia. The presence of eosinophils in the nodules has already been mentioned. In addition, eosinophils have been noted in the initial chancre,⁸ in the pus from the broken-down nodules⁹ and in the circulating blood of experimental animals,¹⁰ as well as clinically.¹¹ It will be of great clinical interest, therefore, to see whether more extended observations will show the eosinophilia in sporotrichosis to be of diagnostic importance.

The cultivation of the organism on artificial mediums, the growth of *Sporotrichium* being characterized by its slow initial appearance; its ready growth on 2 per cent. glucose agar at room or incubator temperature; its raised corrugated appearance on slant agar and its radiating, flower-like appearance in stab culture; its brownish-black pigment production in old cultures and on 4 per cent. glucose agar; its branching septate mycelium and pear-shaped spores.

TREATMENT

Treatment is well summed up in Beurmann's words, as follows: "Potassium iodid should be administered internally in increasing doses as high as 6 gm. a day and even more, and the local lesions should be dressed with a weak iodi-iodid solution: water, 500 gm.; potassium iodid, 10 gm.; iodine, 1 gm. Finally, the ulcerated points should be cauterized with tincture of iodine. The prolongation of general treatment for a month after complete, apparent recovery is indispensable to prevent relapse and recurrences."

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THE APPLICATION OF CONSERVATIVE SURGERY TO OVARIAN DERMoids

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The case which prompted this investigation occurred in the practice of Dr. Edward Reynolds of Boston, during my service as assistant to him, and I am indebted to him for permission to report it, and for the first suggestion of the interest and importance of the subject.

A young woman, with excellent history and in good general health, the mother of one child, came to operation for the repair of a lacerated cervix and perineum, and the correction of certain ovarian abnormalities which had become evident on examination. The ovaries were both found to be somewhat enlarged, and each contained a small dermoid cyst, apparently of the usual type. In addition, there were several small serous cysts. As the patient was extremely anxious that the ovarian function be retained, both dermoids were excised, the serous cysts were evacuated, and their linings removed. This procedure left an ample amount of apparently normal ovarian tissue on the left side, and somewhat less on the right. Convalescence was uneventful.

A pathologic report on the dermoids stated that they were not free from the suspicion of malignancy, as the cells were somewhat too numerous, and showed a tendency to atypical arrangement. After consultation with the patient and her husband (a physician), it was their choice to take the possible risk involved in delay, rather than to submit to another immediate operation which would necessitate a perhaps unjustified sterilization.

About ten months later, she was obliged to submit to a second operation on the discovery of a second enlargement of the right ovary. This was done in another city; but her husband subsequently reported that the tumor was a simple dermoid.

The question of the possibilities of malignancy in ovarian dermoids was naturally considered immediately after the first operation, but a hurried search of the literature of both text-books and journals failed to throw any considerable light on the subject. A more complete and thorough investigation of the available facts forms the basis of this article.

The coexistence of pregnancy and ovarian dermoids is sufficiently common to permit the definite assertion that an ovary which is the seat of one or more of these tumors is usually capable of performing its share in the reproductive function. Bland-Sutton¹ mentions two cases of double ovariectomy for dermoids during pregnancy. In one of these cases, normal ovarian tissue was not detected in either ovary after microscopic investigation. In determining the advisability of conservation in these cases, we have then to deal with the possibilities

1. Bland-Sutton: *Surgical Diseases of the Ovaries and Fallopian Tubes*.