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The Treatment of Carcinoma of the Vulva

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BULLETIN OF THE
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Address communications to: Staff Bulletin, 3330 Powell Hall, University of Minnesota, Minneapolis 14, Minn.

I. THE TREATMENT OF CARCINOMA OF THE VULVA

John L. McKelvey, M.D.

The whole problem of vulva carcinoma requires re-examination for a number of reasons. Because it is characteristically a disease of advanced age, it may be expected to occur more frequently in the future in this part of the world than it has in the past. There are still disagreements as to therapy. What is much more important from a practical point of view is that what is known and generally accepted by those working in the field is not being applied by those who are first seeing and handling the majority of these tumors. All too often, diagnosis is late and therapy incomplete. Finally, there are some new and promising developments which are urgently in need of careful evaluation.

The more general problems of the vulvar tumors will remain with us. By tradition, malignant disease of the vulva includes a group of tumors which have little in common. Fortunately, the vast majority of the group is made up of the squamous cell carcinoma of the labium majus and minus and of the vestibule. But it also includes the occasional carcinoma of the glans clitoris, adenocarcinoma of Bartholin's gland and of the vulvar sweat glands and the melanosarcomas of the vulva. Sarcomas of the vulva are very rare but are also usually included. These present quite different problems from those of the much more usual squamous cell tumors. Paget's disease of the vulva is also extremely rare and it is the author's opinion that this should not be included.

It is probably wise to continue to include the tumors other than Paget's disease for purposes of allowing comparison with the studies which have already been done. Even though they be kept in the general group of malignant vulvar tumors, the obvious qualifications as to prognosis following treatment of one of the more rare tumors is necessary.

The main problem which seems to have influenced decisions particularly as to treatment lies in the relatively advanced age of the patients with this disease. The age distribution of the patients with vulva carcinoma in the University of Minnesota material from 1928-1950 is similar to that which has been reported by others.

Age Incidence of Patients with Vulva Carcinoma

Age	Number	Age	Number
30-39	5	60-69	31
40-49	14	70-79	21
50-59	22	80+	11

There is, however, more than appears on a superficial examination of such a table. Dr. Alan E. Treloar of the division of biostatistics has prepared from this material an age specific index. This is based on the census in Minnesota of 1940. A fraction, made up of the number of women over 80 years of age with carcinoma of the vulva in this series, over the number of women of the same age group who were living in the state in 1940, was assigned an arbitrary value of 100. The numbers in the other decades were similarly treated and expressed as a fraction of this.

Expressing the incidence of the tumor in this way, it is evident that vulva carcinoma is not only a disease of relatively advanced age but that, as age advances, the incidence of the disease rapidly increases. With the rapid so-called aging of the population in this country, it may be confidently expected that more and more carcinomas of the vulva will be seen and more of them will occur in the more advanced age groups. The numbers of vulva carcinomas will increase disproportionately to the simple arithmetical expression of the increasing number of survivors to more advanced ages. The surgical problems of the handling of elderly women with these tumors will increase.

That this is real is suggested by the data from the Minnesota material. Of 40 patients with vulva carcinoma seen from 1928-38 only 7 were 70 years of age or older. From 1938-50, of 64 patients, 25 were in this age group.

The third of the general problems arises from the association of vulva carcinoma with leucoplakia. This will not be discussed in detail here. It is, however, clear that if leucoplakia is to be intelligently handled and if the transitions from leucoplakia to malignancy are to be objectively recognized at the earliest possible moment, then much more careful study of these lesions is required. This problem has been discussed in more detail elsewhere.[1]

Classification

It soon became evident in the course of this study that the classifications which had been suggested to express the extension of the vulva carcinoma are not entirely satisfactory. A classification has more than academic interest. Its obvious uses are to indicate a prognosis for the individual patient and to aid in drawing conclusions as to the effectiveness of varied techniques of treatment. What is not so evident is that it should be so arranged as to throw a strong critical light on the more serious of the clinical problems concerned. In the material to be reported here, it is clear that extension of the tumor to involve urethra or vagina is of serious prognostic significance. The degree of this seriousness was not evident until this classification was applied.

The classification should also be applicable to the information which can be obtained from the material resulting from whatever forms of treatment are likely to require comparative study. In vulva carcinoma, irradiation, coagulation and surgery have been used. Clinical determination of inguinal-femoral gland involvement or its absence is notoriously unreliable. In most instances, this can only be decided by the microscopic examination of surgically removed material. To use this as a classification criterion will immediately rule out of consideration the clinical material treated by coagulation or irradiation. It would seem wise, then, to exclude gland involvement as a criterion of classification.

The following classification has finally been decided upon and seems to satisfy the requirements listed above.

Stage 1. Tumor of 10 square cms. or less.

Stage 2. Tumor of more than 10 square cms.

Stage 3. Tumor of any size which also invloves the surrounding structures such as urethra, vagina, anus or rectum.

Stage 4. Tumor of any size with clinically demonstrable intra-abdominal or other distant metastasis.

The material (1938-1950) to be reported fell into groups 1, 2, 3 and 4 in 53, 19, 25 and 3% respectively. On microscopic examination, the glands were involved in 29, 42, 50 and 100% respectively. The absolute cure rates (1938-1945), including patients previously treated elsewhere were 67, 67 (small group), 0 and 0% respectively. It would seem that the classification expresses clinical reality.

Material

The clinical material to be presented includes all of the patients seen at the University of Minnesota from 1928 through 1950. The earlier material, seen from 1928 to September, 1938, has already been reported by McLennan[2] and will be mentioned only briefly for specific purposes. The clinical material seen since September, 1938, is that which has been used for study purposes and is reported here.

All of these patients except one have been followed to death or to the end of 1950. The one lost patient who was treated prior to 1938 was followed until admitted, moribund, to a Kansas City Hospital. She was discharged in the same condition and is not registered as dying in that or any of the immediately surrounding states. She is charged as dead of tumor.

Treatment

A few general features of treatment deserve short mention. They have been discussed in detail elsewhere.[1] Vulva carcinoma is usually a slowly developing lesion. It is usually associated with symptoms in a sensitive area which should allow the patient to present herself early for diagnosis. It is readily available to direct observation and to the taking of material for biopsy by the physician. The lesion is soon quite characteristic. In spite of this, altogether too often both patient and physician express the hope that "the ulcer will heal with time and local applications of ointments". Precious time is lost. Even when the diagnosis is suspected or made, many patients and physicians seem to lack the conviction that the lesion is curable or that these elderly women are suitable subjects for curative therapy. This is, of course, simply not so.

Carcinoma of the vulva is seldom a localized disease. Many begin as multiple tumors which are not metastatic since they can be seen to begin in the epidermis above the basement membrane. Contact implantation seldom if ever occurs. There is, then, no place for local treatment.

There is usually no reasonable possibility of being sure by clinical examination that the inguinal-femoral glands are the seat of tumor metastasis and never any certainty that they are not. There is no advantage to be gained by preliminary removal of enlarged glands for microscopic examination. This can seriously interfere with adequate surgical removal of the whole group of glands. Small glands which are not seen on biopsy may harbor the tumor while the larger glands show only inflammatory hyperplasia. There is, then, no place for local therapy of any sort to the primary lesion alone.

The lymphatic drainage from the vulva has rich contra-lateral communications. There is, then, no place for unilateral therapy to the glands which drain the area.

Irradiation Therapy

Radium and x-ray therapy have been advocated for the treatment of carcinoma of the vulva. There is good theoretical reason why this is unlikely to be effective. This has been discussed elsewhere.[1] In the University of Minnesota material from 1928-1938, a peculiarly individualized therapy which usually involved a combination of partial surgery, x-ray and radium was used. No single stage radical vulvectomy was done. A 15.4% 5-year cure rate was produced. Todd[3] reported on efficient local radium therapy in 116 patients of whom 71 had "early" tumors and 45 "late" tumors. An unspecified number were subjected to gland dissection as well. A 21% 5-year cure rate was produced. Ellis[4] reported on 127 tumors who were treated with a variety of combinations of x-ray and radium. Of these, 16% were also subjected to some surgical procedure. A 5-year cure rate of 16% was produced. Berven [5] reports the early experience (1915-1921) of the Radiumhemmet with radium and x-ray. A relative 5 year cure rate of 13% was obtained. The absolute cure rate is not given. It would appear that irradiation is not an acceptable curative method of treatment. It is the author's experience that it is seldom useful as a palliative aid.

Coagulation

Berven[5] has recently reported the experiences of the Radiumhemmet with a form of therapy which involves coagulation of the local tumor between bipolar electrodes followed by teleradium to the groins. In some of the patients, inguinal dissection is done later if gland metastases appear or those which are originally present later become operable. At first glance, this would appear to be simply another form of simple vulvectomy with elective irradiation or surgery to the groin glands. However, the author states that during coagulation of the vulva, the temperature of the tissue in the groins reaches 40-50° C. and suggests that this is destructive to metastatic tumor. Of 384 patients seen, 286 were treated for an applicability rate of 74% and an absolute cure rate of 28.4%. Both the applicability rate and the cure rate from this procedure appear to be lower than can be achieved by primary surgical means.

Surgical Therapy

The radical surgical attack on vulva carcinoma has been used over the past 50 years. For the history of this, reference is made to Kehrer's[6] chapter in the Veit-Stoeckel Handbuch. Its use was limited to occasional patients and the procedure was considered to be beyond the skill of the ordinary gynecologist. One gets the impression from reading the older literature that the physicians were afraid of the procedure, that the operative mortality was high and that the clinical material to which it was applied was made up in large degree of advanced tumors. A number of authors urged the wider application of radical surgery. Oddly enough, Basset's name came to be applied to this although he was not the first to use it nor was he very successful with it. Berven[5] states that Basset achieved only a 9% cure rate in 76 patients. Taussig[7] did more in our time than any to demonstrate the effectiveness and popularize the procedure of the radical surgical attack. He made a really significant contribution. His demonstration of the effectiveness of the radical surgical attack has not received the acceptance which it deserves in practical circles.

Taussig[7] reported on 108 patients who had passed five years since therapy. Of these, 7 refused treatment or went elsewhere. In the remaining 101 patients, his treatment and results were as follows:

	Patients	"5 year cure"
Basset and vulvectomy	41	58.5%
Superficial gland dissection and vulvectomy	21	28.6%
Vulvectomy only	12	8.2%
Irradiation	21	4.8%
Palliation only	6	0.0%
TOTAL	101	Avg. 32 %

His absolute cure rate was 30%. In those who were treated by radical surgery, the single stage procedure was done only slightly more often than the two stage.

Taussig's procedural rate for the Basset procedure was slightly less than 46%. Since such a significant improvement in end results was produced by this, one wonders why it was not more widely applied. The material to which it was applied was as follows:

Taussig's stage	1.	19 Basset operations of 28 patients
	2.	31 Basset operations of 48 patients
	3.	17 Basset operations of 43 patients
	4.	1 Basset operation of 29 patients
	5.	0 Basset operations of 0 patients

There were then a considerable number of patients with early tumors who were not treated by radical surgery. The question naturally arises as to whether or not the procedural rate cannot be increased with reasonable safety and with benefit. It was primarily to investigate this that the present study was undertaken in 1938.

An attempt was made to standardize therapy for vulva carcinoma. This had already been explored and appeared feasible. It was decided to carry out wherever possible a one stage radical vulvectomy with removal of vulva and groin glands in one intact mass. The dissection was carried to the peritoneum in the inguinal and femoral canals and included wherever possible the recognition and removal of Cloquet's gland. It was thought that extension of the surgical procedure beyond this to the extraperitoneal gland stripping of the external iliac vessels presented too great risk in these elderly women. It is evident that this will have to be reconsidered and a new study for the purpose of investigating this is now under way. Local procaine and adrenalin anesthesia was chosen as safest for this group of elderly women.

Table 1

Patients with no Previous Treatment
(June, 1951)

Year	Total	No treatment	Survival free of tumor in years 1	2	3	4	5	Died of or with tumor	Died of other disease
1938	1	0	1	0	0	0	0	1	0
1939	2	0	2	2	2	1	1	0	1 (accident)
1940	2	0	1	1	1	1	0	0	1 operative death 1 stroke - 59 mos.
1941	3	0	3	3	3	3	3	0	0
1942	3	0	2	2	2	2	2	0	1 operative death
1943	8	1	6	5	4	4	4	2	1 operative death 1 other disease
1944	3	0	2	2	2	2	1	1	1 stroke
1945	2	0	1	1	1	1	1	0	1 operative death
1946	7	0	7	6	6	5	2*	2	0
1947	2	0	2	1	1			1	0
1948	2	0	2	2	1*			1	0
1949	5	0	3	3*				2	0
1950	4	0	4*					0	0
1938-45 TOTAL	24	1	18	16	15	14	12	4	4 operative deaths 4 other diseases

Absolute cure rate 50%
Relative cure rate 52%
Relative cure rate removing 4 died other diseases 63%

*Duration of survival determined in months from discharge to June 1951 and not by calendar years.

Table 2

Patients with Previous Treatment
(June, 1951)

Year	Total	No Treatment	Survival free of tumor in years 1	2	3	4	5	Died of or with tumor	Died of other disease
1938	2	1	1	1	1	1	1	1	0
1939	2	0	1	1	1	1	0	1	1 operative death
1940	3	1	2	1	0	0	0	3	0
1941	0	0	0	0	0	0	0	0	0
1942	0	0	0	0	0	0	0	0	0
1943	3	0	2	2	2	2	2	1	0
1944	1	1	0	0	0	0	0	1	0
1945	1	0	1	1	1	1	1	0	0
1946	1	0	1	1	1	0	0	0	1
1947	3	0	2	2	1			1	1
1948	3	0	2	2	1			2	1
1949	1	0	0	0				0	1
1950	0	0	0					0	0
1938-45 TOTAL	12	3	7	6	5	5	4	7	1 operative death
Absolute cure rate							33%		
Relative cure rate							44.4%		

Table 3

Patients Previously Treated and Untreated 1938-45

	Total	No treatment	"5 year cures"	Died tumor	Died other disease	Operative death
Previously untreated	24	1	12	4	4	4
Previously treated	12	3	4	7	0	1
TOTAL	36	4	16	11	4	5

Absolute cure rate	44.4%
Relative cure rate	50%
Relative cure rate after removing 4 died other disease	57%
Operative mortality (5 of 32)	16%
(1938-1950 (5 of 64)	8%)

Table 4

Clinical Staging (McKelvey) and Results
(1938-1945)

Stage	Total	Alive and free of tumor 5 years	Died -- other disease	Died of or with tumor
1	21	14	4 (2 operative deaths)	3 (1 refused treatment)
2	3	2	1 (operative death)	0
3	11	0	4 (2 operative deaths)	7 (2 no treatment)
4	1	0	0	1 (1 no treatment)
Totals	36	16	9 (5 operative deaths)	11 (4 no treatment)

The clinical material which has been studied is shown in tables 1, 2, 3 and 4. Every patient seen in 1938-1950 is included. All of this group have been followed. All have histologic controls.

That these patients present serious problems to the surgeon is evident from the relatively advanced age of the group and the frequent association of other disease. Of the 64 patients, 29 had hypertensive cardio-vascular disease, 4 were fibrillating, one was 74 years old and had a left bundle branch block, one had syphilitic aortitis, one was in cardiac decompensation, one had central nervous system syphilis, 5 were diabetics and one had pernicious anemia. One was pregnant at term and delivered from below before treatment could be carried out for a 42 square centimeter stage 3 tumor.

The anatomy of the local lymph drainage and some of the problems of metastasis and local spread of tumor, the details of the preparation of the patient and of the surgical procedure itself and the post-operative problems are considered in greater detail than present circumstances will allow in another paper which is in process of publication.[1] These will not be discussed here.

Of the total of 64 patients in the 1938-1950 period, 55 were treated by single stage radical vulvectomy for an applicability rate of 86%. For the 1938-1945 material, an absolute 44.4% and a relative 50% five year cure rate was produced. This compares well with the older material (1928-1938) when no single stage radical vulvectomy was done and a 15.4% absolute five year cure rate was produced.

Nine were not treated by single stage radical vulvectomy. One patient refused therapy and in another, the carcimona was found in an early stage when the operative specimen from a simple vulvecotmy was being studied for another purpose. An adeno-carcinoma of Bartholin's gland was treated in stages since there was doubt as to the origin of the tumor. She is alive and well after 89 months. In none of these three was single stage radical vulvectomy withheld because of general physical status or age.

Six patients presented conditions which seemed to contraindicate radical surgery. Two of these were excluded because of extensive tumor. One of them had massive abdominal metastasis and the other had had her tumor for 60 months and presented massive involvement of the labia, vagina and the whole right genitofemoral area. In three, the procedure was modified because of the general physical status of the patient. One of these had a left bundle branch block and diabetes at the age of 74. One was fibrillating and had cardiac decompensation at the age of 70. One had severe hypertensive cardio-vascular disease of arteriosclerotic origin at the age of 80. She was treated by simple vulvectomy and a local recurrence was later treated with radon seeds. She died 69 months later without tumor of coronary disease! Finally, one was not treated because of advanced arteriosclerotic cardiovascular disease and pernicious anemia at the age of 84. She was so senile that it was impossible to communicate with her.

It is then possible to apply single stage radical vulvectomy to almost all patients who present any reasonable life expectation from the point of view of their general physical status and who have a vulva tumor which has not spread in extremely massive form.

What price was paid for this? There were five deaths during hospitalization. All of these occurred in the 1938-1945 period. There has been no operative death since. If the total of 64 patients in the 1938-1950 period are considered, then the procedure is charged with an 8% operative mortality.

There is surprisingly little of value to learn from these deaths. One patient was 84 years old and died six weeks after operation from a flare-up of a chronic pyelonephritis which was known to exist prior to surgery. Another was 63 years old with arteriosclerotic heart disease and fibrillation. Seven weeks after operation, she died from an intracranial hemorrhage. A third was 73 years old, had a left bundle branch block and diabetes. She died 17 days after a simple vulvectomy and unilateral gland dissection. The cause of death was cardiac failure and uremia. A fourth was 63 years old and died suddenly 22 days after operation. No clinical diagnosis could be made and autopsy showed no cause of death. The last was 73 years old with apparently well controlled diabetes. She simply refused to eat and gradually faded away to die 7 weeks after surgery.

None of these patients died directly as a result of surgery although all are charged as operative deaths. It appears that the price which was paid for an 86% applicability rate of single stage radical vulvectomy was not too great and that the increase in the 5 year cure rate more than justifies it.

There are a number of problems which still present themselves. Can the cure rate be still further increased by more radical vulvar excision? What can be done to salvage those patients whose tumor has extended to the vagina and urethra (our stage 3)? Can routine extra-peritoneal dissection of the external iliac glands be safely carried out in these patients and will it materially increase the salvage? Those who are interested in this last problem should study the reports of Way[8] who has almost routinely applied very wide vulvectomy, inguinal-femoral gland dissection and removal of the external iliac glands with much better results than have ever been reported.

It seems clear then that it can best be treated by radical vulvectomy and that good results can be obtained, particularly in reasonably early tumors. Almost all patients with vulva carcinoma can have this procedure applied with reasonable safety. There are a number of unsolved problems but the major practical problem is an insistence on early recognition and early radical surgical attack. There is much to be gained by establishing this conviction in both patient and physician.

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II. MEDICAL SCHOOL NEWS

Coming Events

November 8 - 10	Continuation Course in Fractures and Traumatic Surgery for General Physicians
November 26 - December 1	Continuation Course in Child Psychiatry for Pediatricians and General Physicians

* * *

Dr. Rigler Visits Middle East

Dr. Leo G. Rigler, Head of the Department of Radiology, University of Minnesota Medical School, recently returned from a two-month trip in the Middle East. Dr. Rigler was one of the group of medical scientists and teachers sent to Israel and Iran under the auspices of the Unitarian Service Committee and the World Health Organization of the United Nations. In both Israel and Iran, Dr. Rigler participated in formal lectures for the medical profession and medical students. He was also active in many informal teaching exercises which form such an important part of medical education in the United States. These included ward rounds, diagnostic conferences, and clinical pathological conferences. In both countries, Dr. Rigler found medical students especially receptive to clinical teaching and extremely appreciative of the efforts which were made in their behalf.

* * *

Dr. Bittner Receives Cancer Award

Dr. John J. Bittner, Professor and Director, Division of Cancer Biology, is at present in England where he received the Comfort Crookshank Award for Cancer Research. Dr. Bittner is the first person to receive this award recently established through the Middlesex Hospital Medical School in London, England. In addition to the monetary prize, Dr. Bittner will receive a silver medal in recognition of his achievements as discoverer of the milk agent in mammary cancer in mice.

* * *

Continuation Course in Fractures and Traumatic Surgery

A continuation course in Fractures and Traumatic Surgery will be presented at the Center for Continuation Study November 8 - 10. Subjects which will be emphasized in the course are back injuries and head injuries. Registrants for the course will attend the regular weekly Orthopedic X-ray Conference. The course will close with an informal clinic on fractures. Full-time and clinical members of the staff of the Medical School and the Mayo Foundation will make up the faculty for the course.

* * *

Faculty News

Dr. John L. McKelvey, Professor and Head of the Department of Obstetrics and Gynecology, delivered an address in Boston, Massachusetts, on October 31 at the annual meeting of the New England Obstetrical and Gynecological Society. Dr. McKelvey's subject was, "Carcinoma of the Vulva."

III.

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL
WEEKLY CALENDAR OF EVENTS

Physicians Welcome

November 5 - 10, 1951

Monday, November 5

Medical School and University Hospitals

9:00 - 9:50	Roentgenology-Medicine Conference; L. G. Rigler, C. J. Watson and Staff; Todd Amphitheater, U. H.
9:00 - 10:50	Obstetrics and Gynecology Conference; J. L. McKelvey and Staff; M-109, U. H.
10:00 - 12:00	Neurology Rounds; A. B. Baker and Staff; Station 50, U. H.
11:00 - 12:00	Cancer Clinic; K. Stenstrom and A. Kremen; Eustis Amphitheater, U. H.
12:15 - 1:20	Obstetrics and Gynecology Journal Club; Staff Dining Room, U. H.
12:30 -	Physiology Seminar; Some Factors in the Kinetics of Distribution of Materials to Tissues; John A. Johnson; 214 Millard Hall.
1:30 - 2:30	Pediatric-Neurological Rounds; R. Jensen, A. B. Baker and Staff; U. H.
4:00 -	Pediatric Seminar; Lactation; Wm. E. Petersen; Sixth Floor West, U.H.
4:30 - 5:30	Dermatological Seminar; M-346, U. H.
4:30 -	Public Health Seminar; 15 Owre (Medical Sciences) Hall.
5:00 - 5:50	Clinical Medical Pathologic Conference; Todd Amphitheater, U. H.
5:00 - 6:00	Urology-Roentgenology Conference; C. D. Creevy, O. J. Baggenstoss, and Staff; Eustis Amphitheater.

Minneapolis General Hospital

7:30 a.m.	Fracture Grand Rounds; Dr. Zierold, Station A.
11:00 -	Pediatric Rounds; Dr. Top; 7th Floor.
12:30 p.m.	Surgery Grand Rounds; Dr. Zierold; Station E.
1:00 - 2:00	X-ray Conference; Classroom, 4th Floor.
1:30 -	Pediatric Rounds; Dr. Ulstrom; 4th Floor.

Veterans Administration Hospital

9:00 -	G. I. Rounds; R. V. Ebert, J. A. Wilson, Norman Shrifter; Bldg. I.
11:30 -	X-ray Conference; Conference Room; Bldg. I.

Monday, November 5 (Cont.)

Veterans Administration Hospital (Cont.)

1:00 -		Metabolic Disease Rounds; N. E. Jacobson and G. V. Loomis. Bldg. I.

Tuesday, November 6

Medical School and University Hospitals

8:30 -		Conference on Diet Endocrines and Cancer; M. B. Visscher; Physiology Library.
9:00 -	9:50	Roentgenology-Pediatric Conference; L. G. Rigler, I. McQuarrie and Staffs; Eustis Amphitheater, U. H.
9:00 -	12:00	Cardiovascular Rounds; Station 30, U. H.
12:30 -	1:20	Pathology Conference; Autopsies; J. R. Dawson and Staff; 102 I. A.
12:30 -		Selected Topics, Permeability and Metabolism; Nathan Lifson; Physiology Library.
3:15 -	4:20	Gynecology Chart Conference; J. L. McKelvey and Staff; Station 54,U.H.
4:00 -	5:00	Pediatric Rounds on Wards; I. McQuarrie and Staff; U. H.
4:00 -	5:00	Physiology-Surgery Conference; Todd Amphitheater, U. H.
5:00 -	6:00	X-ray Conference; Presentation of Cases by Doctors Nessa and Anderson, St. Cloud, Minnesota; Eustis Amphitheater, U. H.

Ancker Hospital

8:00 -	9:00	Fracture Conference, Auditorium.
1:00 -	2:30	X-ray Surgery Conference; Auditorium.

Minneapolis General Hospital

8:00 -		Pediatric Rounds; Dr. Gibbs; 5th Floor Annex.
10:00 -		Psychiatric Grand Rounds; J. C. Michael and Staff; 3rd Floor Annex.
11:00 -		Pediatric Rounds; Dr. Platou; 7th Floor.

Veterans Administration Hospital

8:30 -		Surgery Staff Seminar; Conference Room, Bldg. I.
9:30 -		Surgery-Pathology Conference; Conference Room, Bldg. I.
1:00 -		Surgery Chest Conference; T. Kinsella and Wm. Tucker; Conference Room, Bldg. I.
1:30 -		Liver Rounds; Samuel Nesbitt.

Tuesday, November 6 (Cont.)

Veterans Administration Hospital (Cont.)

2:00 - 2:50 Dermatology and Syphilology Conference; H. E. Michelson and Staff; Bldg. III.

3:30 - 4:20 Autopsy Conference; E. T. Bell and Donald Gleason; Conference Room, Bldg. I.

Wednesday, November 7

Medical School and University Hospitals

8:00 - 8:50 Surgery Journal Club; O. H. Wangensteen and Staff; M-109, U. H.

8:00 - 9:00 Roentgenology-Surgical-Pathological Conference; Allen Judd and L. G. Rigler, Todd Amphitheater, U. H.

11:00 - 12:00 Pathology-Medicine-Surgery Conference; Medicine Case; O. H. Wangensteen, C. J. Watson and Staffs; Todd Amphitheater, U. H.

12:30 - 1:20 Radio-Isotope Informal Conference; Subject to be announced; 12 Medical Science Bldg.

1:30 - Conference on Circulatory and Renal Systems Problems; M. B. Visscher; Physiology Library.

4:00 - 5:00 Vascular Rounds; Davitt Felder and Staff Members from the Departments of Medicine, Surgery, Physical Medicine, and Dermatology; Sta. 42,U.H.

5:00 - 5:50 Urology-Pathological Conference; C. D. Creevy and Staff; Eustis Amphitheater, U. H.

5:00 - 6:00 Vascular Conference; Todd Amphitheater, U. H.

5:00 - 7:00 Dermatology Clinical Seminar; Dining Room, U. H.

7:00 - 8:00 Dermatology Journal Club; Dining Room, U. H.

8:00 - 10:00 Dermatological-Pathology Conference; Review of Histopathology Section; Robert Goltz; Todd Amphitheater, U. H.

Ancker Hospital

8:30 - 9:30 Clinico-Pathological Conference; Auditorium.

3:30 - 4:30 Journal Club; Surgery Office.

Minneapolis General Hospital

9:30 - Pediatric Rounds; Dr. Platou; 7th Floor Annex.

11:00 - Pediatric Rounds; Dr. Top, 7th Floor.

12:00 - Surgery Seminar; Dr. Zierold; Classroom.

Wednesday, November 7 (Cont.)

Minneapolis General Hospital (Cont.)

12:15 - Pediatric Conference; 4th Floor Annex.

1:30 - Pediatric Rounds; Dr. Huenekens and Dr. Ulstrom; 4th Floor Annex.

Veterans Administration Hospital

8:30 - 10:00 Orthopedic X-ray Conference; Conference Room, Bldg. I.

8:30 - 12:00 Neurology Rehabilitation and Case Conference; A. B. Baker.

2:00 - 4:00 Infectious Disease Rounds; Main Conference Room; Bldg. I.

4:00 - 5:00 Infectious Disease Conference; W. Spink; Conference Room, Bldg. I.

7:00 p.m. Lectures in Basic Science of Orthopedics; Conference Room, Bldg. I.

Thursday, November 8

Medical School and University Hospitals

9:00 - 9:50 Medicine Case Presentation; C. J. Watson and Staff; M-109, U. H.

10:00 - 11:50 Medicine Ward Rounds; C. J. Watson and Staff; E-221, U. H.

12:30 - Physiological Chemistry Seminar; Interchange of Na and K in Mammalian Erythrocytes; S. Dray; 214 Millard Hall.

11:00 - 12:00 Cancer Clinic; K. Stenstrom and A. Kremen; Todd Amphitheater, U. H.

1:30 - 4:00 Cardiology X-ray Conference; Heart Hospital Theater.

4:30 - 5:20 Ophthalmology Ward Rounds; Erling W. Hansen and Staff; E-534, U. H.

5:00 - 6:00 X-ray Seminar; Report of Medical Mission to Israel; Leo G. Rigler; Eustis Amphitheater, U. H.

7:30 - 9:30 Pediatric Cardiology Conference and Journal Club; Review of Current Literature 1st hour and Review of Patients 2nd hour; 206 Temporary West Hospital.

Minneapolis General Hospital

8:00 - Pediatric Rounds; Dr. Gibbs; 5th Floor.

8:30 - Neurology Rounds; Dr. Heilig, 4th Floor Annex.

9:00 - Neurology Grand Rounds; J. C. Michael and Staff; Station A.

11:00 - Pediatric Rounds; Dr. Platou; 7th Floor.

11:30 - Pathology Conference; Main Classroom.

Thursday, November 8 (Cont.)

Minneapolis General Hospital (Cont.)

1:00 - 2:00	Fracture - X-ray Conference; Dr. Zierold; Classroom, 4th Floor Annex.
2:00 -	Psychiatry Rounds; Dr. Benton; 4th Floor Annex.

Veterans Administration Hospital

8:00 -	Surgery Ward Rounds; Lyle Hay and Staff; Ward 11.
9:15 -	Surgery Grand Rounds; Conference Room, Bldg. I.
11:00 -	Surgery Roentgen Conference; Conference Room, Bldg. I.

Friday, November 9

Medical School and University Hospitals

8:30 - 10:00	Neurology Grand Rounds; A. B. Baker and Staff; Station 50, U. H.
9:00 - 9:50	Medicine Grand Rounds; C. J. Watson and Staff; Todd Amphitheater, U.H.
10:00 - 11:50	Medicine Ward Rounds; C. J. Watson and Staff; E-221, U. H.
10:30 - 11:50	Otolaryngology Case Studies; L. R. Boies and Staff; Out-Patient Department, U. H.
11:45 - 12:50	University of Minnesota Hospitals Staff Meeting; A Study of the Pathogenesis of Coronary Sclerosis; Paul H. Lober; Powell Hall Amphitheater.
1:00 - 2:50	Neurosurgery-Roentgenology Conference; W. T. Peyton, Harold O. Peterson and Staff; Todd Amphitheater, U. H.
2:00 - 3:00	Dermatology and Syphilology Conference; Presentation of Selected Cases of the Week; H. E. Michelson and Staff; W-312, U. H.
3:00 - 4:00	Neuropathological Conference; F. Tichy; Todd Amphitheater, U. H.
4:00 - 5:00	Dermatology Seminar; W-312, U. H.
4:00 -	Neurophysiology Seminar; 113 Owre Hall, Medical Science Bldg.
5:00 -	Urology Seminar and X-ray Conference; Eustis Amphitheater, U. H.

Ancker Hospital

1:00 - 3:00	Pathology-Surgery Conference; Auditorium.

Minneapolis General Hospital

8:00 -	Pediatric Allergy Rounds; Dr. Nelson; 4th Floor.
11:00 -	Pediatric Rounds; Dr. Top; 7th Floor.

Friday, November 9 (Cont.)

Minneapolis General Hospital (Cont.)

11:00 - Pediatric-Surgery Conference; Drs. Wyatt and F. Adams; Classroom, Sta. I.

12:00 - Surgery-Pathology Conference; Drs. Zierold and Coe; Classroom.

1:30 - Pediatric Rounds; Dr. Ulstrom, 4th Floor.

Veterans Administration Hospital

10:30 - 11:20 Medicine Grand Rounds; Conference Room, Bldg. I.

1:00 - Microscopic-Pathology Conference; E. T. Bell; Conference Room, Bldg.I.

1:30 - Chest Conference; Wm. Tucker and J. A. Meyers; Ward 62, Day Room.

3:00 - Renal Pathology; E. T. Bell; Conference Room, Bldg. I.

Saturday, November 10

Medical School and University Hospitals

7:45 - 8:50 Orthopedic X-ray Conference; Wallace H. Cole and Staff; M-109, U. H.

9:00 - 9:50 Medicine Case Presentation; C. J. Watson and Staff; E-221, U. H.

9:00 - 10:30 Pediatric Grand Rounds; I. McQuarrie and Staff; Eustis Amphitheater, U. H.

9:15 - 10:00 Surgery-Roentgenology Conference; J. Friedman, O. H. Wangensteen and Staff; Todd Amphitheater, U. H.

10:00 - 11:30 Surgery Conference; Todd Amphitheater, U. H.

10:00 - 11:50 Medicine Ward Rounds; C. J. Watson and Staff; E-221, U. H.

10:00 - 12:50 Obstetrics and Gynecology Grand Rounds; J. L. McKelvey and Staff; Station 44, U. H.

11:30 - 12:30 Anatomy Seminar; Blood in Bivalve Mollusks, Sam Cornwell; The Present Status of the Problem of Fixation for Electron Microscopy, Richard H. Swigart; 226 Institute of Anatomy.

Minneapolis General Hospital

8:00 - Pediatric Rounds; Dr. Gibbs; 5th Floor.

11:00 - 12:00 Pediatric Clinic; Dr. Thomas and Dr. May; Classroom, 4th Floor Annex.

Veterans Administration Hospital

8:00 - Proctology Rounds; W. C. Bernstein and Staff; Bldg. III.

8:30 - Hematology Rounds; P. Hagen and E. F. Englund.