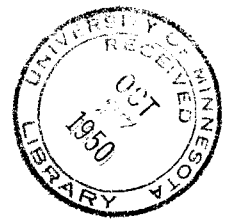


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Bulletin of the
University of Minnesota Hospitals
and
Minnesota Medical Foundation



Paracervical Block
Anesthesia in Obstetrics

BULLETIN OF THE
UNIVERSITY OF MINNESOTA HOSPITALS
and
MINNESOTA MEDICAL FOUNDATION

Volume XXII

Friday, October 27, 1950

Number 4

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Published weekly during the school year, October to June, inclusive.

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I. PARACERVICAL BLOCK ANESTHESIA IN OBSTETRICS

Donald W. Freeman

Interruption of pain sensation from the uterus during labor by means of local anesthesia is a relatively simple procedure. All sensory nerve fibers reach the uterus by way of the so-called uterovaginal plexuses. These are paired structures which lie in the extra-peritoneal connective tissue at the base of the broad ligament just above the uterovaginal junction. The uterine innervation is easily blocked by infiltration of local anesthesia into the paracervical (parametrial) area.

The method of carrying out the block during labor has been described previously.^{1,2} Injections are made into the lateral fornix of the vagina on each side at approximately the three and nine o'clock positions. They can be made at any time during the first stages of labor. The procedure is facilitated by the use of a guide which consists of a long spinal needle of a larger bore than the needle through which the anesthetic agent is injected. The guide is first carried up to the junction of the cervix and the vagina with two fingers of one hand and with the proximal end up. The needle on the syringe is then threaded through the guide and the injection made. The needles are selected for length so that the injection needle projects approximately $1\frac{1}{2}$ cm. beyond the guide. This increases the safety of the procedure by limiting the depth of the injection. The usual technique for sterile vaginal examination is used. Sterile gloves are worn. The field is draped with sterile towels. A quantity of aqueous zephiran 1-1000 is instilled into the vagina prior to injection.

The use of paracervical blocks during labor has been very limited. Rosenfeld in a review of literature up to 1945, found only three reports on its use. He reported at that time on his experience with the method in 100 patients. Immediate complete relief of

pain was obtained in each instance. No significant untoward effects were noted. Rosenfeld used procaine, nupercaine, and eucupin in varying concentrations, both with and without added adrenalin. Relief of pain lasted from one-half hour to four hours with the longest duration of effect being obtained when nupercaine or eucupin was used with added adrenalin.

The results of the first 69 blocks done on 59 patients at the University of Minnesota Hospitals have been previously reported.² The present report deals with these results together with observations on the effects of an additional 31 blocks done on 22 patients. In the combined series, 52 of the patients were multiparas and 29 primiparas. Forty two were private patients and 39 "house cases". There were 9 premature births. Two patients were in false labor. The other 70 patients delivered approximately at term. Fifteen patients were injected twice each and 2 patients 3 times each.

One per cent procaine was the anesthetic agent used most frequently. One and one-half per cent metycaine was used 12 times. One or 2 per cent xylocaine was used thirteen times, and .15 percent pontocaine once. Adrenalin was added to the solution in all but 15 instances. The concentration most frequently used was 3 minims of 1-1000 solution per ounce of anesthetic agent.

The optimum amount of anesthetic agent to be used has not been established. When the procedure was first used here, 20 cc. on each side was the volume most frequently injected. Rosenfeld claimed that the duration of anesthesia was lengthened when a total of more than 50 cc. was used, but our experience to date failed to confirm this. A total of more than 40 cc. was used 20 times and more than 50 cc. was used 10 times. No significant increase in duration of effect could be demonstrated in this group as compared with those injected with 40 cc. or less. In the most recent series of 19 blocks, a total of only 20 cc. was used. Six of these were done with 1 per cent procaine and the average

duration of effect was only 15 minutes shorter than the average for the entire procaine group. The other 13 were done with xylocaine and cannot be compared with the remainder as to the effect of volume on duration of anesthesia since xylocaine has been demonstrated to have a significantly longer effect than procaine or metycaine.³ Studies of the

effects of even smaller volumes are in progress. Two blocks have been done utilizing only 5 cc. on each side. Both were entirely satisfactory.

Results

The degree of pain relief obtained is summarized in Table I. Four blocks

Table I

PAIN RELIEF

	<u>No.</u>	<u>Per Cent</u>	
None	4	4	
One side	5	5	9
+++ (residual backache)	13	13	
Complete	78	<u>78</u>	91
Total	100	100	

were total failures and 5 patients got relief of pain on only one side, the block having failed on the other side. Most cases of failure were thought to be due to inability of the operator to inject the proper area, either because the presenting part was too low in the pelvis or because the cervix was too nearly completely dilated. It is also possible that variation in the distribution of the nerve supply to the uterus accounted for the failures. Thirteen patients got complete relief of abdominal pain but were left with minor back discomfort. Many of these can be relieved by an addi-

tional injection on each side more posteriorly into the sacro-uterine ligament area. This was tried in 7 instances and the backache was relieved in 5. Seventy-eight of the blocks were completely successful in that all discomfort disappeared for the duration of the effect. The onset of pain relief in each instance was immediate.

The average duration of pain relief and the maximum duration obtained with the various agents used is shown in Table II. The variations from the average in duration of effect were not great.

Table II

AVERAGE DURATION OF PAIN RELIEF

	<u>Procaine</u>	<u>Metycaine</u>	<u>Xylocaine</u>
Block wore off before delivery	1 hr. 40 min.	1 hr. 41 min.	2 hrs. 43 min.
Delivery intervened	1 hr. 10 min.	1 hr. 32 min.	1 hr. 42 min.
Maximum duration	2 hrs. 35 min.	2 hrs. 10 min.	3 hrs. 12 min.

It is apparent that xylocaine produces a significantly longer anesthesia than procaine or metycaine. Five blocks were done using 2 per cent xylocaine on one side and one per cent procaine on the other with equal amounts of adrenalin added. The duration of effect on the side injected with xylocaine was from 30 to 75 minutes longer than on the other and averaged 54 minutes longer. No block

done with xylocaine lasted less than 2 hours when delivery did not intervene. Fifty per cent lasted more than 3 hours.

The use of additional analgesia and anesthesia is summarized in Table III. One-half of the patients did not require any further sedation during labor. Paracervical anesthesia has no effect on the pain associated with distention

Table III

ADDED ANALGESIA AND ANESTHESIA

	<u>No.</u>	<u>Per Cent</u>
Analgesia		
None	38	49
Demerol pre-block only	20	25
Demerol post-block only	10	13
Demerol pre- and post-block	11	13
Delivery Anesthesia		
Pudendal block	74	94
N ₂ O - O ₂	28	35
Local only (no demerol or N ₂ O)	28	35

of the vagina and vulva during delivery. Consequently, additional anesthesia was required for delivery in most instances. In 74 patients local pudendal blocks were used and 28 were also given small quantities of nitrous oxide and oxygen by inhalation. More than a third of the patients went through the entire labor and delivery with only local anesthesia in the form of paracervical and pudendal blocks.

The effect of any agent on the duration of labor is very difficult to evaluate because of the many different factors concerned with the progress of labor. A transient uterine inertia lasting 15 to 20 minutes was commonly observed immediately following the injection. This effect is believed to be due to adrenalin. The same effect frequently occurs following pudendal

block. On four occasions uterine inertia developed which lasted from 45 minutes to 1½ hours. Prolonged interference with labor such as this did not develop when the patient was in good labor at the time of the block. The impression was obtained that the blocks more frequently increased the speed of cervical dilatation.

Thirteen patients were delivered by forceps extraction. One infant, the second of a set of triplets, was delivered by version and breech extraction. The remaining patients delivered spontaneously. In no case did interference with the mechanism of labor by the blocks play any part in the indication for forceps. Three patients were delivered by forceps because of heart disease. In 9 instances the block had worn off well before the time of delivery and

in the 13th case the block had failed.

There were no maternal deaths in the series. The only infant mortality was that of an undeveloped macerated still-born, one of a set of triplets. There were no significant untoward effects on the mothers. Four patients developed a temporary paresis of the adductor muscle of the thigh. Seven developed mild adrenalin reactions. Reactions to xylocaine which consisted of generalized muscular tremors, dizziness, and a "light-headed feeling" occurred 4 times. There was one mild puerperal infection. One patient was found to have a minor thickening in the parametrial region on one side at the time of discharge from the hospital. It was thought possible that this represented a small hematoma.

The blocks were associated with a depression of the fetal heart rate on five occasions. Two of these infants were somewhat asphyxiated at birth, but in neither case was it felt that the block played a part. One was due to a true knot in the cord and one to a partial premature separation of the placenta. The cause of the depression of the fetal heart rate is not apparent. Rosenfeld noted its occurrence twice in his series. In each case it proved to be transient and the infants were both normal at birth.

Table IV shows the frequency with which fetal asphyxia occurred. In no case did the paracervical blocks play a part.

Table IV

ASPHYXIA

		<u>No.</u>	<u>Per Cent</u>
None		71	89
Asphyxia		9	11
Asphyxia due to block		0	
Cause of asphyxia			
Mild		6	
	Trauma (ppt. labor)	1	
	Resp. obstruction	4	
	Premat. sep. placenta	1	
Moderate		2	
	True knot in cord	1	
	Trauma (mid forceps)	1	
Severe		1	
	Premature sep. placenta	1	

Discussion

Paracervical anesthesia has the advantages, in general, of all local anesthetics. It is apparently nearly completely safe for mother and baby. The technique is easy and it can be done

on almost any patient. There are no post-delivery reactions and no pulmonary or general complications are to be expected. There is little or no interference with the normal process of labor and delivery and no interference with the establishment of respirations in the

infant. At the same time the degree of pain relief obtained is complete or nearly complete in more than 90% of cases.

There are several objections to the method. The block can only be done during the first stage of labor. Additional anesthesia is required for delivery. Intravaginal manipulations during labor always involve the hazard of introducing infection. While the procedure is simple, it is somewhat time consuming. Finally, the duration of effect is relatively short when 1 per cent procaine or $1\frac{1}{2}$ per cent metycaine is used. None of these objections would appear to be serious and the advantages would certainly outweigh the disadvantages if a safe, long-acting anesthetic agent were available. Xylocaine is said to compare with procaine in toxicity and the increased duration of effect that it produces makes it the drug of choice based on our experience to date. The anesthetic effect of nupercaine probably lasts still longer. We have not used this drug because of its greater toxicity. However, since it is apparently possible to get satisfactory results with considerably smaller volumes than we have generally been using, it is suggested that a total of about 10 cc. of 1-1000 or 1-1500 nupercaine be tried next.

Summary

1. The effects of 100 paracervical injections of local anesthetics during labor are described.
2. Complete relief of pain followed 78 per cent of the blocks. An additional 13 per cent produced nearly complete relief.

3. The average duration of effect in the patients who did not deliver before the block wore off was 1 hour and 40 minutes when 1 per cent procaine or $1\frac{1}{2}$ per cent metycaine was used, and 2 hours and 43 minutes when xylocaine was used.
4. No significant untoward effects were noted.

References

1. Rosenfeld, Samuel S. Paracervical anesthesia for the relief of labor pains. *Am.J.Obst. & Gyn.*, 50:527, '45.
2. Gillam, J. S. and Freeman, D. W. Paracervical block anesthesia during labor. *Journal-Lancet*: 70:206, '50.
3. Hanson, J. R. and Hingson, R. A. The use of xylocaine, a new local anesthetic, in surgery, obstetrics and therapeutics. *Current Res. in Anesth. and Analg.*; May-June, '50.

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II. MEDICAL SCHOOL NEWS

Coming Events

Oct. 30 - Nov. 4 -- Continuation Course
in Neurologic Roentgenology
Nov. 2 - 8:15 p.m. -- Rigler Lecture:
"Backache" - Dr. Knut Lindblom; Medi-
cal Science Amphitheater
Nov. 4 -- Homecoming Clinic and Luncheon
9:15 a.m. to kick-off time
Nov. 9 - 11 -- Continuation Course in
Poliomyelitis
Nov. 27 - Dec. 1 -- Continuation Course
in Child Psychiatry

* * *

Neurologic Roentgenology Course

Physicians from all sections of the United States will attend a continuation course in Neurologic Roentgenology to be presented at the Center for Continuation Study from October 30 to November 4. The course is being given under the guidance of Doctors John D. Camp, Professor of Radiology of the Mayo Foundation in Rochester, and Harold O. Peterson, Clinical Associate Professor of Radiology, St. Paul.

Dr. Arthur E. Childe, Winnipeg, Manitoba, will discuss the Technique of Pneumography and Normal and Abnormal Ventriculograms.

Dr. Carl F. List, Grand Rapids, Michigan, will discuss the Technique of Cerebral Angiography and Normal and Abnormal Angiograms.

Dr. H. Dabney Kerr, University of Iowa, will speak on Radiation Therapy of Tumors of the Central Nervous System.

Dr. Knut Lindblom, Karolinska Institute, Stockholm, Sweden, will present Anatomical Studies of the Intervertebral Disk and Myelography with Abrodil. Dr. Lindblom will also deliver the annual Leo F. Rigler Lecture in Radiology at 8:15 p.m. on Thursday, November 2, in the Medical Science Amphitheater. His subject at that time will be "Backache". All physicians are cordially invited to attend the Rigler Lecture.

Alumni and Faculty News

Dr. Leonard W. Larson of Bismarck, North Dakota, a graduate of the University of Minnesota Medical School in 1922, has been elected a member of the Board of Trustees of the American Medical Association. Dr. Larson is associated with the Bismarck Clinic and has long been active in the work of the North Dakota Medical Association and the American Medical Foundation.

The meeting of the Central Society for Clinical Research in Chicago, November 3 and 4, will be attended by several members of the faculty of the Department of Medicine. Dr. Wesley Spink, President of the Society, will give the presidential address on the subject, "The Inquiring Physician." Dr. Paul Lowry will present a paper at the meeting. Dr. Spink will read a paper prepared by Dr. Robert Magoffin. Dr. Magoffin will be unable to attend the meeting since he has been called to active service in the Navy Medical Corps.

The Third Inter-American Congress on Brucellosis will be held in Washington, D. C. on November 6 to 10. Dr. Wesley Spink, Chairman of the United States Committee on Brucellosis, has arranged the program for this important meeting which will be participated in by outstanding scientists from both North and South America.

Dr. Arnold Kremen attended the recent Chicago meeting of University Cancer Coordinators.

Question and Answer Department

As a service to Minnesota Medical Foundation members and subscribers to the Bulletin, a new feature will shortly appear on these pages. Questions in the medical sciences which are of somewhat general interest will be distributed to faculty members familiar with the particular fields. "Question and Answer" will then appear in the Bulletin.

Mail your questions to George N. Aagaard, M.D., 3330 Powell Hall, University Campus.

III.

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL
CALENDAR OF EVENTSNo. 304

October 29 - November 4, 1950

Sunday, October 29

- 9:00 - 10:00 Surgery Grand Rounds; Station 22, U. H.
10:30 - Surgical Conference; Todd Amphitheater, U. H.

Monday, October 30

- 9:00 - 9:50 Roentgenology-Medicine Conference; L. G. Rigler, C. J. Watson and Staff; Todd Amphitheater, U. H.
9:00 - G. I. Rounds; R. V. Ebert, J. A. Wilson, Norman Shriffter; Bldg. I, Veterans Hospital.
9:00 - 10:00 Pediatric Rounds; Dr. Lowry; 5th Floor, Minneapolis General Hospital.
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 - 11:50 Physical Medicine Seminar; Etiology: Relation of Lower Extremity Alignment to Spinal Alignment; Ralph E. Worden; E-101, U. H.
11:00 - 11:50 Roentgenology-Medicine Conference; Veterans Hospital.
11:00 - 12:00 Cancer Clinic; K. Stenstrom and A. Kremen; Eustis Amphitheater, U. H.
11:30 - X-ray Conference; Conference Room; Bldg. I, Veterans Hospital.
12:00 - 12:50 Physiology Seminar; Fluoracetate as a Metabolic Inhibitor; Nathan Lifson; 214 Millard Hall.
12:15 - 1:20 Obstetrics and Gynecology Journal Club; Staff Dining Room, U. H.
1:00 - Metabolic Disease Rounds; N. E. Jacobson and G. V. Loomis; Bldg. I, Veterans Hospital.
1:00 - 2:00 Staff Meeting; Classroom, 4th Floor, Minneapolis General Hospital.
1:30 - 2:30 Pediatric-Neurological Rounds; R. Jensen, A. B. Baker and Staff; U. H.
2:00 - 3:00 Journal Club; Classroom, Station I, Minneapolis General Hospital.
4:00 - 5:00 Pediatric Seminar; Nucleic Acid Metabolism and Folic Acid; Charles Lowe; 6th Floor West, U. H.
4:00 - Public Health Seminar; 113 Medical Sciences.
4:00 - Medical-Surgical Conference; Conference Room, Bldg. I, Veterans Hospital.
4:30 - 5:30 Dermatological Seminar; M-436, U. H.

Monday, October 30 (Cont.)

- 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 Staffs; Powell Hall Amphitheater.

Tuesday, October 31

- 8:00 - 9:00 Pediatric Rounds; Dr. Adams; 4th Floor, Minneapolis General Hospital.
- 8:00 - 9:00 Fracture Conference; Auditorium, Ancker Hospital.
- 8:45 - Surgery Journal Club; Conference Room; Bldg. I, Veterans Hospital.
- 8:30 - Pediatrics Allergy Rounds; Dr. Nelson; 4th Floor, Minneapolis General Hospital.
- 8:30 - 10:20 Surgery Conference; Seminar Conference Room, Bldg. I, Veterans Hospital.
- 9:00 - 9:50 Roentgenology Pediatric Conference; L. G. Rigler, I. McQuarrie and Staffs; Eustis Amphitheater, U. H.
- 9:00 - Infectious Disease Rounds; W. Hall, Veterans Hospital.
- 9:00 - 10:00 Pediatric Rounds; F. H. Top; 7th Floor, Minneapolis General Hospital.
- 9:00 - 12:00 Cardiovascular Rounds; Station 30, U. H.
- 9:30 - Surgery-Pathology Conference; Conference Room, Bldg. I, Veterans Hospital.
- 10:30 - 11:50 Surgical Pathological Conference; Lyle Hay and E. T. Bell; Veterans Hospital.
- 10:30 - Surgery Tumor Conference; Conference Room, Bldg. I, Veterans Hospital.
- 12:30 - 1:20 Pathology Conference; Autopsies; J. R. Dawson and Staff; 102 I. A.
- 1:00 - Chest Surgery Conference; J. Kinsella and Wm. Tucker, Conference Room, Bldg. I, Veterans Hospital.
- 1:00 - 2:30 X-ray Surgery Conference; Auditorium, Ancker Hospital.
- 1:30 - Liver Rounds; Samuel Nesbitt; Veterans Hospital.
- 2:00 - 2:50 Dermatology and Syphilology Conference; H. E. Michelson and Staff; Bldg. III, Veterans Hospital.
- 3:15 - 4:20 Gynecology Chart Conference; J. L. McKelvey and Staff; Station 54, U.H.
- 3:30 - 4:20 Autopsy Conference; E. T. Bell and D. Gleason; Conference Room; Bldg. I, Veterans Hospital.
- 4:00 - 5:00 Physiology-Surgery Conference; Biophysical Reaction of Tissues to Radiation; K. Wilhelm Stenstrom and George Moore; Todd Amphitheater, U. H.
- 4:00 - 5:00 Pediatric Rounds on Wards; I. McQuarrie and Staff; U. H.

Wednesday, November 1

- 8:00 - 8:50 Surgery Journal Club; O. H. Wangenstein and Staff; M-109, U. H.
- 8:00 - 9:00 Roentgenology-Surgical-Pathological Conference; Allen Judd and L. G. Rigler; Todd Amphitheater, U. H.
- 8:30 - 9:30 Clinico-Pathological Conference; Auditorium, Ancker Hospital.
- 8:30 - 10:00 Orthopedic-Roentgenologic Conference; Edward T. Evans and Bernard O'Loughlin; Conference Room, Bldg. I, Veterans Hospital.
- 8:30 - 12:00 Neurology Rehabilitation and Case Conference; A. B. Baker; Veterans Hospital.
- 9:00 - 10:00 Pediatric Rounds; Dr. Lowry; 5th Floor, Minneapolis General Hospital.
- 11:00 - 12:00 Pathology-Medicine-Surgery Conference; Surgery Case; O. H. Wangenstein, C. J. Watson and Staffs; Todd Amphitheater, U. H.
- 11:00 - Electrocardiography Conference; Ventricular Preponderance; Ernst Simonson; Conference Room, Bldg. I, Veterans Hospital.
- 11:50 - 12:50 Radio-Isotope Seminar; Evaluation of Thyroid Function with Protein Bound Iodine Conversion Rates; J. C. Wang; 113 Medical Science Bldg.
- 12:15 - Staff Meeting; Classroom, 4th Floor, Minneapolis General Hospital.
- 2:00 - 4:00 Infectious Disease Rounds; Veterans Hospital.
- 3:00 - 4:00 Pediatric Rounds; E. J. Huenekens; 4th Floor, Minneapolis General Hospital.
- 3:30 - 4:30 Journal Club; Surgery Office, Ancker Hospital.
- 4:00 - 5:00 Infectious Disease Rounds; Wesley Spink; Main Conference Room, Bldg. I, Veterans Hospital.
- 5:00 - 5:50 Urology-Pathological Conference; C. D. Creevy and Staff; Powell Hall Amphitheater.
- 5:00 - 7:00 Dermatology Clinical Seminar; Dining Room, U. H.
- 7:00 p.m. Lectures in Basic Science of Orthopedics; Conference Room, Bldg. I, Veterans Hospital.
- 8:00 p.m. Dermatological Pathology Conference; Todd Amphitheater, U. H.

Thursday, November 2

- 8:00 - Pediatric Rounds; Forrest Adams; 4th Floor, Minneapolis General Hospital.
- 8:00 - Surgery Ward Rounds; Lyle Hay and Staff; Veterans Hospital.
- 9:00 - 9:50 Medicine Case Presentation; C. J. Watson and Staff; M-109, U. H.
- 9:00 - 10:00 Pediatric Rounds; F. H. Top; 7th Floor, Minneapolis General Hospital.
- 9:15 - Surgery Grand Rounds; Conference Room; Bldg. I, Veterans Hospital.
- 10:00 - 11:50 Medicine Ward Rounds; C. J. Watson and Staff; E-221, U. H.
- 10:00 - Pediatrics Rounds; Adult Contagion; Minneapolis General Hospital.

Thursday, November 2 (Cont.)

- 11:00 - Surgery Roentgen Conference; Conference Room, Bldg. I, Veterans Hospital.
- 11:00 - 12:00 Cancer Clinic; K. Stenstrom and A. Kremen; Todd Amphitheater, U. H.
- 11:00 - 12:00 Clinical Pathology Conference; Large Classroom, Minneapolis General Hospital.
- 11:30 - Pediatric Conference--Main Classroom, General Hospital.
- 12:00 - 1:00 Physiological Chemistry Seminar; Role of the Glutamic Acid in Transport of Potassium in Brain and Retina; Sheldon Dray; 214 Millard Hall.
- 1:00 - Chest Rounds; William Stead; Veterans Hospital.
- 1:00 - 2:00 EKG and X-ray Conference; Classroom, 4th Floor, Minneapolis General Hospital.
- 2:00 - EKG and X-ray Conference; Classroom, Sta. I, Minneapolis General Hospital.
- 4:00 - 5:00 Physiology Seminar on Circulation; The Oxygen Consumption and Efficiency; 116 Millard Hall.
- 4:30 - 5:20 Ophthalmology Ward Rounds; Erling W. Hansen and Staff; E-534, U. H.
- 5:00 - Bacteriology Seminar; Mechanism of the Gram Reaction; D. Silver; 214 Millard Hall.
- 7:30 - 9:30 Pediatrics Cardiology Conference and Journal Club; Review of current literature 1st hour and review of patients 2nd hour; 206 Temporary West Hospital.
- *8:15 - Rigler Lecture: "Backache" - Dr. Knut Lindblom, Medical Science Amphi.

Friday, November 3

- 8:30 - 10:00 Neurology Grand Rounds; A. B. Baker and Staff; Station 50, U. H.
- 9:00 - 10:00 Pediatric Rounds; Dr. Lowry; 5th Floor, Minneapolis General Hospital.
- 9:00 - 9:50 Medicine Grand Rounds; C. J. Watson and Staff; Todd Amphitheater, U.H.
- 9:30 - Surgery-Pediatric Conference; O. S. Wyatt and T. C. Chisholm; 4th Floor, Minneapolis General Hospital.
- 10:00 - 11:50 Medicine Ward Rounds; C. J. Watson and Staff; E-221, U. H.
- 10:30 - 11:20 Medicine Grand Rounds; Conference Room, Bldg. I, Veterans Hospital.
- 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; Superficial Carcinoma of the Stomach; Robert Hebbel; Powell Hall Amphitheater.
- 1:00 - 2:50 Neurosurgery-Roentgenology Conference; W. T. Peyton, Harold O. Peterson and Staff; Todd Amphitheater, U. H.
- 1:00 - Microscopic-Pathology Conference; E. T. Bell; Conference Room, Bldg. I, Veterans Hospital.
- 1:00 - 3:00 Pathology-Surgery Conference; Auditorium, Ancker Hospital.

Friday, November 3 (Cont.)

- 1:30 - Chest Conference; Wm. Tucker and J. A. Myers; Ward 62, Day Room, Veterans Hospital.
- 2:00 - 3:00 Dermatology and Syphilology Conference; Presentation of selected cases of the week; H. E. Michelson and Staff; W-312, U. H.
- 2:00 - 4:00 Physiology Conference; Cardiovascular Demonstration Course; Rodney Harvey, 214 M. H.
- 3:00 - Renal Pathology; E. T. Bell; Conference Room, Bldg. I, Veterans Hospital.
- 3:00 - Orthopedic Journal Club; Conference Room, Bldg. I, Veterans Hospital.
- 3:00 - 4:00 Neuropathology Conference; F. Tichy; Todd Amphitheater, U. H.
- 4:00 - 5:00 Clinical Pathological Conference; A. B. Baker; Todd Amphitheater, U. H.
- 4:15 - 5:15 Electrocardiographic Conference; 106 Temp. Bldg., Hospital Court, U. H.
- 4:00 - 6:00 Urology Seminar; Aureomycin and Chloromycetin in Transurethral Resection; Powell Hall Amphitheater.

Saturday, November 4

- 7:45 - 8:50 Orthopedic-X-ray Conference; Wallace H. Cole and Staff; M-109, U. H.
- 8:00 - Pediatric Rounds; Forrest Adams; 4th Floor, Minneapolis General Hospital.
- 8:30 - Hematology Rounds; P. Hagen and E. F. Englund; Veterans Hospital.
- 8:30 - 9:30 Surgery Conference; Auditorium, Ancker Hospital.
- 9:00 - 9:50 Medicine Case Presentation; C. J. Watson and Staff; E-221, U. H.
- 9:00 - 10:00 Pediatric Rounds; F. H. Top; 7th Floor, Minneapolis General Hospital.
- 9:00 - 10:30 Pediatric Grand Rounds; I. McQuarrie & Staff; Eustis Amphitheater, U.H.
- 9:15 - 10:00 Surgery-Roentgenology Conference; J. Friedman, O. H. Wangenstein and Staff; Todd Amphitheater, U. H.
- 10:00 - 11:30 Surgery Conference; O. H. Wangenstein and Staff; 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.
- 11:00 - 12:00 Pediatric Clinic; Charles May; Classroom, 4th Floor, Minneapolis General Hospital.
- 11:00 - 12:00 Anatomy Seminar; Intrinsic Tissue Susceptibility to Induction of Pulmonary Tumors of Mice, Arthur Kirschbaum and Joyce R. Shapiro; Effects of X-rays on Ovarian Tissue, Albina Yakaitis; 226 I. A.

* Indicates special meeting. All other meetings occur regularly each week at the same time on the same day. Meeting place may vary from week to week for some conferences.