Staff Meeting Bulletin Hospitals of the » » » University of Minnesota

Compound Fractures and Osteomyelitis

Volume XVII | Friday, May 10, 1946 | Number 22

STAFF MEETING BULLETIN
HOSPITALS OF THE . . .
UNIVERSITY OF MINNESOTA

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William A. O'Brien, M.D.

I.

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL
CALENDAR OF EVENTS
May 11 - May 17, 1946
Medical Visitors Welcome

No. 113

Saturday, May 11

7:45 - 8:50 Orthopedics Conference; Wallace H. Cole and Staff; Station 21, U. H.

9:00 - 9:50 Surgery-Roentgenology Conference; O. H. Wangensteen, L. G. Rigler, and Staff; Todd Amphitheater, U. H.

9:00 - 9:50 Medicine Case Presentation; C. J. Watson and Staff; M-515 U. H.

9:00 - 9:50 Pediatric Grand Rounds; I. McQuarrie and Staff; Eustis Amphitheater.

10:00 - Anatomy Seminar; The Effects of Suramin (germanin), Azo-Dyes and Vasodilators on Mice with Transplanted Lymphosarcomas; 226 I. A.

Sunday, May 12

11:00 - 1:50 Obstetrics and Gynecology Grand Rounds; J. L. McKelvey and Staff; Station 44, U. H.

Monday, May 13

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; Interns Quarters, U. H.

12:15 - 1:15 Obstetrics and Gynecology Journal Club; M-435, U. H.

12:30 - 1:20 Physiology Seminar; The Anti-Stiffness Factor; William J. Van Wagtendork; 214 M. H.

12:30 - 1:20 Pathology Seminar; Congenital Anomalies of the Rectum and Colon including Hirschsprung's Disease; Dr. Philip Anderson; 104 I.A.

4:30 - Lecture on Antibiotics - The Story of Streptomycin; Selman A. Waksman; Room 15 MeS.

8:00 - Clinical Research Club; Speakers - Ivan Baronofsky, William Kubicek, and Donald Simmons; Eustis Amphitheater.

Tuesday, May 14

9:00 - 9:50 Roentgenology-Pediatrics Conference; L. G. Rigler, I. McQuarrie and Staff; Eustis Amphitheater, U. H.

12:30 - 1:20 Pathology Conference; Autopsies; Pathology Staff; 104 I. A.

12:30 - 2:30 School of Public Health Seminar; Respiratory Infections in Students; Donald Cowan; Room 15 MeS.

2:00 - 3:00 Dermatology and Syphilology; H. E. Michelson and Staff; Veterans' Hospital, Bldg. III.

3:15 - 4:15 Gynecology Chart Conference; J. L. McKelvey and Staff; Station 54, UH.

3:45 - 5:00 Pediatric Staff Rounds; I. McQuarrie and Staff; W-205 U. H.

4:00 - 4:50 Surgery-Physiology Conference; Oliguria and Anuria; Drs. Creevy and Lifson; Eustis Amphitheater.

5:00 - 5:50 Roentgenology Diagnosis Conference; T. B. Merner; Eugene Ahern and and L. P. Anderson; M-515 U. H.

Wednesday, May 15

8:00 - 8:50 Surgery Journal Club; O. H. Wangensteen and Staff; M-515 U. H.

9:00 - 10:50 Neuropsychiatry Seminar; Staff; Station 60 Lounge, U. H.

11:00 - 11:50 Pathology-Medicine-Surgery Conference; Carcinoma Stomach, Myocardial Infarction; E. T. Bell, C. J. Watson, O. H. Wangensteen and Staff; Todd Amphitheater, U. H.

12:30 - 1:20 Physiology Chemistry Journal Club; Staff; 116 M. H.

4:00 - 6:00 Medicine and Pediatrics Infectious Disease Rounds; W-205 U. H.

4:30 - Neurophysiology; The Neurological Basis of Diabetes Incipitus; Akira Omachi; 113 MoS.

Thursday, May 16

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

12:15 - 1:15 Pediatrics Seminar; Irvine McQuarrie and Staff; 6th Floor Eustis.

12:30 - 1:20 Physiological Chemistry; Karl Sollner; 129 M. H.

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

4:30 - Bacteriology Seminar; 214 M. H.

5:00 - 5:50 Roentgenology Seminar; Protection in Radiation Therapy; Samuel Blank; M-515 U. H.

Friday, May 17

9:00 - 9:50 Medicine Grand Rounds; C. J. Watson and Staff; Todd Amph., U. H.

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

10:30 - 12:20 Otolaryngology Case Studies; L. R. Boies and Staff; Out-Patient Otolaryngology Department; U. H.

11:50 - 1:15 University of Minnesota Hospitals General Staff Meeting; Cholangiography: Regurgitation into Blood Stream; E. T. Mixer; New Powell Hall Addition Amphitheater.

1:00 - 2:00 Dermatologic Allergy; Dr. Stepan Epstein; W-312 U. H.

2:00 - 3:20 Dermatology and Syphilology; Presentation of Selected Cases of the Week; H. E. Michelson and Staff; W-312 U. H.

1:30 - 2:20 Roentgenology-Neurosurgery Conference; H. O. Peterson, W. T. Peyton, and Staff; Todd Amphitheater, U. H.

II. NEWER ASPECTS IN THE TREATMENT OF SECONDARY CHRONIC AND ACUTE OSTEOMYELITIS WITH SPECIAL REFERENCE TO THE TREATMENT OF COMPOUND FRACTURES

Edward T. Evans

In the bulletin of the American College of Surgeons (1944), Col. Champ Lyons made the following statement. "The new philosophy of wound management assigns priority to the technical, surgical management of the wound and institutes reparative procedures 3 to 10 days after the injury. Systemic chemotherapy is effective in the treatment of impending or established invasive infection. The prophylaxis of infection and the treatment of established wound suppuration is the surgical excision of devitalized tissue and the application of splints and pressure dressings to prevent the accumulation of blood clot and serum within the wound."

I am not in a position to give you a complete picture of the surgery of War II. Until all the reports are in from the many theaters of operation, and until they are released, I am not in a position, nor at liberty to give you specific facts. However, one may attempt from some published figures to visualize the problems as we saw them in the past, and as we see them at the present time.

On the 2nd of March, 1944, Major Bosworth, who appeared before the sectional meeting of the American College of Surgeons in Minneapolis and cited his experience as a member of an auxiliary surgical team, surgical hospital, and evacuation hospital staffs. He reported on a few months (only) of service in the North African and Sicilian campaigns, spoke of seeing some 12,000 surgical casualties, and stated that if all minor extremity injuries were included, there were 90 per cent of these; but that severe, mind you, severe major extremity injuries constituted 66 per cent of the whole, of which 42 per cent were compound fractures and 11 per cent simple fractures.

In 1944 the 26th General Hospital treated 1,372 fractures, of which 63 per cent were compound. We had few amputations. Bosworth reported only 15 in his group and yet, recently there have been released by the War Department figures of 15,000 amputations.

The record of the relative frequency of amputation in the field reflects the carrying out of the Army dictur, "Save life, save limb, and prepare the wound for reparative surgery".

It was not given to us to decide the question of amputation except in extreme cases, but rather to save the limb and prepare the wound for reparative surgery. This was a difficult directive for many of us to accept at first, and I frankly admit I questioned the rationale of saving some limbs I saw, merely because the wounds were healing. I recall the astonishment of a young Polish Orthopaedist who worked with us when he saw radical debridement of gas gangrene rather than amputation, and I think I first clearly understood the moral side in our program, when I saw the return of freed prisoners with amputations performed by other armies to prevent the spread of local infection rather than the surgical application of principles which we in our army evolved and adhered to.

The statistics are not yet available as to how satisfactory the immediate end-results were, nor as to how many cases had to have amputation at a later date, nor can I tell you how many early secondary closures of compound fractures remained healed. My impression is that they were well over 90 per cent of the whole group, varying somewhat with the experience of the surgeon of the theater of operations. In this respect we learned the hard way in all theaters, as we received little experience from the others. And then I came to the Fifth Service Command at Billings General Hospital, Indiana, where the unsatisfactory results were concentrated, the compound fractures with osteomyelitis. I digress at this

point to say that we amputated 94 limbs at the United States Veteran's Administration Hospital, Minneapolis from 1928 to 1940 for chronic osteomyelitis, 10 to 22 years after World War I. These were patients who begged for relief from repeated hospitalization and disability by the only sure cure which could be offered then. In 1944, Kelly and Burgess conceived the plan of attack which I will outline. Early in 1945, Burgess came to Billings and carried on there until he was sent out to the Pacific. This program was carried out throughout the Fifth Service Command, and in the 5 months' observation I am convinced of its merit and pray for the sake of the lads we have treated that it stands the test of time.

In 8 months of 1945, there were 475 osteomyelitis cases admitted and treated. Seventy-nine of these had sequestrectomy and final closure with 8 reoperations to finally effect healing. These were most carefully chosen cases and represent a troublesome, but clinically quiescent group. One hundred and seventeen cases were subjected to the old operative treatment of saucerization, commonly known as Orr treatment. Within 2 weeks or so, secondary closure was carried out in 15 with 3 failures.

Of the remaining 102 treated by saucerization or Orr treatment, 23 were reoperated. Ultimate healing has occurred, or is occurring, by the usual means. These cases were chosen for operative treatment of the Orr method, because they were mechanically unsuited for the new procedure by which 279 cases were treated.

Given a secondary or or localized osteomyelitis of a short or long standing, we have a deep infection with more or less involved bone, soft tissue pockets, granulations, and interstitial fibrosis of varying degree. Adjacent joint structures may be involved. Our procedure was first to establish the patient's protein balance, the A.G. ratio, and his blood level. Under penicillin, a radical, mechanically sound saucerization was carried out, including all the involved tissues, that is, bone pockets, granulation, and fibrosis, establishing a surgically clean and non-traumatized wound. The wound was then lined with a nylon strip and packed tightly with machinist's waste. This waste is dry and no vaseline is used. A firm compression bandage is next applied. Plaster was used over this only when necessary to splint a fracture or support a limb. On the 7th day the dressing is removed. If the wound looks good, the second step is scheduled. If the wound does not look good a clinically clean, resaucerization is scheduled and performed once more. This may be repeated over and over at approximately weekly intervals if necessary, but we had no record of more than 3 such resaucerizations.

The second step is carried out on the 8th to 10th postoperative day, that is, a couple of days after inspecting the initial wound, and consists of lining the saucerized area with a split thickness graft accurately applied to all areas and held in place by the same type of pressure dressing as was used in the initial operation.

Ten to 12 days later, this dressing is again removed. If healing has occurred, the patient is scheduled for further reparative surgery, which may be either plastic, full thickness coverage of the excised area by cross laid flaps, or by tubes which have been repaired, or this procedure may be the last stage in the treatment, or it may be preparatory to reconstructive bone work.

The results of these 279 saucerizations and dermatomes follow:

Total cases from January to October, 8 months, 279 with 57 reoperations, or 20 per cent.

Since May 86 cases have been operated upon with only 9 reoperations, or 10 per cent. This improvement reflects certain conditions of healing we were able to observe and judge, and I feel my report to the Surgeon General best pictures these observations.

On the 18th of October, 1945, I sub-

mitted the following : "One hundred and seventeen cases were treated by saucerization without dermatomes. These were for the most part extensive soft tissue lesions involving the bone, in which the mechanical factors precluded firm pressure or the application of a dermatome, or in cases in which the osteomyelitic process was of such a nature, orr treatment was deemed best by the operating surgeon. Fifteen of these were treated by secondary closure as stated. Recently more courage has been evidenced in the early closure of these cases. It is felt that the persistence in Orr treatment is to some extent a traditional carry-over, and that more secondary closures will be carried out in the future in the light of overseas experience in the early secondary closure of infected wounds under penicillin control. It is felt, however, that certain cases will over a period of time continue to have Orr treatment followed by indicated plastic surgery at a later date.

Heretofore it was the policy of this service to wait for a period of approximately 3 months subsequent to all healing before plastic work was started and bone work attempted. On analyzing our alleged breakdown of the dermatomes while in the saucer, it is now our feeling that over a period of the above mentioned 3 months observation, those cases which broke down approximately 60 per cent were due to aseptic necrosis as a result of sclerosis of the underlying bone, and another 10 to 15 per cent were due to leakage of synovial fluid in those cases involving joints in which ablation of the joint surface was not carried out. In the report it is noted that resaucerizations dropped to 10 per cent since May, and it is felt that a considerable number of resaucerizations have been avoided by recognizing that the breakdown of the dermatome is in fact aseptic in many cases and that subsequent plastic procedures could with impunity be carried out at an early date.

In our cases which have shown this sclerosis at the expiration of 3 months' waiting period, we have instituted a formal bone graft, re-establishing the medullary continuity as an essential part of the procedure. However, a new program is being established, in that we are recognizing that, in all probability, sufficient aseptic healing has taken place within 3 to 4 weeks to allow early bone grafting. To this end we are now proceeding with early preparation of skin tubes for coverage and propose to do early bone work, hoping thereby to reduce the extent of sclerosis which takes place beneath the dermatome. This is in line with the experience at Crile Hospital, with which we are now inclined to agree, though we believe that each case must be carefully judged as to its fitness for the above outlined program.

The reduction in failures of dermatome saucerizations is, we believe, a result of 2 factors. First, those cases done since the 1st of May are in many instances resaucerizations and could have been expected to have been successful in a higher percentage of cases. Secondly, as a result of observations of the methods, we have been able to recognize that an aseptic necrosis and synovial leakage as mentioned in the comments above, do not constitute failures of the procedure, and many resaucerizations were carried out prior to the 1st of May and for a short time thereafter on the false assumption that the previous dermatome was a failure.

It is felt that certain procedures have been carried out in the past because of traditional viewpoints. It is also felt that the opportunity to review the cases in abstract has enabled us together with the reported experience from other hospitals to re-evaluate the whole proposition of secondary osteomyelitis and to institute an accelerated program of treatment as outlined above, recognizing that sclerosis of bone beneath the dermatome should be avoided when possible, and that aseptic necrosis of the dermatome as a result of underlying sclerosis is not to be considered a failure of the procedure. It is felt that by instituting this program the case of secondary osteomyelitis can in a large percentage be healed."

III. GOSSIP

The Minnesota State Medical Association announces an outstanding series of round table luncheons during its annual meeting on Tuesday, May 21 at 12:15 p.m., and Wednesday, May 22 at 12:15 p.m. The leaders and subjects follow: Tuesday, "Thiouracil", E. B. Flink; "Newer Aspects of Allergies", E.M. Rusten; "Current Problems in the Field of Ophthalmology and Otolaryngology", Karl C. Wold; "Newer Treatment in Burns," H. Waltman Walters; "Diabetes," J. R. Meade; "Esophageal Obstructions," N. Logan Leven; "Amino Acids," R. L. Varco; "Arthritis," P. S. Hench; "Edema and Duretics," F. J. Hirschboeck; and "Obstetrical Demonstration," M. Edward Davis. On Wednesday, "Tuberculosis, Mass Radiography," G. A. Hedberg; "Poliomyelitis," M. E. Knapp; "Ulcerative Colitis," J. A. Bergen; "Rheumatic Fever," Paul F. Dwan; "Digitalis Preparations and Quinidine," G. E. Fahr; "Anesthesia," J. S. Lundy; "Fungus Diseases," H. E. Michelson; "Dermatology," F. W. Lynch; "Varicose Veins," H. O. McPheeters; and "Surgery of the Extra Hepatic Duct System," H. B. Zimmermann.... Erling Hauge, M.D., recently of the Army Medical Corps announces his association with Edward C. Maeder in the practice of gynecology and obstetrics, 948 Medical Arts Building, Minneapolis....Richard H. Lyons of the Department of Internal Medicine, University of Michigan, was a Center visitor this week. He came here to observe our courses for returning veterans and to discuss plans for the future. The second course in the Basic Sciences will start in July 1946. It will represent the same general sort of material which is being given during the spring quarter, as Anatomy will be deferred until fall. The interest in these courses remains high as more returning veterans realize their desirability in preparation for a residency, for practice, or for Board examinations. The course in Medicine and Surgery and the course in the Basic Sciences have been experimental in content, but much has been learned by our experience. A name for these courses is difficult to coin as one series is supposed to be a review of the first two years of Medicine and the other of the last two years of Medicine, but the subject material has not been that easy to divide. The ideal offering would be one which would include certain phases of each series combined on the basis of the subject under consideration, rather than on the specialty involved. Under this plan the subjects of neuroanatomy, neurophysiology, neuropathology, would be presented with clinical side of neurology. The place which anatomy occupies in the surgery and surgical specialty group is unique, but the practical applications of chemistry, physiology, and bacteriology are equally important for those who wish to limit their practice to internal medicine. The all-over emphasis of the functional organic relationship in man suggests that this approach should be included in at least 5 different fields, namely, the central nervous, cardiovascular, gastro-intestinal, urogenital, and skin. Pathology retains its old time interest and all servicemen marvel at the clinical attitude of our group in Pathology. Radiology has become such an important part of Medicine that in working up cases on the wards, the stack of x-ray films which are concerned with the particular patient are left at the bedside table to assist the clinician in "completing" his examination.....The University of Northwestern's plans for returning veterans include a 3-year program in which 2 years are resident years, and 1 year is spent in the basic sciences and on a non-resident clinical basis. Actually the program which they recommend is our course at the Center except that they would have their students work in the Out-Patient Department instead of on the wards. The effect of this experimentation in Medical education on the undergraduates will be of interest in the future, for surely when we declare the objective in Medical education, it will be a much easier program to plan. Every school has its curriculum committee at work, but most of them bog down in controversy over hours and subject material and manner of presentation rather than trying to devise a program which has a clear-cut objective......