THE NOVA SCOTIA MEDICAL BULLETIN

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"Combined Operations"

The practise of Medicine is becoming increasingly complex. A rapidly growing patient-load and heavier demands on all available facilities and personnel make it difficult to provide adequate services and still maintain a high degree of quality control.

"Specialization" is one artificial technique devised in an attempt to meet the complicated demands of medical practise. There is considerable overlapping of specialist services, and the distribution of responsibilities within specialties varies from centre to centre. It is not unreasonable to anticipate, within the forseeable future, a realignment of disciplines under "larger umbrellas" in order to reduce degrees of overlap and waste of effort, space and personnel. This development should also cut down on the increasing tendency for discrete islands of activity to develop within our medical centres.

This issue, as well as the next issue, of The Nova Scotia Medical Bulletin will be devoted to "Orthopaedics and Traumatology" in an attempt to illustrate literally and figuratively the desirability and feasibility of "Combined Operations". □

A.J.B.

Everybody's Getting in on the Act

Originally planned as an orthopaedic symposium, this month's issue has also produced a bumper crop of articles on trauma. So great has been the interest generated by the subject, and so effective has been the "arm-twisting" technique of our guest editor, that not only have we had to stretch the present issue to capacity, but we have a whole series of articles which just naturally begged to be included which we are forced to hold over to our next issue.

In this issue, we not only present thumb-nail sketches of the management of common orthopaedic problems in both children and adults, discuss the immediate management of trauma in the Emergency Department, and the surgical and medical management of thoracic trauma, but we also present more sophisticated diagnostic aids now available in the management of abdominal trauma. In addition, for the first time we are asking you to exercise your diagnostic acumen in an X-ray quiz.

Last, but not least, we present a "do it yourself" manual on how to build a Rehabilitation

Centre, to deal with the late results of trauma, and turn some of its helpless victims back into producing members of society. Timely comment, indeed, in view of the present lack of adequate rehabilitation facilities in this Province, and a comment which we hope will act as a stimulus and a challenge for those who are concerned in getting this project off the ground.

In our next issue, we shall embrace the field of hand injuries, maxillo-facial injuries, and urinary problems of acute trauma, and draw together the opinions of other disciplines involved in the management of these patients who come to us in ever increasing numbers as a result of our highly mechanized society.

Even though, as individual practitioners, we may be confronted with major trauma but rarely, we can all learn from the accumulated experience of others which will be assembled in these two issues of *The Bulletin*. □

I.E.P.

43rd Dalhousie Refresher Course

Plan now to attend the 43rd. Annual Dalhousie Refresher Course which will begin with registration at the Sir Charles Tupper Medical Building 1.30 p.m. Tuesday, November 18th, 1969. The course will run Nov. 18 - 21, 1969 and include:

Small Group Clinics - 13 hours - dealing with many aspects of everyday problems of practice.

Medical Grand Rounds - 3 Medicine and 1 Paediatric - covering problems related to non operative orthopaedic and practice, with review of current management and recent innovations in treatment.

Family Physician Case Conference - 2 cases relating to orthopaedic problems and 1 case based on immunologic problems will be presented simultaneously by family physicians, with discussion by our guests and course registrants.

Clinical Pathological Conference - Presented by the Department of Paediatrics. The outline of the case will be distributed at registration to allow individual time for assessment of diagnosis and management.

Socratic Luncheons - 3 days. This permits a follow-up of an unanswered question or an opportunity to discusss a new topic while relaxing over lunch with the teacher of your choice.

These sessions are designated as the Scientific Programme of the Annual Meeting of the Medical Society of Nova Scotia, who will sponser a Banquet and Ball jointly with the Dalhousie Medical Alumni on Tuesday evening at the Hotel Nova Scotian.

Associated meetings of other groups such as the Atlantic Provinces Orthopaedic Society, and the Nova Scotia Society of Ophthalmologists and Otolaryngologists will be held.

The John Stewart Memorial Lecture will be delivered at 2.00 p.m. November 19th. by Dr. R. A. Good, Professor of Paediatrics and Microbiology, University of Minnesota, on the topic of "Development of the Lymphoid system and Immunological Capacity".

The Special Visitors Lecture will be by Dr. F. R. Tucker, Professor of Surgery (Orthopaedics), University of Manitoba, on the topic "A Fresh Look at Amputations and Prosthess".

Details of the programme (e. g. Small Group Clinics topics, etc.) will be included in pre-registration packets.

Further details from Dr. J. F. Filbee, Chairman, Dalhousie Refresher Course Committee, Division of Continuing Medical Education, Dalhousie University, Halifax, N. S. □

Help for the Handicapped
The Rehabilitation Hospital as a Community Service

B. J. S. Grogono, M.D., F.R.C.S.(C.)*
Halifax, N. S.

Rehabilitation is not just an expensive luxury to be conducted in an expensive building for the benefit of a few carefully selected patients by an isolated group of specialists. It has been my privilege to work for the last five years in a modern rehabilitation hospital in Manitoba where I have learned the true value of cooperative medicine conducted in elegant but functional surroundings.

Established in 1962, the hospital is now well accepted by the Compensation Board, specialists and general practitioners in the Province, and is beginning to draw patients from as far away as Kansas. In fact, there are few centres in Canada with such facilities available. Its success could not have been achieved without careful planning, good administration and special integration with existing facilities.

In Halifax, although there has been much careful planning, and a site has been selected which allows integration with other facilities, no rehabilitation hospital has been built. How is it that we are ten years behind Manitoba,which has still no modern medical school building such as the Sir Charles Tupper building. Was it an expensive project?

Foundation of the Rehabilitation Hospital in Winnipeg.

The problem of finding jobs for Indian patients who had recovered from tuberculosis was tackled with such success by Mr. Jack Cunnings, present executive director of the Manitoba Rehabilitation Hospital, that he rapidly turned to the problem of rehabilitation of patients with other disabilities. The work was supported by the Sanitorium Board of Manitoba, and Mr. Cunnings, with exceptional foresight and ability, coordinated all the interested agencies and brought together a special group of those who were intimately connected with rehabilitation and knew its purpose, to plan the Rehabilitation Hospital.

It was built at a cost of approximately five million dollars, and included a wing for the treatment of tuberculosis (subsequently transformed into a respiratory centre — the D. A. Stewart Centre), a large gymnasium, an occupational therapy workshop, a cafeteria, auditorium, a therapeutic swimming pool and approximately 160 beds. Each step of the construction was carefully followed by Mr. Cunnings and his colleagues, ensuring special provision for wheel-chair and semi-ambulant patients and ade-

The Manitoba Rehabiliation Hospital, built at a cost of five million dollars.

*Formerly Director of the Paraplegic Unit, Manitoba Rehabilitation Hospital, and now Assistant Professor of Surgery, Section of Orthopedics The Halifax Infirmary and Dalhousie University, Halifax, N. S.

quate space for both inpatient and outpatient treatment, while eliminating vague and unnecessarily elaborate facilities.

As a result, the design and execution proved economical, the cost per bed being between one half and two thirds of the cost of a bed in a general hospital. It has proved to be an extremely pleasant and effective centre for both patients and staff. Further additions are planned for the coming year.

The Anatomy of a Rehabilitation Hospital

The hospital is situated close to the Winnipeg General Hospital, the Children's hospital and the Medical School and is connected to them by underground tunnels, an essential feature when temperatures range between 90 degrees F. above and 40 degrees F. below zero. All doors allow easy access to wheel chairs, and the main doors open automatically and provide for telephone communication with the operator. Washing and toilet facilities are accessible to wheel-chair patients, but as far as possible, special gadgets have been avoided, since the aim is to make the handicapped patient accommodate to his disability rather than pandering to him. The basic plan of each floor is outlined below:

The Basement: contains a heated garage which those of our staff who are handicapped find a great help, the prosthetic unit, where much fundamental research in orthotics and prosthetics has been carried out, and the pharmacy.

The first floor: Here is the out-patient department, the administration, records and publicity departments, while close at hand is the Board Room, where many committee meetings are held. In addition, there is a large physiotherapy treatment area with pool, and a large occupational therapy department and workshop.

The second floor: Contains the cafeteria, chapel and an auditorium, situated over the main entrance, which has proved to be a most useful meeting place for many combined conferences. In addition, the splint and plaster rooms are situated here, together with the electro-myographic department.

The third floor: Is the educational centre of the building, housing the schools of nursing, physiotherapy and occupational therapy.

The fourth floor: Houses the amputees, the orthopaedic unit, and the paraplegic unit, consisting of 14 beds, sometimes more.

The fifth floor: contains up to thirty patients in a hemiplegic unit, with additional orthopaedic beds.

The sixth floor: is assigned to rheumatic disorders.

While the number of beds is flexible within certain limits, the upper three floors house approximately 120 beds.

Physiology of The Rehabilitation Hospital

The hospital is administered by an executive director, at present responsible to the Sanatorium Board, but future plans include integration with the University and Medical Centre. Committees derived from the active staff members, consisting of an executive committee, a medical standards committee, a records committee, a credentials committee and an admission and discharge committee, exercise close control over the quality of medical care and delineate privileges for the specialists and general practitioners of the active and courtesy staff. Courtesy privileges enable interested general practitioners to follow the progress of a patient while in hospital, and consultant privileges are given to many of the interested heads of university departments. The active staff are members of the consulting staff who participate in teaching, ward rounds, seminars and committee work in the hospital. A medical director supervises the medical aspects of the hospital, particularly resident and intern training and the medical aspects of the physiotherapy and occupational therapy departments.

Residents and interns:

Most residents are training to be specialists in physical medicine, but a few are orthopaedic residents who rotate to the hospital as part of their training. A chief resident is responsible for the allocation of duties.

Nursing personnel:

Where so many disciplines are so closely involved one might expect that the nursing staff would become over-awed, and that there would be jealousy, rivalry and pettiness. Fortunately, the Rehabilitation Hospital brings about a spirit of "*Bayahihan*" which is a desire to cooperate and help one's neighbour, and I am glad to admit that the standard of nursing care was higher than that of any other hospital in the area. I have frequently seen bed sores heal under skilled care. Emphasis is placed on cooperative team-work, with the needs of the patient being discussed with the whole group at regular sessions, leading to the development of an individual programme for inpatient and outpatient care.

Physiotherapy, occupational therapy and social workers:

In rehabilitation, the patient is a person whom everyone gets to know, not just a hospital number to be discharged as quickly as possible. With the help of group discussions, the physiotherapy and occupational therapy programs are carefully integrated so that each member of the group is aware

of the vital role he is playing, and the patient quickly learns to be self-sufficient. Early involvement of the social worker enables an accurate assessment of the patients probable potential, and suitable modification of his home, his job and his relationship with his family can be attained.

Links with the community:

It is essential to take advantage of every means available to assist the patient in a return to normal life, and the hospital maintains close links with community resources and organisations such as the Workmen's Compensation Board, The Canadian Paraplegic Association, The Canadian Arthritis and Rheumatism Society, and The Society for Crippled Children and Adults.

Who Needs Rehabilitation?

With adequate modern surgery and the latest medications, one might think there was little need for rehabilitation. Certainly, much time can be saved by expert surgery, and rehabilitation is no substitute for poorly performed operations. But many patients have a residual disability after surgery, and many have to readjust to new conditions following amputation, paraplegia, hemiplegia and similar conditions. It has been found practical to group similar types of disability together in a single unit. The different units are not completely closed, but represent a rough division of beds while allowing sufficient flexibility to adjust to everyday needs. The most important groups of disabilities, together with the units in which they are treated are listed in Table I.

TABLE I

Important disability groups and appropriate treatment units.

DISABILITY	TREATMENT UNIT
Spinal injuries	Paraplegic unit
Amputations	Prosthetic unit
Hemiplegias	Hemiplegic unit
Joint disease	Rheumatic disease unit
Speech and hearing	Dept. of communications disorders
Orthopaedic problems	Orthopaedics and Physical Medicine units

Personal Experience in Rehabilitation

For the past four years, I was fortunate enough to direct the paraplegic unit established in the Rehabilitation Hospital. Cases were referred by neurosurgeons or orthopaedic surgeons from other hospitals after the initial active phase of management is over. Fourteen beds were attended by a team consisting of urologists, a plastic surgeon, nurses, physiotherapists occupational therapists and a social worker. An active program is established for each patient, designed to deal with the complications of bedsores, urinary infection and psychological problems while proceeding to the maximum development of the individual's remaining abilities. The results achieved were well worth the infinite care and enthusiasm of the staff. There are some 300 paraplegics in Manitoba, and well over 250 of them are confined to wheelchairs, yet many own their own homes and half of them are employed. An equal number are married and many drive their own cars. While there is still plenty of room for improvement, we have seen that grouping these people together in the presence of an active team helps them to realize that their handicap is not an isolated problem and gives them the incentive to learn the tricks necessary to overcome their disability.

Examples of Rehabilitation:

A woman of 35 suffered from deformities associated with spina bifida. In her childhood she had been treated at the Shriners Hospital and had been enabled to walk with crutches. However, owing to her father's attitude, she was never allowed out of the home and did not associate with anyone until he died. Rehabilitation consisted of surgical correction of her deformed feet, a procedure for her urinary disorder, and an active physiotherapy and occupational therapy programme. Within one year she was entirely independent, living in an apartment, and had a completely new outlook on life.

A young nurse on holiday in Italy turned over her Volkswagen and sustained a fracture–dislocation at the level of T6, with paraplegia. She was taken to a local hospital where she was catheterised with an unsterile catheter and otherwise neglected. Fortunately, she was rescued by a Canadian surgeon and transferred eventually to Winnipeg. Conservative management of her paraplegia with plastic surgery to her large thoracic sore, and an active physiotherapy program transformed her outlook. Within a year she was re-employed at her own hospital as a special clerk in the operating room.

Not all rehabilitation is as successful, but the majority of patients can achieve a substantial degree of independence and lead a satisfactory life.

Other Benefits of a Rehabilitation Centre.

Apart from the advantage of rendering many patients economically self-sufficient and productive, an efficiently designed rehabilitation hospital is economical to run and releases acute beds to the general hospital. The Manitoba Rehabilitation

TABLE II

Types of cases benefitting from rehabilitation services

Amputees
- Upper limb
- Lower limb

Cardiovascular
- Post-coronary
- Post-surgical

Cerebro-vascular
- Hemiplegia
- Triplegia
- Tetraplegia

Congenital defects
- Congenital deformities
- Spina bifida and meningomyelocele
- Cerebral palsy

Special problems
- Psychological
- Drugs

Speech
- Hearing defects
- Visual defects

Joint diseases
- Osteoarthritis
- Rheumatoid arthritis
- Surgical problems

Post-cancer
- After surgery
- After irradiation

Post traumatic
- Spinal injuries
- Head injuries
- Limb injuries
- Hand injuries
- Fractured pelvis
- Multiple injuries
- Back injuries

Neurological
- Multiple sclerosis
- Parkinson's disease
- Post-surgical problems

The Gymnasium: Adequate space must be provided for a variety of different disorders including spinal injuries, amputees and neuromuscular disorders. Even this space is now becoming inadequate.

Occupational therapy: This has proved valuable for many different disorders. Patients can be seen exercising the knees, ankles and hips on the Oliver machine. Wheel chair patients can learn to use their paralysed limbs again.

Auditorium Number 1: Leg classes can be seen in progress.

A large pool is used extensively, but it is going to be enlarged and redesigned.

Hospital, functioning in a university teaching centre, developed into a true centre of learning. In the excellent auditorium, numerous conferences on rehabilitation, orthopaedics, biomechanics and prosthetics have been held, in addition to conferences on nursing, physiotherapy and occupational therapy. There has been an active program of research in prosthetics and orthotics and further programs are expected in the fields of biomechanics and electromyography.

Policies and Staffing in a Rehabilitation Hospital.

This article is not intended to be a eulogy, and I would be the first to admit that there are many problems in a project of this size. Careful selection of patients is necessary so that the hospital does not become filled with unsuitable clients, such as the very old, the very infirm or the grossly mentally retarded, who need special facilities elsewhere. Adequate space is necessary for out-patients and for clerical work. Above all, good administration is essential. The future needs of this hospital are seen to be greatly increased space for out-patients, expanded pool facilities, and additional space for the prosthetic research unit and the paraplegic unit.

While it might be thought that staff would be a problem, since few would be attracted to the prairies where the winters are long and cold, the fact remains that once a good program has been established, and facilities and reputation are gathered, the hospital will attract doctors nurses and therapists not only from Canada, but from the United States, England, and even Australia. They will be the best and most idealistic young people, who enjoy working in a good team.

Rehabilitation in Halifax.

As a newcomer to this city I am struck with the urgent need to get started now with the rehabilitation hospital which has been planned for so long. We already have a fine reputation in rehabilitation, but for too long this has been hampered by the lack of adequate facilities. While I have become an enthusiast for rehabilitation it must be obvious to both doctors and to the community in Halifax that the expansion of present services into a well designed, economic but adequate hospital integrated with the community in all aspects would result in substantial savings to society as previously dependent patients become productive members of society once again. □

Some Common Orthopaedic Problems in Children

D. C. S. Brown, M.D., F.R.C.S.(C)*

Halifax, N. S.

Many common orthopaedic problems which come to the general practitioner's office are relatively easily managed, since they have a favourable outcome and constitute only a nuisance for the patients and their families. Such conditions as Osgood-Schlatter's Disease, Calcaneal Apophysitis (tender heel), growing pains, in-toeing and out-toeing and certain types of flat feet come into this category and will not be discussed in this presentation. There are other conditions, perhaps not so common, which deserve early recognition and treatment, since they may lead to considerable disability and deformity if not diagnosed.

Congenital Dislocation of the Hip is a problem which occurs mainly in girls, and must be found and treated in infancy if deformity is to be avoided. The diagnosis may be difficult, since the signs of unequal skin creases, wide perineum and shortening are not always obvious and depend on the degree of hip displacement. Examination of the range of movement at the hip may disclose limited abduction in one hip when abduction is tested in flexion. One must be sure that the pelvis is level on the table when making this test, since it may be masked by pelvic movement.

Unless one is confident that C. D. H. is not present, one should exclude this diagnosis by X-ray.

Management at birth is by abduction splintage, using four diapers until the child is measured for a commercial splint. Later, open or closed reduction followed by prolonged immobilisation, and occasionally surgery to stabilise the reduction, is required. If the child has walked for three to four months before diagnosis, the percentage of good results is less than 50%.

Spinal Curvature (Scoliosis)

There are said to be thirty-six causes of scoliosis, including the idiopathic and congenital variety, and the less common myopathic or paralytic types. The more common idiopathic type appears between the ages of eight and twelve and is more often seen in girls. The earlier the age of onset, the more severe the resulting curvature. In assessing degrees of scoliosis, look for the high hip that makes dress-fitting awkward. With the patient undressed, look for the prominent rib hump on forward bending, since postural curves disappear on forward flexion. Thoracic curves lose the normal kyphosis early.

Management is by bracing, or by correction with spinal fusion, depending on the age of onset and years of growth remaining. Congenital curves are less predictable except for those cases showing unsegmented bars and progressive kyphosis, which require early spinal fusion, even at the age of two or three years.

Club Feet

Congenital Talipes Equino Varus is usually obvious at birth and the more rigid the deformity at this time, the more prolonged will be the treatment required, and the less likely it is to produce a good result. Treatment is by early manipulation with maintenance of position by corrective casts initially, and later by Denis–Browne splints (with boots or strapping). The patients must be seen frequently for adjustment of splints, and if long distances separate patients from the referral centre, they may not be able to be seen as frequently as is necessary. The corrective casts are not easy to apply and must produce early correction of the varus deformity of the foot and heel to be effective. The so-called "relapsed club foot" is really an example of inadequate correction. Early correction is so important that some authorities feel that 95% of cases of club feet should have a heel lengthening operation as early as three months of age.

Legg-Perthes Disease

Idiopathic avascular necrosis of the femoral head occurs predominantly in boys between the ages of five and ten years. They may present with a painless limp, or with knee pain, and both these symptoms may be intermittent in the early stages. Careful examination will reveal some limitation of hip motion, and X-rays will confirm the diagnosis.

The aim of treatment is to obtain a concentric head in the acetabulum. This can best be achieved through limitation of weight bearing by a weight relieving caliper, or changing to a new weight bearing surface by abducting and internally rotating the hip. There are a number of surgical procedures designed to accomplish the latter and allow early weight bearing without braces, but unfortunately, there is no treatment that can be guaranteed to produce good results in all cases.

Meningomyelocele

This lesion presents dramatically at birth, and may be accompanied by hydrocephalus. Since progressive paralysis may occur in the first twelve hours, closure should be undertaken as an emergency

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procedure. Hydrocephalus frequently is associated and is relieved by the implantation of a relief valve draining C.S.F. into the general circulation. Closure of the spinal defect and insertion of the valve are procedures carried out by neurosurgeons in Nova Scotia, and it is their responsibility to decide which cases are inoperable. Immediate referral gives them the opportunity to make this decision at the most favourable time. If a case is judged inoperable, vigorous medical treatment to preserve the life of the infant is probably not justified.

Rehabilitation is a team-process throughout the growing period of the child, involving orthopaedic surgeons working to provide stable hips for ambulation through surgery and bracing as necessary, and urologists to assess the urinary tract with a view to controlling incontinence, in addition to the neurosurgeon. Essential assistance is given by the physiotherapist in gait training, by the psychologist with intelligence assessment, and by the social worker who encourages family adjustment. Ideally, the general practitioner can render invaluable assistance by coordinating all these aspects of management and maintaining a proper balance between them.

Summary

Some relatively common and disabling orthopaedic conditions occurring in children have been discussed, and it will be evident that the effective management of these conditions is in large measure dependant on close cooperation between the patient, his family, his own doctor, and the specialists and allied health personnel concerned in his rehabilitation. □

The Barbados Walking Heel

A. J. Buhr, M.D.*

Halifax, N. S.

Various ingenious devices have been utilized to facilitate weight-bearing for the patient with a leg cast. Segments of car-tires, blocks of wood, different types of rubber-heels, over-boots as well as walking-irons have been used at various times and in varying situations.

Earlier this year Mr. A. G. Leacock, Senior Surgeon at the highly modern Queen Elizabeth Hospital in Bridgetown, Barbados demonstrated to me the effectiveness and simplicity of the walking-heel shown in Figures 1 and 2. It consists of a tapered plywood base measuring 17.5 cms. in length,

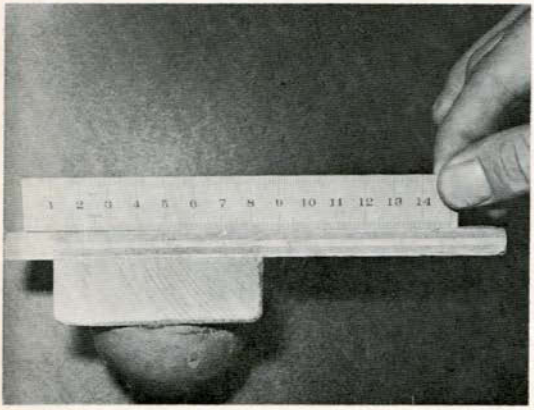

Figure 1. Side view of the Barbados Walking Heel.

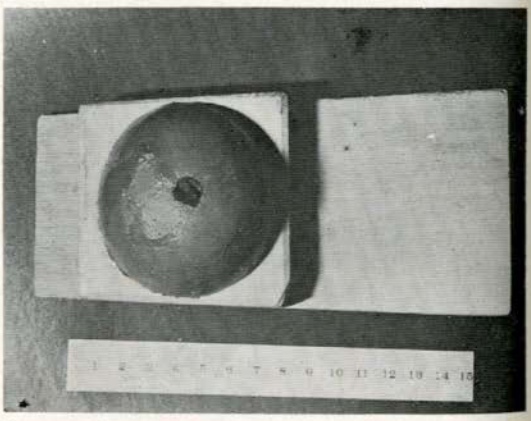

Figure 2. Vertical view of the Barbados Walking Heel.

6 cms. in width at the heel-end and 8 cms. in width at the distal end. A shorter, slightly-tapered second block measuring 6.5 cms. by 7 cms. by 2 cms. is glued and nailed to the base approximately 2 cms. from the heel-end. Then one half of a firm rubber ball measuring approximately 6 cms. in diameter is glued to the second block and doubly secured with a heavy screw penetrating half-way through the hemi-sected ball.

This walking-heel can be made easily and at low cost and would provide a useful project for an occupational therapy department or a sheltered workshop. □

*From the Section of Orthopaedics, Department of Surgery, Victoria General Hospital and Dalhousie University.

The Management of Acromioclavicular Dislocation

SURG. CAPT. D. V. WILLOUGHBY, C.D., M.D., F.R.C.S.(C.), F.A.C.S.*
Halifax, N. S.

The time–honoured dictum: "the most conservative procedure may be the best, and often should be the first" is appropriate in the management of acromioclavicular subluxations and dislocations. The following case illustrates this point.

Case Report

A 19 year old seaman was checked and forced into the boards during a hockey game, sustaining a complete dislocation of the left acromioclavicular joint (Figure I).

Figure 1. Anteroposterior view of the left shoulder without weights, showing a dislocation of the acromioclavicular joint.

A modified suspension cast[1] was applied in the emergency department about ninety minutes after injury. Recheck X-rays taken after application of the cast showed adequate reduction of the dislocation with some minor separation of the joint remaining. (Figure 2). Twenty-four hours later, the patient was able to abduct his arm above a right angle, dress himself, salute and carry on essentially normal activity (Figure 3). Thirty-six hours after injury he returned to duty on board ship.

Five weeks later, the cast was removed: the patient was asymptomatic and had a full range of shoulder movement.

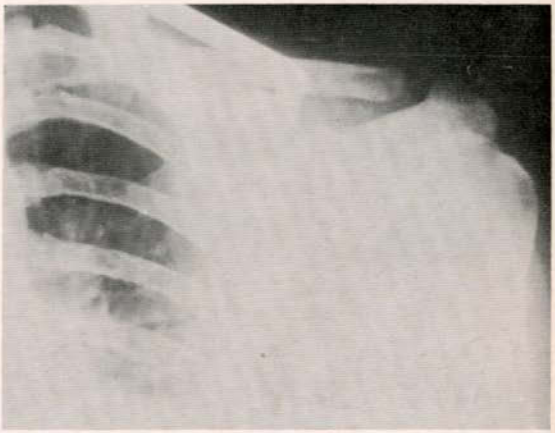

Figure 2. Post-reduction film of the left shoulder with suspension cast and strap in situ. The dislocation is reduced although some minor separation persists.

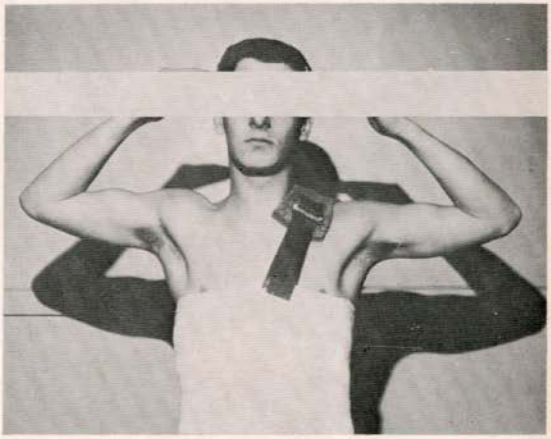

Figure 3. Shoulder motion 24 hours after dislocation. The anterior level of the cast and the position of the buckle and adjusting strap is shown.

Method

The cast used is a modification of the suspension cast first described by Stubbins and McGaw in 1959[2]. As shown in figures 3 and 4, a padded, well moulded cast is applied around the thorax and upper abdomen resting on the iliac crests and extending up to the inferior angle of the scapula posteriorly

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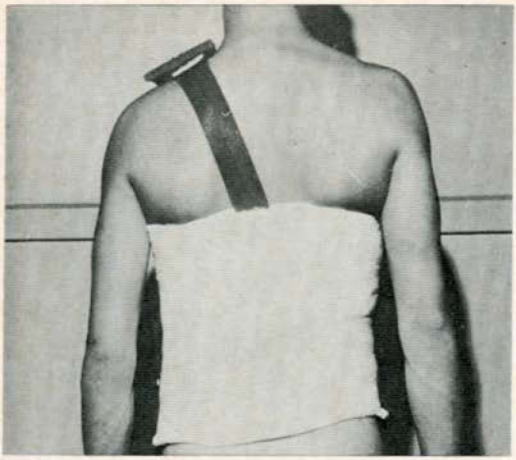

Figure 4. Posterior view of the finished cast, showing the lower limit and posterior aspect of the strap.

and to the nipple line anteriorly. An adjustable strap, such as a parachute harness or an automobile seat-belt is incorporated into the cast with the friction-type buckle resting on a pad of felt placed over the middle third of the clavicle. The lower ends of the straps must be incorporated in the cast beyond the midline towards the opposite side from the injury to prevent the buckle falling off the shoulder. The patient is instructed how to adjust the straps to provide even pressure in the erect and supine positions, and his arm is placed in a sling. Twenty-four hours later, he is pain-free, has almost a full range of active movement at the shoulder and is able to wear clothes satisfactorily. The sling is then removed and the patient returned to normal activity unless he is engaged in unusually heavy work.

Five to six weeks later, depending on the severity of the injury, the cast is removed and re-check X-rays are taken. Little if any physiotherapy or rehabilitation is necessary, although the patient is advised to refrain from heavy work and contact sports for a further five to six weeks.

Discussion

Acromioclavicular trauma may be grouped as sprains, subluxations or dislocations. Increasing severity of injury involves damage first to the acromioclavicular ligament and capsule, then the clavicular attachments of the deltoid and trapezius muscles and lastly, the coraco-clavicular ligaments. Simple sprains are caused by slips or falls, whereas subluxations and dislocations are the result of high-speed auto accidents, contact sports, parachute jumping, etc. Subluxations are more common than dislocations.

While simple sprains do well with little or no treatment and rarely produce any permanent disability, controversy continues to rage over the value of conservative over surgical treatment of dislocations and major subluxations. Urist, [3,4], in his classical paper, states that more than thirty different operations and fifty different types of strapping, splints, harnesses, braces or casts have been advocated in this condition. The multiplicity of methods speaks poorly for their effectiveness.

Each of the many operations described has its limitations and none is entirely satisfactory. It is generally agreed that excision of the outer end of the clavicle is the best procedure, and is the only one in which a sufficiently large series of results have been reported. Most authors conclude that this should not be used on fresh injuries, but should be reserved for the late and complicated cases.

To quote Urist, "To begin treatment with an extensive surgical dissection of the joint, to implant internal fixation, to encase the patient in a large cast to protect the internal fixation, and to observe the inevitable breakdown of fascial transplants, wires or screws, and then to perform another operation to remove the metal, to leave a large scar on the shoulder all for a condition that is largely a cosmetic problem is largely irrational treatment. *It is tantamount to shooting a dove with an elephant hunter's rifle, and it is the antithesis of sound surgical practice.*"

The many conservative methods range from the neatest to the most grotesque of orthopaedic appliances, since immobilisation is often difficult because of the extraordinary range of motion and small size of the shoulder joint, and the anatomical relationship of the acromioclavicular joint to the chest and shoulder. Unlike most dislocations, the apparatus must not only immobilize the joint but also reduce the dislocation, and most types act by elevating the acromioclavicular component while depressing the clavicle.

Summary

A modified suspension cast for the treatment of acromioclavicular dislocations is reported. The method has been used by the author for the last ten years with excellent results: it is equally effective on male or female patients, and no complications have been encountered when it is used by intelligent and cooperative people. It is easily employed as an office procedure, and renders the patient almost immediately symptom-free, allowing the normal wearing of clothes and a continuation of normal activity. In addition, it effectively reduces and immobilizes the joint for the required time and prevents the complications inherent in open operation and internal fixation. □

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Simple Procedures in the Management of Chest Injuries*

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Most doctors called upon to manage patients involved in accidents feel confident in their ability to handle injuries of the extremities, abdomen, and at least to render first aid treatment for head injuries, but may feel in the case of chest injuries that there is little that can be done, and the otherwise competent general practitioner or surgeon may fail to institute simple measures which could bring relief or even save the life of the patient.

All doctors, even those with minimal clinical experience of chest injuries, possess a knowledge of the basic physiology of the respiratory and cardiovascular systems. Because of the very rapid advances made in these fields in recent years, the general surgeon or practitioner may feel that disturbances of these systems are in the realm of the superspecialist and beyond his own competence. However, a doctor need not be a cardiac surgeon or a pulmonary physiologist to recognize that trauma to the chest has resulted in a disturbance of pulmonary or cardiac physiology. There are many simple remedial procedures which every doctor is capable of carrying out; unfortunately, many are reluctant to institute them because they feel these procedures to be far more complicated or involved than they really are.

In assessing an injured patient, a very rapid history and physical examination can suggest that chest injury has occurred. This may be the only injury, or it may be associated with one or more injuries elsewhere. Often, the injury which is most obvious may be of a relatively minor nature but may distract attention from a far more serious injury which at the time of initial examination may show little in the way of symptoms or signs.

Table I lists the possible injuries the patient may have sustained, together with symptoms and signs that may be associated with chest injury, and the possible therapeutic procedures which may be indicated. If the examining doctor keeps the possibility of such injuries in the forefront of his mind, and looks for the symptoms and signs which lead to a more precise diagnosis, he will be able to render far more effective first aid treatment, emergency treatment, and definitive treatment. Many of the procedures are relatively simple, and it is of little value for the doctor to make the correct diagnosis by assessing the symptoms and signs if no measures are instituted to correct the abnormalities which have resulted from the trauma.

Terms used in Chest Trauma

Some of the terms may need a word or two of explanation. "Flail Chest" is a condition in which a portion of the chest wall moves in a direction opposite to the way it normally should, that is, paradoxically. On inspiration, instead of moving outward, the flail segment moves inward, and the converse obtains on expiration. The emergency or first aid treatment of this condition is to apply pressure to the flail segment with the palm of the hand or a tight bandage so that it will not move paradoxically. The ideal treatment for such an injury is positive pressure respiration through an endotracheal tube, but if this is not available at the scene of an accident, and the condition is not controlled through pressure, one can apply mouth-to-mouth respiration.

TABLE I

A Profile of Management of Chest Trauma

Possible injury	Symptoms and signs	Therapeutic Procedure
Simple rib fracture	Cyanosis	Endotracheal suction
Retained secretions	Dyspnoea	Bronchoscopy
Flail chest	Subcutaneous emphysema	Intubation
(Steering wheel injury)	Paradoxical motion	Mouth-to-mouth respiration
Penetrating wounds	Bony crepitus	Respirator
Sucking wounds	Deviated trachea	Tracheotomy
Hemothorax	Pendulum respiration	Intercostal nerve block
Pneumothorax	Chest X-ray	Thoracentesis
Fracture of bronchus	Shock	Closed thoracotomy
Wounds of the heart		Splint flail chest
Ruptured diaphragm		a) pressure
		b) wire or towel clip
		Close sucking wounds
		Pericardiocentesis
		Thoracotomy

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A "Sucking Wound" is one in which there is a communication between the pleural cavity and the outside air through a hole in the chest wall. Since this interferes with the normal negative pressure in the pleural space, simply closing the hole with the palm of the hand or an airtight adhesive dressing affords relief, and definitive suturing can be undertaken later.

Air under the skin produces the symptom of "Subcutaneous Emphysema", and while it is not in itself serious and requires no treatment, it suggests that there has been a tear of a lung or bronchus. In such a case, one would look for rib fractures or a pneumothorax.

The term "Pendulum Respiration" is given to a condition in which the mediastinum moves from side to side like a pendulum, because of changing pressure differences between the two sides of the chest. The characteristic movement may be seen on fluoroscopy and is often associated with open wounds of the chest or tension pneumothorax. One must always bear in mind that multiple injuries may occur affecting more than one side of the chest.

Simple Treatments in Chest Injury

Institution of mouth-to-mouth respiration may be life-saving not merely through the ventilation of the lungs, but also because the preliminary steps of clearing the airways with two fingers placed at the back of the throat will remove obstructing dentures or aspirated vomitus. Tilting the head back and pulling the chin forward will provide a clear airway for the victim who is capable of breathing. If respiration is absent, mouth-to-mouth respiration can then be applied, closing off the nose with the fingers so as to prevent the escape of air through the nose.

Wounds of the heart are not always immediately fatal, but bleeding into the closed pericardial sac may cause fatal pressure on the heart unless relieved by aspiration. A hemopericardium is suggested by the history, signs of shock and heart sounds which are distant, and may be confirmed by the characteristic X-ray appearance of a pear-shaped enlargement of the heart shadow. It may be aspirated at two sites: at the left sternal border in the fourth interspace, or through the apex of the epigastric area of the abdomen. When aspirating through the chest wall, a No. 18 needle attached to a 50 c.c. syringe is advanced slowly until blood is withdrawn. Obviously, it is possible to enter the ventricle, but this will be avoided if one has an assistant watching the pulse for extrasystoles which occur when the needle tip touches the myocardium. In the abdominal approach, a needle is directed at a 45 degree angle to the anterior chest wall in the angle made by the xiphoid and the left subcostal margin, and enters the under surface of the pericardium.

Closed thoractomy, or the insertion of a catheter connected to a water seal drainage, is accomplished with a trocar and cannula. It provides immediate improvement in a case of tension pneumothorax and, allows the drainage of air and blood from the injured chest while encouraging expansion of the underlying lung.

Endotracheal intubation is often lifesaving, as it allows secretions to be removed from the tracheobronchial tree, reduces deadspace, and allows artificial ventilation with a hand resuscitator. In hospital, a tracheostomy allows a respirator to be used more effectively, and simplifies nursing care.

Summary

Every qualified doctor has a basic knowledge of chest physiology and of the mechanics of breathing. By keeping in mind the possible injuries and the symptoms and signs that these may produce, he should be able to accurately assess the impairment which has resulted. There need not be a feeling of helplessness on the part of the doctor since the application of simple therapeutic measures will often save a life.

The aim of our treatment should be to provide an adequate supply of oxygen to the alveoli by assuring a patent airway, removing obstructing secretions, and assisting ventilation where necessary. Once adequate oxygenation is assured, attention can be directed to the problem of providing an adequate flow of blood through the lungs, at an adequate pressure and flow to provide for oxygenation of the tissues. □

Thoracic Complications in Multiple Injuries*

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Elsewhere in this journal, Doctor Casey has outlined the surgical management of chest injuries. This article is designed as a review of the pulmonary and cardiac complications of multiple trauma which are not directly subject to surgical repair. As the number of accidents increase, particularly those involving injuries about the head and chest, an increasing number of patients are seen with insufficiency of respiratory and cardiac function. It is incumbent on each physician to acquire facility in the recognition and management of these emergent conditions.

A. RESPIRATORY COMPLICATIONS

Respiratory insufficiency may result from several causes. The regulation of respiration may be disturbed in head injuries, by a variety of mechanisms the airways may become obstructed, injuries to the chest wall and the pleural cavity, as well as direct trauma to the lungs may impair respiratory function, or imposition of any of these factors on pre-existing chronic lung disease may precipitate respiratory failure.

The syndrome of respiratory failure is the final common pathway in these disorders. One easily recognizes the acutely dyspneic individual who is cyanosed; however it must be remembered that the arterial oxygen tension must fall by approximately one-half before cyanosis will be clinically detected. More subtle respiratory failure with retention of carbon dioxide may easily go unrecognized (particularly if the individual is being given oxygen) and acidosis and carbon dioxide narcosis may supervene, especially since the classic physical findings of carbon dioxide narcosis (in the early stages, vasodilotation with wide pulse pressure and hypertension, and in the later stages falling blood pressure, mental changes, papilloedema, cardiac arrhythmias, coma and death) may be masked by, or confused with, head injuries, or the cardiovascular adjustments in the shock state. Thus the diagnosis may remain unrecognized. In order to assess definitively and manage the injured patient, it is therefore necessary to have available means of determining the arterial PCO_2, pH and, if possible, oxygen tensions.

The Immediate Pulmonary Complications of Multiple Trauma.

a) Airway Obstruction.

This may result from a variety of causes. The obtunded patient like the anesthesized patient, is uable to control his tongue and jaw and may easily obstruct his own airway. In these individuals immediate intubation is necessary. This will serve both to eliminate the obstruction, and if the tube has an inflatable cuff will help to prevent aspiration. It will also serve as an access for the removal of tracheal-bronchial secretions. It is well to remember that an obstructed airway alone can lead to the development of pulmonary edema. If one can foresee that the patient's problems will be prolonged, a tracheostomy is advisable. Patients with maxillofacial injuries present a special problem, since they may easily become obstructed and frequently aspirate blood and debris from the pharanyx. Intubation may prove difficult but access to the airways is frequently mandatory in these cases. One should not hesitate to do a tracheostomy. Cervical spine injuries also present special problems in that positioning of the head to maintain the airway is frequently inadvisable due to the danger of cord compression. If intubation in these cases should prove hazardous then immediate tracheostomy should be carried out. Direct injuries of the larynx and trachea, although uncommon, can be extremely dangerous. In closed injuries to the larynx the most serious problem will be edema. Although the majority may be treated conservatively, these patients must be carefully observed and emergency tracheostomy may be necessary. Open injuries of the larynx usually require a tracheotomy along with specific surgical treatment. Tears of the trachea result in tension pneumothorax and are most easily diagnosed by bronchoscopic examination and require emergency surgical intervention. The individual who has a pneumothorax resistant to treatment with an intrapleural catheter, those who show massive or rapidly advancing mediastinal or subcutaneous emphysema or those who 48 hours to two weeks after the injury show developing atelectasis on X-ray examination should be suspected of having a tear of the trachea or bronchi. Bronchoscopic examination should be carried out immediately if the air leak cannot be controlled, and once the diagnosis is established the lesion should be surgically repaired.

b) Chest Wall Injury

Direct injuries to the chest wall may cause traumatic pneumothorax, hemothorax, or may result in the "flail chest". This latter injury if un-

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recognized may result in extreme respiratory insufficiency and death. It is easily diagnosed by the observation of paradoxical movement of the injured section of the chest wall. These patients require respiratory assistance by means of positive pressure ventilation. Immediate intubation is necessary and since stabilization of the chest wall takes two to three weeks to achieve, elective tracheostomy is indicated.

c) Injuries to the Pulmonary Parenchyma.

Direct injuries to the chest may result in bleeding into the pulmonary parenchyma, which may vary from small focal lesions, to large hematomas. These rarely cause any trouble. In these cases there may be frank hemoptysis and opacifications may appear on the chest X-ray. Chest injuries can also result in the "*Traumatic Wet Lung*". In this condition, the injured lung accumulates edema fluid in the alveoli and interstitial tissues. Excessive secretions from bronchial glands and broncho-spasm may further complicate the picture. Due to pain the patient may not be able to cough or clear his secretions adequately and progressive obstruction to the air ways and respiratory insufficiency may supervene. The syndrome is recognized by dullness and diminished breath sounds in the affected area; bronchial breathing may be heard, but most suggestive is the presence of coarse rhonchi which are audible without the aid of a stethoscope. It is important to realize that early in the evolution of this disorder the chest X-ray findings may be negative. Rigorous tracheo-bronchial toilet is necessary in these individuals to treat the respiratory insufficiency and to help prevent the later complications of superimposed pneumonia or atelectasis. Intubation or tracheostomy may be necessary to achieve these objectives.

d) Respiratory Depression

Respiratory depression may result from head injuries or from drug induced depression of the nervous system. The obvious treatment is artificial ventilation.

Summary of Treatment of Respiratory Complications of Trauma

The following principles apply in the management of the respiratory complications of multiple injuries.

i. Insure that the airway is patent.
ii. Insure that the air passages are cleansed of aspirated vomitus, blood, foreign material or debris.
iii. Do not hesitate to intubate the patient who does not have cervical spine injuries.
iv. If intubation is difficult or the patient is facing long-term problems, tracheostomy is probably the best approach.
v. Remember that an elevated arterial carbon dioxide tension means hypoventilation. Artificial ventilation may then be necessary and is mandantory if the pCO_2 rises above 60 mm of mercury.

At this point, let us restate the indications for tracheostomy.

i. Deep coma.
ii. Maxillofacial injuries which impair the airway or are associated with head injuries.
iii. Combined head and chest injury.
iv. Combined head injury with pre-existing chest disease.
v. Injury to the cervical spine associated with head injury or with impairment of the airway.
vi. Open trauma to the larynx and cervical portion of the trachea.
vii. Any protracted condition in which the patient is having difficulties clearing the tracheal bronchial secretions.
viii. Any condition in which there is a need for prolonged artificial ventilation.

In treating the patient who has been intubated or in managing the individual with a tracheostomy, one must remember that secretions will be increased, the normal means of humidifying inspired air have been bypassed and that the normal cough mechanism has been altered. It will therefore be necessary to have means available to humidify the inspired air such as large-volume nebulizers on respirators or fitted by use of a tracheotomy mask attached to the tracheotomy tube or indwelling intratracheal tube. Frequent suctioning of secretions is necessary. Many patients require the instillation of saline directly into the tracheal bronchial tree at frequent intervals to aid in the liquefaction of secretions.

Delayed Complications of Multiple Trauma.

a) Fat Embolus

This mysterious entity not uncommonly follows trauma to the major long bones. It is characterized by tachycardia, tachypnea and fever beginning 24 hours to 10 days following the injury. Drowsiness, restlessness and delirium progressing to coma are often seen. Petechiae, characteristically seen initially on the anterior part of the shoulder, upper chest, base of neck, axilla and conjunctivae, usually occur late in the syndrome. Physical and electrocardiographic findings of right ventricular overload and right ventricular failure may be seen. Examination of the fundi often reveals fat emboli in the retinal vessels. Laboratory aids to the diagnosis are the demonstration of fat globules in the urine, or fat globules in the sputum (although these are less specific), and more rarely, biopsy of the petechiae or needle biopsy of the kidney. Elevations of serum lipase occur but are usually delayed by as many as four days. During the first 48 to 72 hours following injury, an elevation in the serum lipase is more likely due to pancreatic trauma. Treatment consists of several measures. Adequate oxygenation must be insured by the administration of oxygen in high concentrations. Digitalization is desirable if right heart failure complicates the clinical picture. Heparinization has been found useful

although doses less than those used in anticoagulation are adequate: 25 mgs. intramuscularly every six hours has proved useful. The administration of alcohol has also been effective. 30 cc's of one hundred proof whiskey orally every three hours or 2-3 litres of five per cent alcohol per day intravenously each day is considered an adequate and rather pleasant dose. If severe cerebral symptoms such as spasticity or decerebrate rigidity occur, the use of hypothermia may be indicated.

b) Pulmonary Embolus

The early manifestations are those of sudden severe dyspnoea accompanied by precordial pain simulating that of myocardial infarction. Depending on the size of the embolus, varying degrees of pulmonary hypertension and right heart failure may be seen. The cardiac output may be impaired and shock will be seen. Chest X-ray findings may show diminished blood supply to an area of lung. Electrocardiogram may show signs of right axis deviation, right bundle branch block, ST segment depression and T-wave inversion over the right precordial leads, right atrial hypertrophy or various arrhythmias, particularly atrial fibrillation. At this stage of the disease, the patient also has considerable respiratory distress, may be cyanosed, and surprisingly, may have broncho spasm. As the disease progresses the stage of infarction ensues, at which time one may demonstrate pleural friction rubs, pleural effusion or the characteristic findings of pulmonary infarction on chest X-ray. At this time, the serum bilirubin may be elevated and the characteristic enzyme changes of slight elevation in the SGOT with a larger, disproportionate elevation in the LDH may help in establishing the diagnosis.

The best treatment is prevention. The patient should be watched daily for signs of phlebitis. Adequate measures to prevent thrombus formation particularly in the legs should be taken and prophylactic anticoagulation in those cases developing phlebitis or those in whom anticoagulation is not contraindicated should be actively considered. Once the embolus has occurred, the treatment is initially symptomatic. Oxygenation must be assured. Shock should be treated. The patient should be digitalized. If the patient does not respond to conventional therapy, surgical intervention with removal of the clot from the pulmonary artery may be necessary. These patients must be anticoagulated. Heparin therapy should be instituted immediately and the patient later switched to the coumarin drugs. The arguments for the various venous ligation procedures are impressive, and these procedures should be considered more often. The use of thrombolytic agents is at the moment under evaluation and is not common clinical practice.

c) Stasis Pneumonia and Atelectasis

These are mentioned principally to emphasize the fact that adequate tracheal bronchial toilet, i.e. the rigorous use of coughing and deep breathing exercises, postural drainage, humidification, and suctioning of those patients with intratracheal tubes or tracheotomies should have prevented their occurrence. If these have developed, however, the stasis pneumonia is best treated with the appropriate antibiotic therapy plus institution or maintenance of vigorous tracheo-bronchial toilet. Atelectasis frequently responds to bronchoscopy, or in its absence, the more conservative means of tracheo-bronchial toilet. The use of IPPB apparatus is to be encouraged in the prevention and treatment of both of these disorders.

B. CARDIAC COMPLICATIONS OF MULTIPLE INJURIES

The heart is principally involved in direct injuries to the chest. The heart may be ruptured in which case death rapidly occurs. In less severe trauma, pericardial bleeding may be seen with progressive embarrassment of myocardial function. In these cases pericardial pain is often present which is characterized by intensification when the patient swallows, belches or even changes his body position. Dyspnoea is often intensified by lying back and relieved by leaning forward. The physical manifestations are distention of the neck veins, with a paradoxical rise in the venous pressure during inspiration. As the condition progresses and the cardiac output becomes more inadequate, the pulse pressure narrows. A pulsus paradoxicus may be found. Friction rubs are often heard. The chest X-ray may reveal a large heart with normal pulmonary vessels. The electrocardiogram may reveal electrical alternans.

If exotic facilities such as echo-scanning or radioisotope scanning or angiographic equipment are not available, pericardiocentesis may be useful in establishing the diagnosis, and may be essential and life-saving in an emergency. However, more rigorous surgical intervention is necessary in many cases.

Myocardial contusion results in the syndrome which is very similar to myocardial infarction. These patients should be treated as any myocardial infarction with monitoring to detect arrythmias, the prompt treatment of arrythmias, and support of the failing cardio-vascular system.

Frank myocardial infarction may occur if coronary perfusion has been impaired by direct trauma or if the patient with pre-existing coronary artery disease remains in shock.

Various arrhythmias may follow a blow to the chest: atrial and ventricular atopic beats, supraventricular tachycardia, and atrial fibrillation have been described. These do not necessarily represent injury to the myocardium. However, these arrhythmias should be treated in the same way as arrhythmias following myocardial damage.

Various ST segment and T wave abnormalities have been described in the electrocardiograms of those subjected to chest trauma, but these are of a non-diagnostic nature. It is interesting to note that at autopsy, some of these individuals do not have any underlying myocardial damage.

Summary of treatment of cardiac complications

Again, it is useful to state some principles of management in the individual with traumatic injuries to the heart.

i. Do not neglect a hemopericardium. Rigorous surgical intervention may be necessary.

ii. Arrhythmias following chest injuries whether or not they represent myocardial damage should be promptly and rigorously treated.

iii. Myocardial damage may result in dysfunction and congestive heart failure.

SUMMARY

The patient with multiple injuries must be carefully watched for the development of respiratory or cardiac complications. If these are promptly diagnosed and efficiently treated or prevented, the awesome waste of human life in accidental death may be reduced. □

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Chondromalacia Patellae

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Chondromalacia of the patella is a softening of the articular cartilage of the patella. It is probably the most frequent cause of pain in the knee-joint region. The softening of the cartilage most frequently starts during the second decade of life and it is claimed that by thirty years of age nearly every human being is affected to a varying extent; however, in only a relatively few people do these changes cause symptoms.

The most probable cause of this condition is repeated injury to the cartilage. Developmentally the medial facet of the patella is slightly convex; the lateral facet is slightly concave. Therefore the lateral facet achieves more congruity with the convex femoral condyle during the different grades of flexion of the knee joint. Medially, the congruity of the patello-femoral joint is less, and stresses are concentrated in a relatively smaller area. Sometimes the presence of a ridge on the medial condyle of the femur may even increase the localized pressure. Lateral instability of the patella leading to lateral subluxation or dislocation of the patella causes chondromalacia which also starts most frequently on the medial facet. This condition is encountered more frequently in women because of the genu valgum caused by the relatively wider pelvis. Congenital ligamentous laxity may be a cause of the laterally unstable patella. Also a congenitally small high-riding patella and a relatively flat lateral condyle of femur predispose to recurrent subluxations. It is known that sometimes a patient, after a knee operation, may develop chondromalacia. Probably this is caused by the relatively increased atrophy of the vastus medialis in relation to the vastus lateralis muscle resulting in lateral instability of the patella.

The pathological changes begin as a nodular swelling of the cartilage. The cartilage becomes lustreless and relatively soft. Then fissures develop on the surface which lead to flaking. The extent of these changes vary. Mirror-image changes may develop on the apposing surfaces of the femoral condyles. Gradually the cartilage gets thinner and wears down to the bone. In later stages osteophytes tend to develop along the involved edges of the patella indicating established patello-femoral osteoarthritis. The synovial membrane may be slightly inflamed. Usually a pannus does not form.

Clinically the most frequent symptom is discomfort in the knee. The onset is often insidious;

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a distinct injury is relatively seldom remembered. An injury usually aggravates the vague symptoms which are already present; however, an acute dislocation of the patella may be caused by a distinct injury. The discomfort is rather poorly localized; it is often through and through the knee joint. Very frequently it is felt in the popliteal space, apparently because of the secondary spasm of the hamstrings. Gradually it becomes more painful but often there are symptom-free episodes and the symptoms may completely subside with adequate management. Kneeling and squatting tend to aggravate the symptoms. Sitting for a prolonged period of time with the knee flexed causes stiffness which tends to subside soon after the knee has been exercised for awhile. Occasionally the knee tends to give way. The patient may feel an occasional "catching" sensation on moving the knee joint; this is apparently caused by the semi-detached flakes of cartilage. True locking will occur only if the patella is dislocated or if there is a loose body in the knee joint. Swelling of the knee is often absent or minimal in comparison with patients who have a torn meniscus.

On examination, patello-femoral crepitus and pain on pressure of the patella against the femur with grating are diagnostic. There may be relative lateral instability of the involved patella. On sitting with the knee bent, the patella may point laterally. There is a distinct point tenderness on the involved facet of the patella. The tenderness may extend to the medial retinaculum yet the distinct point-tenderness of a torn medial meniscus is missing. There may be a slight effusion within the knee-joint. The infrapatellar fat pad may be enlarged and tender. Hamstring spasm may prevent full extension of the knee and flexion of the knee beyond a certain point is usually found to be uncomfortable. There may be some quadriceps atrophy; however, in comparison with patients who have a torn meniscus the quadriceps muscle preserves its tone and volume well.

In the differential diagnosis chondromalacia patellae is most frequently confused with a torn medial meniscus. This mistake is made over and over again especially in a young girl. The site of tenderness, the degree of effusion, locking, McMurray's test, the knee movements and the state of the quadriceps muscle should help in the differential diagnosis. Following dislocation of the patella a loose body may develop as an osteochondral fracture. In addition, osteochondritis dissecans, rheumatoid arthritis, pigmented villonodular synovitis and ligamentous injuries of the knee should be ruled out.

The management of chondromalacia of the patella is primarily conservative. It is important that kneeling and squatting be avoided. The knee is most comfortable when it is held in ten to fifteen degrees of flexion. Prolonged sitting with the knee bent to a right angle causes discomfort and stiffness; it should be avoided when sitting and sleeping. A sudden forceful weight-bearing pressure on the leg with the knee bent usually causes subluxation or dislocation of the patella if it is unstable laterally. Ordinary flexion and extension exercises of the knee joint carried out with the patient sitting on a table, are valuable. Quadriceps strengthening exercises are most important, concentrating on the last ten to fifteen degrees of extension thus strengthening the vastus medialis muscle. Weight lifting with the knee from the flexed position will aggravate the symptoms; isometric exercises, carried out with the weight attached to the foot while the knee is fully extended, are good. At the tender stage, moist heat or any othr variety of heat may be useful in relieving the discomfort. Intra-articular Hydro-cortisone injections may give temporary relief of symptoms. It is mandatory that this should be done under sterile conditions and only occasionally.

If symptoms persist in spite of adequate conservative treatment and if the patient has a real disability, then an operation may be considered. For relatively young patients a proper shaving of the involved portion of the articular cartilage with the excision of the femoral condylar ridge, if present, is the treatment of choice. If the area involves less than one-third of the cartilage of the patella, this procedure may give lasting relief; however, in a few patients the articular cartilage deteriorates and patellectomy is required. For patients over forty years of age patellectomy may be the treatment of choice because by then a certain degree of patello-femoral osteoarthritis has already developed. End to end repair of the quadriceps and the patellar tendons is important to prevent postoperative quadriceps lag.

Usually the results of patellectomy are relatively less satisfactory than shaving of the cartilage alone because by then the process is more advanced and much more extensive. For adolescents and young adults with distinct lateral instability of the patella and relatively-localized changes, shaving of the cartilage of the patella and transfer of the patellar tendon, e.g. the Hauser procedure, may be done at the same time. After realigning the patella the changes in the articular cartilage may not progress; however, it is important to remember that the cartilage was already involved to a certain extent and is not normal. This procedure involving the transfer of the tibial tuberosity is done only after growth is completed, otherwise complications such as genu recurvatum may develop. For children probably the best thing would be not to operate at all; however, if something has to be done the parents should be warned that a repeat-operation may be required later. □

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X-Ray Diagnostic Quiz*

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An eighteen year old boy was admitted to the Victoria General Hospital in June 1964 for investigation and treatment of diffuse pain just proximal to the right ankle. He stated that in November of 1962 he "fell backward and twisted the right leg." His symptoms of pain were considered to be minor and settled after a week. About six months later he again developed poorly-localized pain just cephalad to the right ankle, and swelling began just above the ankle posteriorly about six months prior to hospitalization. Walking and other exercises did not aggravate the pain which was however worse at night and eased by taking aspirins. Past history, family history, functional enquiry and general examination revealed nothing of significant interest. Local examination revealed slight swelling and increased warmth over the lateral aspect of the right leg about 12 cms. proximal to the lateral malleolus without any evidence of tenderness and no gross reduction in range of ankle movements except doubtful slight restriction of dorsiflexion. Routine laboratory investigations did not reveal any unusual findings and after tomographic studies were done it was decided that further exotic tests were not indicated but that surgical removal of the lesion would confirm the radiological diagnosis.

At operation "an elevated area of new-bone formation was noted subperiosteally on the posterior aspect of the tibia about four inches proximal to the ankle joint. The bone was white and sclerotic. Having unroofed the area overlying the lytic lesion shown in the tomographs a rounded, well-defined nidus measuring about a half centimeter in diameter was noted.

This lesion appeared to be slightly vascular and was red in colour. It was readily removed and submitted to the pathologist.

Post-operatively the patient's pain was promptly relieved and he has had no recurrence of symptoms. See page 144 for discussion of the Radiographics, differential diagnosis and final diagnosis.

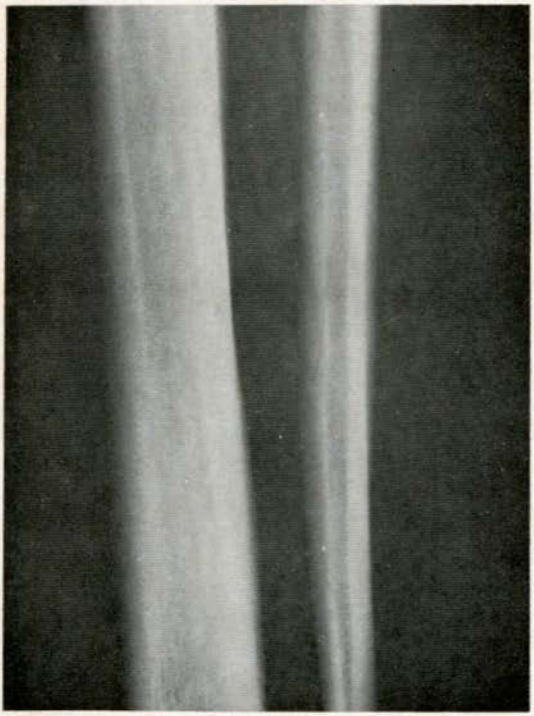

Figure 1. Plain AP view of right leg.

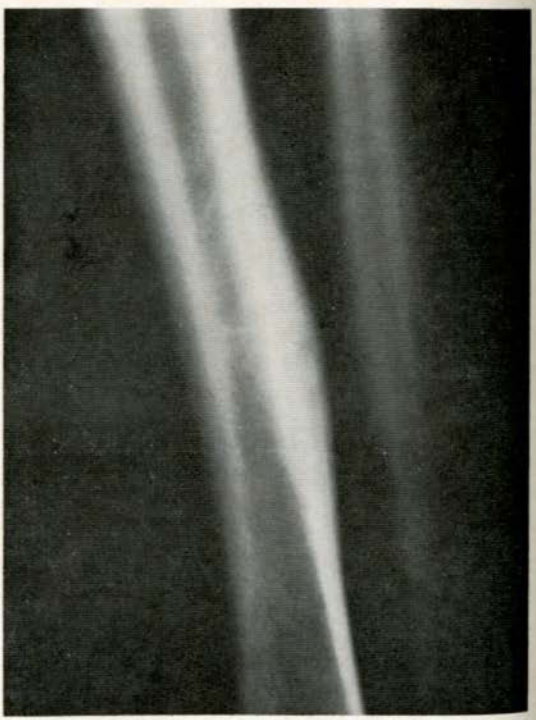

Figure 2. Tomographic view of right leg. □

*From the Department of Radiology, Victoria General Hospital, and Dalhousie University, Halifax, N. S.

Initial Management and Sorting of Trauma Cases*

JOHN HOWARD, M.D., B.Sc.,** and ROBERT F. SCHARFE, M.D., C.M., F.R.C.S.(C)†
Halifax, N. S.

Trauma cases entering an Emergency Department often require speedy action by one physician or carefully planned cooperation between several specialist physicians. Other cases require careful observation before correct therapy can be outlined. Some cases recently admitted to the Emergency Department of the Victoria General Hospital illustrate these points, and a brief review of some selected cases is the purpose of this presentation.

Case No. 1.

A 40-year-old man was brought in by his friends. He sat in the waiting room until a visitor told a nurse that he "looked poorly". He stated that he had been hit across the abdomen by a crowbar. The initial blood-pressure was 80/20 mm. Hg.; five minutes after a rapid infusion of saline, it had fallen to 60/10 mm. Hg., and despite a transfusion of Group O, Rh-negative blood, the pressure was 40/0 mm. Hg., after a further five minutes. Rapid transport to the operating room appeared to be essential, and within thirty minutes of arrival at the hospital his abdomen had been opened. After the removal of approximately 2000-3000 ml. of free blood a large tear of the jejunal mesentery was discovered; following corrective surgery, recovery was uneventful.

Case No. 2.

A 17-year-old male was injured in a car accident. His two brothers had been in the same accident, but after arrival in Halifax three to four hours later, these two died of ruptured spleens and exsanguination. The survivor had signs of intra-abdominal haemorrhage, subcutaneous emphysema on the right side, together with broken ribs. There was no clinical or X-ray evidence of pneumothorax. After insertion of Levine tube, bladder catheter, central venous pressure catheter, and intravenous tubing (all of which are routinely indicated in cases of serious trauma), he was taken to the operating room and anaesthetized. The chest wall had been prepared before induction of anaesthesia, and tubing and trocars were ready; the chest tube was inserted in the interval between induction of anaesthesia and the application of positive intrathoracic pressure by the Anaesthetist. The spleen was found to be ruptured; after splenectomy he made an uneventful recovery.

Case No. 3.

A 65-year-old woman was injured in a car accident, sustaining fractures of the left seventh and eighth ribs. Respiratory difficulty was attributed to obesity, but she was admitted for observation and pain relief. During the next 48 hours she complained of pain in the left upper quadrant; clinical examination was equivocal, but an abdominal angiogram was suggestive of extravasation of blood from the splenic vessels. After splenectomy for intra and extra-capsular rupture of the spleen, she recovered satisfactorily.

Case No. 4.

A 35-year-old woodsman was injured by a falling tree. Examination two to four hours later revealed the following abnormalities: a compound depressed frontal fracture, together with fractures into both frontal sinuses, posterior dislocation of the left hip, posterior dislocation of the left knee with complete arterial insufficiency distally, a chain-saw laceration of the upper lip, and a facial bone fracture best described as a compound comminuted LeFort types 1, 2 and 3. Intravenous saline was infused, a catheter was inserted into the bladder, and after X-ray investigation, he was taken to the operating room. Reduction of the dislocation of the knee without anaesthesia was impossible.

After induction of anaesthesia, the dislocated knee and hip were reduced by an orthopaedic surgeon. Exploration of the popliteal fossa by a vascular surgeon revealed a complete tear of the popliteal artery and veins. The artery was repaired with a saphenous graft, and pressure from swelling in the leg was relieved by multiple fasciotomies. The circulation of the leg improved, but because the swelling was extreme, the incisions could not be closed; the fasciotomies required packing with dry gauze. During the procedure neurosurgeons first explored the compound skull wounds, and plastic surgeons dealt with the facial injuries.

The wounds of the leg were covered with skin grafts seven days later. The circulation of the leg remained good. Progress appeared to be satisfactory, and prospects for recovery seemed good.

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Case No. 5.

A man's leg was caught in a hoist cable, the leg being squeezed from knee to ankle. A compound wound was evident on the antero-lateral surface of the leg, soft-tissue swelling being extensive. A direct-violence fracture of the mid-shaft of the fibula was revealed by X-ray. It was decided to treat this as a wringer injury. A plastic surgeon opened the anterior compartment of the leg, revealing extensive blood clot, necrotic fat and muscle. The incision could not be closed, but after five days the leg was grafted. The patient made a good recovery.

Case No. 6.

A young woman was stabbed ten times. On admission to hospital there was evidence of considerable blood loss: her blood-pressure was 80/60 mm. Hg. Bilateral haemothorax and hemisection of the lower thoracic cord were the main injuries. After initial resuscitation, thoracic surgeons inserted bilateral chest drainage tubes, and the neurosurgeons explored the haematoma along the spinal cord. Postoperatively there was some residual haemothorax, but she made a slow but satisfactory recovery.

Case No. 7.

A 40-year-old man was admitted following a splenectomy elsewhere. Two days after operation, he became badly confused and violent; due to the injuries and his mental disturbance he was referred to Halifax for investigation. The cause for the mental abnormality was revealed only when his general practitioner informed us that he had delirium tremens.

These cases illustrate some of the problems seen during the initial management of cases of serious injury. In particular, it is not always easy in the Emergency Department to select the appropriate service or specialist for advice regarding further management. The occasional patient has a critical injury, easily localized to one area of the body, which must be treated at once, with study of other possible problems later. Fractures are often obvious, but more often it is the soft-tissue injury which may be important; here, the help of the urologists, plastic surgeons, vascular and thoracic surgeons is valuable. Head injuries are frequently complicated by bony injuries elsewhere, or hidden thoracic or pelvic trauma, and many need plastic and orthopaedic advice for good management. Diagnosis is often easy, but the case of an injury, for example, involving the knee may require the services of surgeons trained in two or even more fields. The importance of good medical advice also must not be forgotten, illustrated here by Case No. 7.

In Summary, the secases illustrate the cooperation required for the correct management of traumatic cases. Obviously one person can manage many of these alone, but we believe that better results are possible if surgeons trained in the different specialties are available and utilized. Optimal care, however, is only achieved if, in the long run, one physician is responsible for the overall care of each patient. □

X-RAY DIAGNOSTIC QUIZ . . . . . page 142

Discussion and Answers

Figure 1: A single Antero-Posterior view of the tibia and fibula. There is very slight cylindrical thickening of the cortex of the tibia over an area which is roughly 7 cms. in length. This subperiosteal thickening is well-organized and does not show any lamination, suggesting that the new bone has been laid down very slowly and in a highly-organized way. There is also a slight narrowing of the medullary cavity in keeping with endosteal new bone formation.

In the absence of any significant history, this localized reaction is quite non-specific and could well be due to trauma, tumour, or even a very old low-grade infection. Further investigation should include tomographic studies.

Figure 2: A tomographic section through this site shows the reaction to be more localized to one area of the cortex and there is also a radiolucent nidus about 1 cm. in its longest diameter. The nidus is situated well within the centre of the cortex where the surrounding periosteal reaction is more dramatic. **This is an osteoid osteoma.** In rare exceptions the reaction may be simulated to some degree by a small cortical abscess of bone or even a more generalized low-grade infection which has undergone a period of systemic antibiotic treatment.

An **Osteoid Osteoma** is the radiological opinion without any significant doubt. This opinion is fortified by the typical clinical history of *pain relieved by aspirin* which is always associated with this condition and further confirmed by the operative and histological findings. Note that the radiological diagnosis was shown only on the tomographic section. □

Angiography in Blunt Abdominal Trauma
With Special Reference to Hepatic and Splenic Injury

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Introduction:

The assessment of organ injury following non-penetrating trauma to the abdomen is a situation frequently met by physicians today. While this assessment is largely a clinical one, radiological and laboratory assistance frequently are necessary for more accurate and earlier diagnosis. For the purpose of this discussion, the organs to be considered are the spleen and the liver. The indications for angiography following injury to the retroperitoneal structures, e.g. kidney, are somewhat different and will be excluded from this discussion.

The patient admitted with the clinical triad of injury, shock and signs of peritoneal irritation requires an immediate assessment with regard to the source and volume of hemorrhage, and its control by supporting measures. Should the hemorrhage be uncontrollable on clinical evidence, it is worse than useless to pursue those laboratory and radiographic examinations which consume considerable time and cause a dangerous delay in implementing definitive surgery.

A proportion of patients with abdominal injury, however, will present with less severe symptoms which will usually include pain, a short period of lowered blood pressure or a gradual fall in blood pressure, and tachycardia. Plain abdominal radiographs in this situation will usually eliminate the diagnosis of a ruptured hollow viscus, but will not provide pathognomonic evidence of the nature of the injury. It is chiefly in this latter group of patients that angiography of the aorta and abdominal visceral vessels can provide a precise diagnosis.

Case History:

Mrs. O. F., a 65 year old white female, was admitted to the Emergency Department of the Victorial General Hospital on the evening of February 4, 1969 after being struck by a car while crossing the street. She had not lost consciousness.

On physical examination, the patient was conscious but somewhat unco-operative and acutely short of breath, complaining of severe pain in her left lower chest. Her left eye was swollen shut and both nostrils were bloody.

Her respirations were 44 per minute and very shallow, her pulse was 120 per minute and regular and of good volume, the blood pressure was 158/98 and bowel sounds were normal. Radiographs of the chest and abdomen at the time of admission showed a Fracture of the 7th, 8th and 9th ribs on the left side posteriorly. The abdominal radiographs were unremarkable. The hemoglobin was 11.6 grams per cent, white blood cell count was 7,650, with a normal differential and the sedimentation rate was 7 mm per hour.

On February 6, 1969, a chest X-ray confirmed the rib fractures and now demonstrated a left-sided pleural effusion or hemothorax. Abdominal radiographs showed an ill-defined area of increased density in the left upper quadrant which was interpreted as representing an intracapsular rupture of the spleen with some intraperitoneal bleeding. At this point, the patient continued to complain of abdominal pain and was diffusely tender with somewhat hypoactive bowel sounds.

On February 7, 1969, the hemoglobin was 10.6 grams per cent, the white bloodcell count was 7,050 and the sedimentation rate was 22 mm per hour. Radiographs of the chest and abdomen were essentially unchanged from those of the previous day.

Coeliac axis angiography was performed on February 7 and showed unequivocal evidence of splenic rupture. (Figures 1 & 2) A splenectomy and tracheostomy were carried out on the same date. A rent was found in the superior pole of the spleen with a large amount of old blood in the region of the tear.

The post-operative course was complicated by a bout of thrombophlebitis in the deep veins of the legs; this responded to conservative therapy and the patient was discharged on March 14, 1969.

Plain X-ray Findings in Hepatic and Splenic Trauma

The diagnosis of ruptured spleen or liver can quite often be made by conventional radiographic techniques if good quality films can be obtained. This requires a chest X-ray as well as abdominal films since rupture of the liver and/or spleen are frequently associated with rib cage fracture, hemothorax, lung contusion or hematoma and diaphragmatic injury. The outline of the liver and/or spleen may appear enlarged because of the contiguous subcapsular hematoma. This results in displacement of surrounding structures, notably the gastric air bubble in the case of the spleen, and the hepatic flexure and stomach in the case of the liver.

*From the Dept. of Radiology, Victoria General Hospital and Dalhousie University, Halifax, N. S.

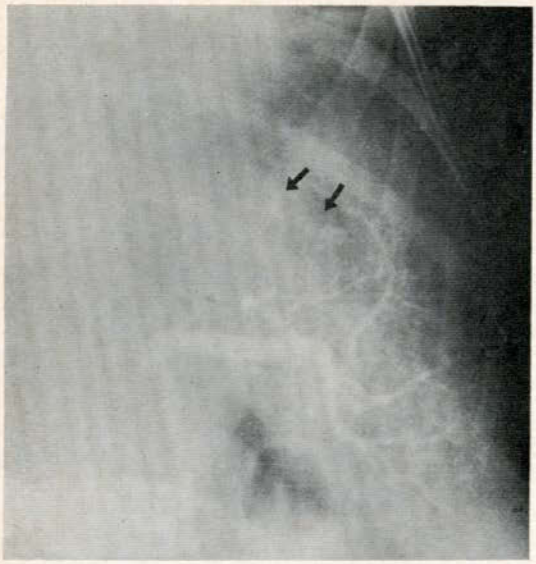

Figure 1. Celiac angiography: the arrows indicate pooling of blood in the spleen in the area of rupture.

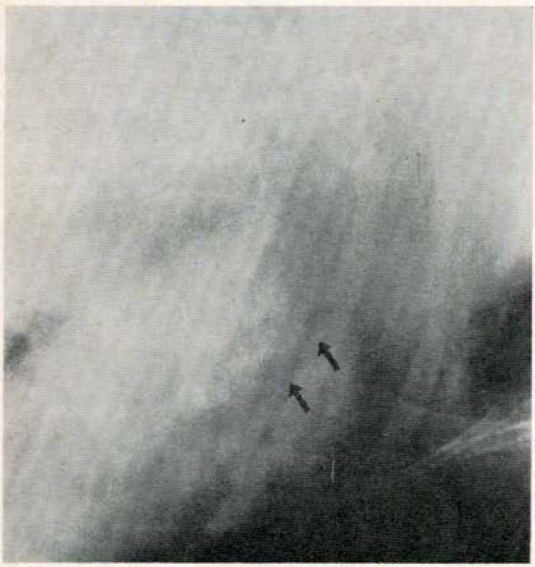

Figure 2. Celiac angiography: the tear in the splenic parenchyma is seen in the capillary phase of the angiogram. Some residual "puddling" of contrast material is still present.

Signs of free abdominal fluid (blood) may be present with rupture of either of these organs. Localized areas of small and large bowel ileus usually related to the organ involved may be seen.

In general, splenic rupture is more often diagnosed by plain abdominal and chest films preoperatively than is rupture of the liver. This is perhaps in part due to the probability that patients with hepatic rupture bleed more massively and hence require emergency exploration earlier than many with splenic rupture, but also because the radiological signs of splenic rupture tend to be somewhat more definite.

Indications for Angiography:

No hard and fast list of indications for angiography following blunt abdominal trauma can be given. Each case must be judged on its particular merits. As already mentioned, it is not reasonable in the presence of rapid or steady deterioration to carry out angiography since exploration and control of hemorrhage is mandatory. However, when associated injuries such as major fractures are present, shock may be due to blood loss at these sites as well as to a hidden intra-abdominal site. In such a patient, abdominal symptoms may be clouded by more obvious and painful injuries. In a patient already developing symptoms and signs of shock, unnecessary or ill-timed abdominal surgery is, of course to be avoided. In this instance, angiography is indicated and will usually provide diagnostic information.

After some accidents, the possibility of intra-abdominal injury may only be clinically apparent after a considerable time-interval due to restriction of the amount of initial bleeding by an intact capsule of either liver or spleen. The diagnosis can be clinched with angiography and hence elective treatment instituted.

Technique of Angiography

The examination is performed by the percutaneous technique of Seldinger. A needle with a cannula is inserted under local anaesthesia into one of the major arteries, usually the femoral, or if this is not possible, into the axillary artery. A flexible guidewire is then inserted through the needle bore and passed into the aorta. The needle is then removed and a flexible catheter with a preformed tip is inserted over the wire. The tip of the catheter is placed in the origin of the coeliac artery and by means of a mechanical pump, 25 to 55 cc of a suitable radiopaque contrast medium is injected and radiographs of the spleen and /or liver circulation obtained in rapid sequence. If the coeliac artery cannot be selectively catheterized, a situation which arises only infrequently, the contrast medium may be injected directly into the aorta. This often is adequate to visualize the organ under study, but the picture is less clear due to overlapping of blood vessels and less dense opacification.

When the examination is completed, the catheter is removed and pressure is maintained by the operator on the site of insertion for a period of time adequate to ensure complete sealing of the puncture site (usually at least ten minutes.)

The examination requires from 30 minutes to 45 minutes to perform. Rarely does it require more than one hour. Blood loss is minimal, usually amounting to less than 50 cc. Infection is virtually unknown. The procedure is almost invariably well-tolerated.

Findings:

The X-ray signs of a ruptured viscus seen on plain films of the abdomen and chest are secondary signs that is, they are produced as a result of the rupture. The signs are therefore non-specific in nature. Angiography, however, allows one to visualize the organ itself, and in most cases, see direct evidence of the rupture.

Although it is not our purpose to demonstrate the actual radiographic signs sought for, it may be pertinent to mention briefly the more important ones in order of their frequency of occurrence.

1. Stretched vessels: Arteries in the liver and spleen normally follow irregular courses. When a mass such as a hematoma develops, the feeding vessels are displaced and stretched over the mass.

2. Distorted or incomplete outline of the organ: This is best seen in the spleen and is visualized during the "capillary phase" when the contrast has left the major arteries and is producing a dense blush in the organ examined. The outline of the actual rupture often appears as a negative filling defect due to the presence of blood clot.

3. Extravasation of contrast material: The contrast material floods an area and does not disappear in the normal fashion but remains for many seconds as a "smudge" on the outline of the organ, indicating leakage of the opacified blood proving the site of major hemorrhage.

4. Arterio-venous fistula formation: This is seen in splenic ruptures only and is recognized when the splenic artery and vein are visualized at the same time. This is presumably due to shunting of blood from the ruptured arterioles in the spleen into the sinusoids and hence to the venous circulation.

5. Organ enlargement: This may be seen on plain films but the borders of the organ examined are much better defined during angiography.

6. Displacement of related organs: This, like No. 5 is a secondary sign but can be seen more accurately angiographically.

Of these signs, the first three are the most frequently seen and are the most valuable pathognomonic signs.

Summary:

Angiography is a reliable method of demonstrating rupture of the liver and/or spleen following blunt abdominal trauma. Its use should be confined to those situations in which time is available for definitive and conclusive diagnosis. The time required is usually less than one hour.

It may be further indicated in patients with multiple injuries in whom unnecessary exploratory surgery should at all costs be otherwise avoided. □

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A Device for the Detection of Metallic Foreign Bodies

A. M. Sinclair, M.D., F.R.C.S.(C)*
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While the position of radiopaque foreign bodies is well indicated by antero-posterior, lateral and oblique roentgenograms, their location at operation can be difficult and frustrating, especially when they are deeply embedded in soft tissue.

In the past five years, three young children have been admitted to The Children's Hospital, Halifax, with a history of having fallen on a needle. In all cases, the needle had penetrated the articular cartilage and had broken off. The first two patients had two arthrotomies each before the needle could be removed. In the third case, the use of the Berman Metal Locator allowed marked reduction in operating time and early location of the foreign body. One segment was in the subcutaneous fat on the lateral aspect of the patella, the other was embedded deep in the articular cartilage of the lateral aspect of the femoral condyle. (Figures I and 2.)

The Berman Metal Locator is an electronic detecting device employing a thin pointed probe for the localisation of metallic foreign bodies. It is a highly sensitive detector of magnetic metals, such as iron and steel, and much less sensitive, though still effective, in the case of non-magnetic metals like brass, copper and aluminum.

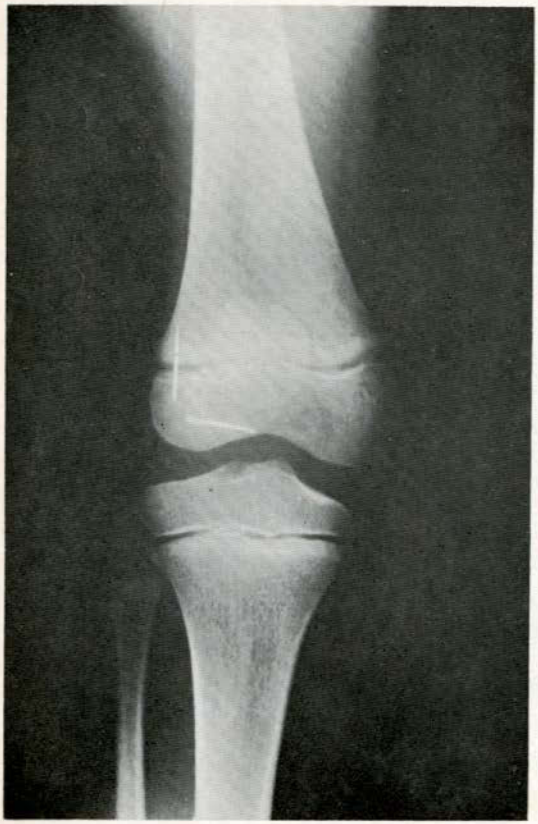

Figure 1. Anteroposterior View of Right knee joint showing broken needle.

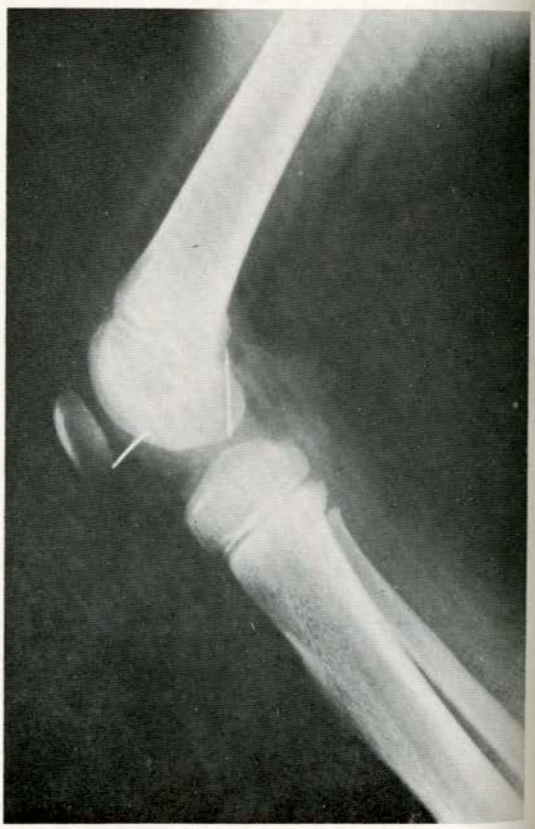

Figure 2. Lateral view of Right knee joint showing needle fragments.

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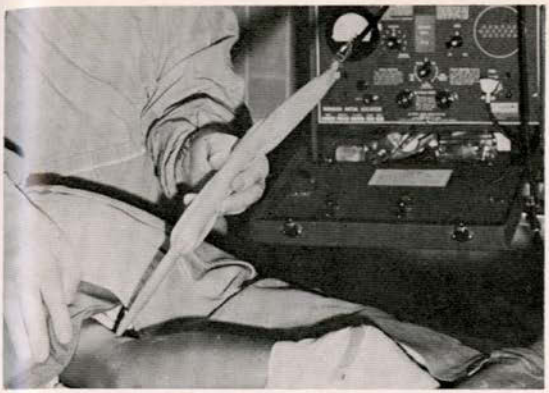

Figure 3. The Berman Metal Locator in use.

The routine for detection of metallic foreign bodies with the locator is as follows. After routine localizing roentgenograms and suitable preparation of the area to be explored, the probe of the Locator, encased in its sterile rubber sheath, is used to scan the surface of the area. (Figure 3.) Through induction, the position of the foreign body is indicated by the deflection of a meter needle and an increased pitch of tone from a loudspeaker on the locator. Intervening bone, cartilage, soft tissue or fluid do not interfere with the localisation. After the incision is made, the probe may be used gently in the depths of the wound, readjusting the sensitivity as the tip of the probe approaches the exact site. The probe does not have the power to extract the foreign body, but merely indicates its position. It has been found convenient to have a member of the anaesthetic staff assume responsibility for the operation of the Locator.

Since the Locator is sensitive to all closely placed magnetic metals, the operative field must be raised sufficiently above the metal operating table to avoid interference with the localisation, and special non-metallic retractors, available from the suppliers of the locator, must be used for the wound.

Further information on the Berman Metal Locator and its accessories may be obtained from: Dumont Laboratories, 750 Bloomfield Ave., Clifton, New Jersey. □

NEW MEMBERS

The Physicians listed below have joined The Medical Society of Nova Scotia between July 1 and August 31, 1969. A most cordial welcome is extended from the Society.

DR. O. A. AUDAIN	Halifax	DR. L. G. LYSAGHT	Berwick
DR. J. W. BEATON	Chester	DR. A. H. MITTON	Halifax
DR. M. R. CLARK	Halifax	DR. DEBORAH MITTON	Halifax
DR. J. C. HYNDMAN	Halifax	DR. K. R. NICKERSON	Halifax
DR. A. E. JOHNSON	Great Village	DR. J. H. L. ROBBINS	Lockeport
DR. G. K. KINI	Yarmouth	DR. E. D. ROSS	Dartmouth
DR. B. W. KNIGHTS	North Sydney	DR. R. D. STUART	Wolfville
DR. G. R. LEGER	Halifax		

116th ANNUAL MEETING - 5th MEETING OF COUNCIL

43rd DALHOUSIE REFRESHER COURSE

November 17, 18, 19, 20 & 21, 1969

ON BEING A STRYKER PATIENT

Twelve weeks on a Stryker Frame is a most enlightening experience, if nothing else. The idea that this is boring, assumed by many, is incalculably erroneous. Of course there are some people who would be bored in the Sistine Chapel or the British Museum, but that's their problem. My problem was to pass through the time from August 8th to October 30th, 1968, and this is an account of my observations, rendered in as objective a manner as a physician-patient can make them, which we all know is pretty subjective.

The blurred events of the first five to seven days are of little interest, and are simply a matter of living from shot to shot, knowing that the heavenly period of oblivion will be followed by one of excruciating pain which only the needle can dispel. "This too, shall pass" is the over-riding philosophy of the Stryker patient, and is never more needed than in the first few days.

After this period of pain follows what can be a most comfortable eleven weeks — that is, if one doesn't count the bowels. The Bowel Movement became the bane of my existence. Life was worth living, the world was a wonderful place, my "Circ-O-Lectric" bed was a bed of down — on the days I had a bowel movement. On the days of constipation — and there were many — a more miserable soul would be hard to find. This is without question the most difficult and harrowing part of being immobilized for a long period. Family doctors should be aware of this and take proper measures to avoid it; if the patient's bowels can be kept open, he should actually enjoy his Stryker experience. Based on my experience, I would recommend a regimen featuring bulk and avoiding fried foods, consisting of bran, fruit juices, fruits, and stewed or raw prunes supplemented by a laxative which softens the stool, such as Magnolax or mineral oil, or one which provides bulk, such as Senokot or Metamucil. I started on a general diet, with Magnolax twice daily, and after the first manual disimpaction on the seventh postoperative day, things were not too bad, producing a successful evacuation almost every day, after one or two false starts. However, after four weeks, I became extremely nauseated, and was forced to give up the Magnolax, resulting five days later in a never to be forgotten experience. It was a long day of suppositories, enemas, more suppositories, more enemas, and finally, a second manual disimpaction. Once I adopted the diet recommended above, supplemented by a Fleet enema if no evacuation had occurred by the third day, life became much more bearable, nay, even enjoyable.

Reading is the answer to the boredom of forced immobilisation. Many visitors commiserated with me over the "misery" I must have suffered, and were invariably surprised, even disbelieving, when I told them I was enjoying my stay. Most of us have too little time to relax or read, and the demands of practice make us feel that we cannot take the time. There's nothing like a spinal fusion to change all that. The great variety of literature available in pocket book form is truly staggering, and I must emphasize the words "pocket book", because handling hard-cover books is very tiring for the bed-ridden. Medical journals are also easy to handle and make a change from fiction, politics and the centrefold of Playboy Magazine.

Exercise is not only possible, but should be actively encouraged from the third week on to ease the transition from horizontal to vertical status. Patients should be told about muscle atrophy and encouraged to keep this to a minimum through isometric and isotonic exercises. It is very easy to do quadriceps exercises by lifting the heel, tightening the patella and holding the position for a count of ten. I would do this every two hours, alternating legs until I was exhausted. Another exercise I found worthwhile was to push the abdomen out as hard as possible, holding for a count of ten. Arm exercises should, of course, be isotonic rather than isometric. A special effort should be made to instruct patients in these exercises, and the physiotherapist will be glad to check the patient regularly to assist him in carrying them out.

As far as hypnotics and tranquillizers are concerned, I found Valium to be the drug of choice for its muscle-relaxing and sedative effects, while Mandrax was, for me, the most effective hypnotic. After trying several different hypnotics, I found Mandrax to be the most effective and to have the least side effects. It was given to me every night, and though I frequently found the capsule on the table beside me when I awoke, I feel its presence was helpful.

Meals are not as difficult to manage as one might think, and I quickly learned what not to order. Soups, for example, are definitely not worth the bother, while sandwiches (imported, of course) are a godsend. While some patients do manage to

eat while lying on their stomachs, I could not manage this position, and gave it up after trying it only once. All my meals were eaten with the plate sitting on my chest, and this is much more difficult in appearance than in actual performance.

I had two signs ordered for my door, which, though only partially effective, I fervently recommend. The first was a "No Smoking" sign, since, as a non-smoker, I find the odor of cigarette smoke most distasteful. The unthinking visitor can leave for the fresh air of the outside world, but the poor miserable prisoner is left behind to breathe the fouled air of his cell. I dissuaded the smokers to the point of being positively insulting — and with good results.

The second essential is a "No Visitors" sign. One tires very quickly while on a Stryker, and long visits can be painful: I shudder to think of the situation that might have developed had I had "open house". As it was, most visitors stayed only a short time and were a welcome change in the day's routine.

These are a few observations from my three months on a Stryker frame. They brought home to me the point that the Family Doctor can do a great deal more to keep the patient more comfortable while the cure is taking place. The patient will not get depressed or despondent if he is kept occupied, given things to do and, last but not least, assured of a "moving experience" regularly. □

M.E.B.

HEALTH PROFESSIONS AID CANADA GAMES

A 400-strong medical and paramedical team, including doctors, nurses, physiotherapists, St. John Ambulance personnel, armed forces medics and first-aid specialists spent a busy ten days behind the scenes of every sports event during the recently completed Canada Games in Halifax-Dartmouth.

Dr. Joe Cantwell, well-known physician in local sports circles, headed up the voluntary medical team always in attendance at each Games site. His groups, equiped with just about every conceivable aid-facility, provided medical care to participant and spectator alike. The Dalhousie University mens' residence with its Health Services Center became headquarters for the team and was manned by a round-the-clock staff of volunteers. Here minor injuries were treated and facilities were available for observation of an injured participant in case of need. This service was maintained to complement the Emergency Department of the Victoria General. No serious injuries were encountered by the medical team during the Games but athletes were treated for everything from dog and wasp bites to appendicitis. There were the anticipated number of sprains, concussion, bruises, broken bones, abrasions as well as sore throats and ears.

More important, perhaps, was the sight of the "man in white" rushing to the aid of some fallen competitor during a lacrosse match, on the soccer or field hockey pitch, at the track or the pool. Spectators, coaches, as well as the fallen athlete, were quick to realize that sound medical attention was at hand and that if possible the athlete would be able to resume competition. To the athlete, competition was what the Games were all about, and it was because of prompt and efficient medical attention that many were able to continue to represent their province or territory.

Drugs and bandages for the medical teams were supplied by a number of drug companies and their representatives checked the quantity of supplies daily and made deliveries whenever and wherever needed.

It was a full ten days for the volunteer team for as Dr. Cantwell summed it up, "We've done everything for the athletes except deliver them."

Nova Scotia team standard-bearer John MacKeigan, M.D., Halifax, doubled up on Canada Games honors this August when he led his provincial compatriots in official opening and closing ceremonies before Prime Minister Pierre Elliot Trudeau and, then, Governor General Roland Michener and between times crewed his way to a first Games Gold Medal for the province with Soling skipper Hume Wells and co-crewman Mike Oxner.

MacKeigan's craft, with a 2.3 overall competition points-gap showing between Nova Scotia and hard-sailing British Columbia, went well off the mark in the eight mile finals at Bedford Basin but slipped to fifth position and had to work its way back through the front runners to show first again on the last leg. To leeward of British Columbia, the Nova Scotia Soling squeezed out a six-foot lead over their arch-rivals when the cannon signalled race-over in the teeth-clenching exhibition of seamanship. □

Correspondence

MEASUREMENT OF THE DIAPHRAGMATIC CONTRIBUTION TO A BREATH

Dear Sir:

The purpose of this study, which is sponsored by the Canadian Muscular Dystrophy Association, is to find out how much the diaphragm contributes when taking a breath and how much is contributed by the rib cage musculature. The balance between diaphragmatic and rib cage breathing may be affected voluntarily by pushing out or by holding back the abdomen, by tight girdles, bras, belts and also by disease (adhesions, operations), by obesity, pregnancy, possibly by a training in singing or playing wind instruments. We are studying normal breathing as well as disorders.

The principle of the study is Newton's Third Law (Action = Reaction): When we take a breath the rib cage expands, mostly sideways, and increases its circumference and the diaphragmatic action pushes the abdominal contents footwards. This displacement of liver and bowel footwards would make the whole body float headwards if we were in space. On a moveable platform (ballistobed) we also move slightly headwards during inspiration. If sensitive apparati were available we could measure the amount of this headward movement of the whole patient with the bed during inspiration (or footward movement during expiration) precisely and from the amount of such displacement calculate the diaphragmatic activity. However, such an apparatus does not exist and it is unlikely that it can be built in the near future.

We therefore apply a different principle: we compensate the head or footward displacement by having a trolley move in the *opposite* direction to the diaphragm. This trolley is activated by your breathing so that when you breathe in, the trolley moved headward and when you breathe out it moves footward. By now loading the trolley in the correct amount of weight we can fully compensate and abolish the head-footward displacement due to respiration and use the displacement of the trolley for our calculations.

You know that during inspiration the abdomen bulges out. Before we find the trolley displacement we will have to study this abdominal bulge, and how it is distributed over the abdomen. We then calculate its centre of gravity. Together with the information obtained in the phase using the trolley we can calculate the diaphragmatic contribution to a breath.

So far we have found that the diaphragm is responsible for between sixty and ninety per cent of a breath, the rib cage making up the remainder. However these are only preliminary indications and we are not even sure if this is the normal range in all age groups and for the two sexes. Your contribution is invited to help us to get a clearer picture. It will serve as a most valuable background when studying patients to see where and how much they differ from normals.

Please enter your name in our appointment book for a time suitable to you. Allow approximately 45 minutes. Also please feel free to ask us any questions. If you know of any person willing to be studied (particularly someone who might have a disturbed balance of rib cage to diaphragmatic breathing) please let us know and we will get in touch with this person to extend our knowledge.

Thanking you for your contribution, we are,

W. T. Josenhans, M.D.
C. S. Wang, M.D.
R. E. Weaver.

NEW TREATMENT FOR PARAPLEGIA

Dear Sir:

May we draw the attention of your readers to an article in the Journal of Neurosurgery, Vol. 29, August, 1968, Page 113 entitled "Study of Functional Recovery Produced by Delayed Localized Cooling after Spinal Cord Injury in Primates", by authors Albin, White, Acosta-Rua and Yashon.

This article draws attention to the decrease in neurological deficit in spinal cord injuries when localized cooling to the injured area has been administered within a short time after injury. It would appear that possibly some of the permanent neurological changes in the spinal cord are the result of the secondary edema and inflammatory reaction in the cord following trauma. If this can be prevented, or reduced, then a better recovery of neurological function might result. A number of Neurosurgical Centres are now beginning to employ this treatment which potentially would appear to have great promise in the reduction of neurological deficit after spinal cord injury. The Neurosurgical Unit at The Victoria General Hospital is now equipped and prepared to carry out this procedure.

This letter is to specifically request physicians to attempt wherever possible to transport the patient with spinal cord injury to the Neurosurgical Unit as soon as possible after injury. It is generally felt that if the spinal cord can be exposed and cooled within six hours of the time of injury, that the greatest benefits of this type of treatment will follow.

Yours sincerely,

W. D. Stevenson, M.D.,
Head, Department of Neurosurgery,
Victoria General Hospital.

for the control of hostility,
aggressiveness and impulsiveness

a new psychotropic agent

℗ NEULEPTIL

pericyazine

complete
information
upon request

Poulenc

Aspiration During Induction Anaesthesia

Reprinted from the Canadian Medical Association Journal, Oct. 30th, 1965, Vol. 93, page 977.*

A 30-year-old white woman, pregnant for the first time, was admitted to a small isolated hospital staffed by one physician at 10:45 p.m. June 12, 1962. Her expected date of confinement was June 10, 1962. She consulted her physician early in her pregnancy and visited him on eight occasions. She received iron and vitamin supplements. Weight gain, blood pressure and urine were normal on each visit.

Her past medical history was non-contributory. Radiographic pelvimetry was done on June 8, 1962, because of a breech presentation. The pelvimetry was reported as follows: "A single fetus is seen with breech presenting. The fetal spine is on the patient's right. Pelvic measurements are found to be within normal limits; the anteroposterior diameter of the inlet is 12.8cm.; the transverse diameter of the inlet is 12.8 cm.; the anteroposterior diameter of the midpelvis is 12.3 cm. and the transverse diameter of the midplane is 10.8 cm. The sacral curve is concave and the ischial spines are not prominent and no difficulty during delivery is anticipated."

On admission to hospital the patient had irregular uterine contractions and the fetal heart rate was normal. She was given 50 mg. of pethedine hydrochloride (Demerol) and 50 mg. of promethazine (Phenergan) at 11:05 p.m. Four hours later she received 100 mg. of secobarbitol sodium (Seconal) orally and 50 mg. of pethedine hydrochloride and 50 mg. of promethazine intramuscularly. The membranes ruptured spontaneously four hours after hospital admission. At 11:45 a.m. June 13, 1962 (12 hours after admission) she was given 100 mg. of amobarbital sodium and 100 mg. secobarbitol sodium (Tuinal) orally; 50 mg. of amobarbital sodium and 50 mg. of secobarbitol sodium orally at 1:05 p.m. and at 6:10 p.m. Also at 6:10 p.m. she was given 75 mg. of pethedine hydrochloride and 50 mg. of promazine hydrochloride (Sparine) intramuscularly.

At 6:15 p.m. June 13, 1962 (20 hours after admission) a telephone consultation was held with a physician 40 miles distant, as labour was not progressing favourably. At 1:00 a.m. June 14, 1962 (26 hours after admission) and at 7:00 a.m. June 14, 1962 the patient received 50 mg. of pethedine hydrochloride and 50 mg. of promazine hydrochloride. The patient was given an intravenous infusion of 1,000,000 units of penicillin in 1000 c.c. of 5% glucose and water, beginning at 1:00 a.m. on June 14, 1962. Up to this time the fetal heart rate was normal. At 7:30 a.m. the fetal heart was not heard and at 8:30 a.m. (30 hours after hospital admission) the physician decided that the patient should be delivered. She was taken to the case room and "open-ether" anesthesia was administered by a nurse. A left mediolateral episiotomy was done. At this time the physician noticed that the patient was cyanotic. An intravenous infusion of 4 mg. of noradrenaline (Levophed) and 100 mg. of hydrocortisone (Solu-Cortef) in 1000 c.c. of 5% glucose and water was started. A laryngoscope was introduced and mouth-to-tube breathing was performed because no anesthetic machine was available in the hospital. Despite the resuscitative measures, she remained in shock and died undelivered at 11:00 a.m. June 14, 1962, two and one-half hours after the attempted induction of anesthesia.

The attending physician considered that an amniotic fluid embolism was the cause of death. No autopsy was performed.

Decision of Committee on Maternal Welfare

The conclusions reached by the Provincial Committee on Maternal Welfare after a review of the case was as follows: "This was a preventable direct maternal death. No autopsy was performed. The committee considered this an anesthetic death due to aspiration during induction of an "open-ether" anesthetic. The preventable professional factors were as follows: A physician factor was attributed to the radiologist who originally read the pelvimetry films. These films were reviewed by the committee, who concluded that the pelvic inlet measurements were smaller than reported. Other physician factors were the use of excessive amounts of sedation, and failure to transfer the patient with a breech presentation and prolonged labour to a larger hospital where surgical facilities were available. An additional physician factor was the decision to have the nurse anesthetize the patient prior to attempting a breech extraction after intrauterine death had occurred. Once intrauterine death had occurred, labour should have been allowed to proceed until the baby was born to the umbilicus and then an assisted breech delivery could have been carried out. There was a hospital factor in that the anesthetic was administered by an untrained person. This maternal mortality is considered to be ideally preventable under the terms of reference of the Provincial Maternal Welfare Committee and there is no implication of any negligence."

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*This series of articles arranged by an editorial subcommittee of the C.M.A. Committee on Maternal Welfare, and originally published in the Canadian Medical Association Journal, is being reproduced in the Bulletin at the request of The Medical Society of N. S. Committee on Maternal and Perinatal Health, by kind permission of the Editor of the Canadian Medical Association Journal.

Discussion

Radiographic pelvimetry and consultation is mandatory in all breech presentations and delivery should be carried out in a hospital with a well-equipped obstetrical unit.

The radiographs should be reviewed, where possible, by the attending physician. The first stage of labour in a breech presentation should not be longer than with a vertex presentation. In cases where prolonged labour ensues in a breech presentation, the mortality increases. An elective Cesarean section should be carried out in a primigravida with a breech presentation when the mother is over 35 years of age, if there is any degree of pelvic contraction, if the baby is large, if the mother has diabetes or if she has had previous stillbirths. Cesarean sections should be done in the presence of breech presentations more often than in the past.

The excessive use of sedation, as in this case, must be avoided. Obstetrical anesthesia is hazardous and its safe administration requires the skill, ingenuity and experience of a well-trained person. As a cause of maternal mortality, anesthesia ranks third or fourth and the responsibility for administering obstetrical anesthesia should not be delegated to nursing personnel.

Telephone consultation may be life-saving when the physician is working in isolated circumstances. However, whenever possible the consultant should examine the patient before offering his opinion.

Summary

A maternal death was reviewed by the Provincial Committee on Maternal Welfare. The patient died undelivered and no autopsy was performed. The cause of death was considered to be aspiration during induction of anesthesia. The preventable factors are discussed. □

Public Health News

by John Wilson, Health Educator

Anti-Pollution Survey

Two Cape Breton health units of the Nova Scotia Department of Public Health this summer surveyed residences on the Bras d'Or Lakes and the Mira River to determine the condition of their sewage and garbage disposal and water supply.

Dr. N. F. Macneill, Cape Breton South Health Unit Director, said in a letter to residents that these two areas were "our two main recreational summer resorts and tourist attractions" and it was their intention "to help you maintain these resorts as safe areas, free of pollution."

Attached to the letter were a questionnaire and extracts from the Public Health Act and the Water Act in order that "prevention of pollution will be fully understood as an absolute necessity to each individual and to the area in general."

Residential Program in Speech Therapy

A six-week residential program in speech therapy for children with serious defects in speech from all parts of Nova Scotia except the Halifax-Dartmouth area took place this summer at the Convent of the Sacred Heart in Halifax.

Sponsored by the Canadian Rehabilitation Council for the Disabled in cooperation with the Hearing and Speech Clinic in Halifax, the program provided frequent periods of therapy, and supervised homework, as well as a broad range of activities in sports, handicrafts, and recreation.

Staff, in addition to a social worker and speech therapists from the Hearing and Speech Clinic, included a housemother, four houseparents, four senior and two junior counsellors. The Medical Director of the Clinic was the physician on call.

This program believed to be the only one of its kind in Canada, arose out of the lack of trained speech therapists in Nova Scotia and the difficulties connected with transportation and accommodation for children from rural areas of Nova Scotia.

Cleaning Staff Took Course

The first course for hospital cleaning maintenance staff to be held in the province by the Department of Public Health took place during June and July at the Victoria General Hospital.

The course, a series of six classes spaced over a period of six weeks, was directed by Frank Graham, assistant supervisor of public health inspectors, Atlantic Health Unit.

The course covered such topics as the importance of sanitation in cleaning, basic bacteriology, the cleaning of specialized areas such as the operating room and isolation areas, techniques of cleaning planning and the use of materials and machines.

Approximately an average of 50 members of the cleaning and maintenance staff of the Victoria General Hospital attended the course.

Secretariat on Home Nursing

Three public health nurses have spent the summer studying the need for home nursing and home care services in the province.

The three, members of a secretariat set up by the Minister of Public Health Hon. W. A. Donahoe, are: Miss Margaret Brine of the Victorian Order of Nurses and Mrs. Pauline Thompson and Mrs. Elsie Percy of the Department of Public Health.

The secretariat was to determine what additional services would be required if there were to be home nursing and /or home care in Nova Scotia. □

Personal Interest Notes

Dr. M. R. MacDonald has been appointed Administrator of the Victoria General Hospital with effect from June 27th, 1969. Born in Sydney Mines, Dr. MacDonald graduated with his M.D. degree from McGill University in 1938, after prior study at St. Francis Xavier University. After a period of general practice in Glace Bay, he received his Diploma in Public Health from the University of Toronto in 1943. After serving as division medical health officer with the department of public health in Sydney, he was appointed Assistant Medical Administrator of the Victoria General Hospital and Assistant Professor of Preventive Medicine at Dalhousie University in 1951. He is Registrar and Secretary-Treasurer of the Provincial Medical Board.

During August **Dr. Willard O'Brien,** Wedgeport, was honored for his fifty years of service as a general practitioner at a testimonial dinner. A "captain's chair" was presented to Dr. O'Brien on behalf of the two-hundred friends present.

Dr. C. Beecher Weld, recently retired Dalhousie Professor, has received his second award in the Horner's Physicians' Art Salon annual event. His painting, "Fishing Boats", was awarded second place in the Traditional Fine Art section of the Salon, held in conjunction with the Annual Meeting of the Canadian Medical Association.

Congratulations are extended to **Dr. John M. MacKeigan,** crew member of the Soling entry from Nova Scotia in the recent Canada Games. They were successful in winning a Gold Medal for our Province. Dr. MacKeigan was Standard Bearer for the Nova Scotia delegation of athletes at the opening ceremonies of the Games.

Dr. J. F. Filbee has been elected to the Board of Directors of the Atlantic Symphony, Inc.

Dr. J. E. H. Miller has been elected President of the Nova Scotia Council of the St. John Ambulance, succeeding the late Dr. Earl Hiltz, of Kentville. His post of Provincial Superintendent of the St. John Ambulance has been taken over by **Dr. J. H. Haldane.** The new Provincial Surgeon to the St. John Ambulance is **Dr. E. V. Haldane.**

Dr. S. H. Kryszek, Provincial Director of Emergency Medical Services, has just returned from completing the diploma course for physicians in Public Health at the University of Toronto.

Dr. J. McD. Corston, President of Maritime Medical Care Inc, recently announced the appointment of **Dr. J. Kempton Hayes** as Associate Medical Director. Dr. Hayes will work in conjunction with the Medical Director, Dr. A. W. Titus and will be concerned with the professional aspects of M.M.C. and M.S.I.

Dr. Ross Munro Mathews
President C.M.A. 1969-70

Dr. R. M. Mathews, a native of Port Arthur graduated from the University of Toronto in 1933. Today he is a paediatrician associated in a group practice in Peterborough. Dr. Mathews has served the interests of medicine for many years, having been President of the County Medical Society, Chairman of the O.M.A. Board in 1964 and President of O.M.A. in 1966. Community affairs has also been one of his main interests and his contributions have been most noteworthy.

Dr. Mathews will be addressing members of the Society at the luncheon scheduled for 12:30 p.m. Monday, November 17th during the Annual Meeting of The Medical Society of Nova Scotia. He and his wife Barbara are expected to be attending all the social functions thereby giving all members an opportunity to welcome them to Nova Scotia.

Dr. J. S. Robertson, Deputy Minister of Public Health, will join the Canadian Delegation to the World Health Assembly in Boston. The delegation will be headed by federal **Health Minister John Munro.** □

News Flashes

TO ALL PHYSICIANS

Re: PREGNANT Rh NEGATIVE PATIENTS

Rh Immune Globulin is available, free of charge, for use in Nova Scotia. It is supplied in phials of 1 ml. to be injected intramuscularly.

The Criteria, as determined by the Rh Committee, are as follows:

1) Rh negative gravida married to an Rh positive husband and baby is Rh positive.
2) Rh negative gravida who has aborted.
3) Rh negative gravida who suffers an ectopic pregnancy.
4) There must be *no* antibodies in the mother's blood at delivery, abortion, or at time of ectopic pregnancy.

The intra-muscular injection of the 1 ml. Immune Serum Globulin must be given *within* 72 *hours* of the delivery, abortion or ectopic pregnancy.

A repeat injection must be given after each succeeding pregnancy.

The distribution of the Immune Serum Globulin is through the Red Cross in Halifax. All hospitals in Nova Scotia stock the phials for use by the doctors on request.

It is now up to us to protect our patient by using the Immune Serum Globulin so that Rh disease becomes a thing of the past in Nova Scotia.

Rh Committee of
The Medical Society of Nova Scotia

AUDIO-DIGEST TAPE SERVICE

The Kellogg Health Sciences Library announces the inauguration of a lending service of tapes issued by the Audio-Digest Foundation since 1967. The subjects include General Practice, Anesthesiology, Internal Medicine, Obstetrics and Gynaecology, Ophthalmology, Otolaryngology, Paediatrics and Surgery.

The tapes, in cassette form, play at a speed of 1 7/8 i.p.s. on the Sony TC 100-C60, Phillips EL 3312 Stereo or EL 3310 mono types of tape recorders, or their equivalents. Tapes may be borrowed for one week, but extended loan for particular needs can be arranged. The Library has two tape recorders which can be used for listening to the tapes in the library. For out-of-town users, and Hospital Libraries, photocopies of the subject indexes covered by the tapes may be obtained at the usual photocopy rates.

FORTHCOMING MEETINGS

Dalhousie University is offering the following short courses:

General Surgery	October 17 - 18, 1969
Radiology	October 24 - 25, 1969
Refresher Course	November 18 - 21, 1969
Drug Abuse	December 12 - 13, 1969

The College of Family Practice of Canada, Fifth Conjoint Scientific Assembly will be held at Confederation Centre, Charlottetown, P. E. I. from October 23rd. to October 25, 1969

The Joint Annual Meeting and Scientific Sessions of the Canadian Cardivascular Society and the Canadian Foundation will be held in the Chateau Frontenac, Quebec City, October 22 - 25, 1969.

The Medical Society of Nova Scotia
116th Annual Meeting
5th Meeting of Council Nov. 17 and 18, 1969

Dalhousie University Department of Continuing Medical Education.
43rd. Refresher Course. Nov. 18 - 21, 1969.

The 1969 Nova Scotia Oto-Ophthalmological Conference will be held in Halifax, November 20 and 21, 1969.

The American College of Physicians announces the following postgraduate courses:
Office Psychiatry for Internists. Oct. 27-31, 1969.
Mechanisms of Disease and Modern Therapy. Nov. 3-7, 1969.
Nuclear Medicine, Diagnosis and Treatment of Disease with Radionuclides given internally. Nov. 3-7, 1969.

Symposiums will be held in New York:
The Fifth Annual Symposium on Air Pollution and Respiratory Disease. October 23, 1969.
The Pharmacology of Selected Drugs used in Dermatology: Oct. 29-31, 1969. Principles of Action and Uses.
New York University Post-Graduate Medical School Correlative Neuroradiology. Nov. 17-21, 1969.

The Second International Air Pollution Conference of the International Union of Air Pollution Prevention Associations will be held in Washington, D.C., from Dec. 6-11, 1970. The Program Committee invites submission of proposals to present papers at the Conference. Deadline, Jan. 31, 1970.

For more information on any of the above apply: The Nova Scotia Medical Bulletin Office.

News Flashes

1968-69 CAMSI DRUG APPEAL

The 1968-69 CAMSI Drug Appeal is now history. Although the financial statements are not yet available, this year's campaign appears to have been a resounding success.

The appeal began in September 1968 and continued throughout the autumn months mainly on a correspondence level. The co-operation first offered by the World Health Organization failed to materialize, leaving us completely on our own. Through various means, hospitals in the Dominican Republic, Ghana and Peru were contacted, and eight hospitals and clinics in these countries replied: all greatly desired our supplies. This made the final selection of a recipient most difficult.

In January, in a combined meeting of the National Executive and our Executive Director, final selection was made. In answer to his request for assistance, Bishop Thomas Reilly and his organization — Catholic Relief (Caritas) — were chosen to receive our supplies. Three main criteria were used in making this selection. First, a definite need was demonstrated, not only through their direct correspondence but also through impartial personal contact. Secondly, Catholic Relief (Caritas) have been granted permission by the government of the Dominican Republic to import, duty free, supplies for their work in caring for the poor. They also satisfied us that they had adequate means for ensuring proper distribution of our supplies. Thirdly, we were able to arrange transportation for our supplies, free of charge, through Saguenay Shipping Lines, directly to Santo Domingo; this company also contributed containers for shipping our supplies, thus avoiding any possibility of "misplacement" of part of our shipment.

The actual appeal for drug supplies proved most fruitful. Thirteen of the drug firms contacted agreed to participate in our appeal. Although this number may not seem too great, the actual size of their contributions is encouraging. At this time allow me to personally thank the firms which participated in our appeal: Abbott Laboratories Ltd.; Ciba; Desbergers; Elliot Marion; Frosst; Meade Johnson; Merck, Sharp & Dohme, Navapharm; Parke Davis & Co.; Smith, Kline & French, Ltd.; Syntex; John Wyeth & Brothers (Canada) Ltd.; and Warner Chilcott Co., Ltd.

Eight medical schools co-operated in our campaign, including Dalhousie, McGill, University of Toronto, Queen's University of Western Ontario, University of Manitoba, University of Saskatchewan, and the University of Alberta. Through the combined efforts of these schools and with the co-operation of the pharmaceutical firms, the total shipment amounted to in excess of 12 tons, more than double the amount collected in last year's campaign. The supplies were shipped from Halifax March 21 and were scheduled to arrive in Santo Domingo April 4, 1969. They were transported aboard the Saguenay vessel *Sun River*.

17 KILLAM SCHOLARSHIPS AWARDED

Seventeen postgraduate medical scholarships, each worth between $1,000 and $2,000 per year, have been awarded for 1969-70 by the faculty of medicine at Dalhousie University here.

Ten of the recipients are from Nova Scotia, three are from New Brunswick, two from Newfoundland, one from Prince Edward Island, and one from Ontario.

The scholarships, established by the late Mrs. Isaac Walton Killam, are for Canadian medical graduates who are doing advanced study or research and likely to contribute to the advancement of learning or to win distinction in a specialty.

Scholarship recipients are: Dr. Calvin Ramsay Avery, Grate's Cove, Nfld.; Dr. Leslie William Caines, Corner Brook, Nfld.; Dr. Alexander John Murchison, Charlottetown, P.E.I.; Dr. John Paul Schaefer, Dunnville, Ont.; Dr. Donald Arthur Morgan, Fredericton, N.B.; Dr. Windston Spencer Parkhill, Chipman, N. B.; Dr. William Hutcheon Lenco, Moncton, N.B.; Dr. Eldon Raymond Smith, Hammonds Plains; Dr. Clarence Herman Felderhorf, New Glasgow; Dr. James Robert Rae, New Glasgow; Dr. Paige Leroy Emenau, Brooklyn, Queen's County; Dr. Ormille Aubrey Hayne, Country Harbor; Dr. David Bruce Fraser, Halifax; Dr. Carleton Lamont MacMillan, Baddeck; Dr. Laurie Keith McNeil, Dartmouth; Dr. Herbert Lawrence Vallet, Halifax; and Dr. Clary Henry Townsend, Grand Pre.

News Flashes

HIGHWAY SAFETY

An important component of safe driving is the condition of tyres, the motorist's only contact with the road.

The Canada Safety Council, in co-operation with the Rubber Association of Canada, is conducting a major national Tyre Education Campaign aimed at reducing the possibility of accidents due to tyre failure. The campaign is comprised of sections covering automobile driving during the season when the roads are clear, trailer tyres, and winter driving. The importance of safe tyres for safe driving is so great that inclusion of a thorough tyre inspection in provincial car check programmes is recommended.

The CSC and RAC appeal to all people concerned with safety to support the Tyre Education Campaign, thus contributing to safer driving and a reduction in needless accidents.

PASSING SMILES

Several members of a women's drawing-room working party were chatting with a little daughter of their hostess. "I suppose you are a great help to your mother," said one. "Oh yes," replied the child: "Today it's my turn to count the spoons after you've all gone home."

A middle-aged woman lost her balance and fell out of a window into a garbage can. A passing Chinese man who was passing remarked: "Amelicans vely vasteful. That woman good for ten years yet."

(From *Health Rays*, Nova Scotia Sanatorium)

ANNOUNCEMENT

The County Home Motel in Kentville announces the opening of a new, modern Nursing Home and Senior Citizens Quarters. The facilities of both sections are modern, up-to-date and especially designed for the occupants.

Qualified nursing care is available to all the guests.

For further information:-
Contact:—J. N. Craik, 655 Park St.,
Kentville, N. S.

VICTORIA GENERAL HOSPITAL,

A $988,403 federal hospital construction grant for the Victoria General Hospital has been approved by the Department of National Health and Welfare, Ottawa. Announcement of the grant's approval was made by the Hon. Allan J. MacEachen, Minister of Manpower and Immigration, on behalf of National Health and Welfare Minister John Munro.

The grant will assist with costs of an extensive renovation programme designed to have the original hospital building harmonize with the new Centennial Wing. The renovations include the installation of a new lighting system, floor repair, the replacement of the present electrical distribution system, and improved heating and plumbing systems. All areas of the building are to be redecorated. Renovations are expected to be completed by April, 1970.

HELPFUL HINT

The average time it takes a train to pass a railway crossing is at least 10 seconds — whether your car is on it or not.
(From *Health Rays*, Nova Scotia Sanatorium)

News Flashes

BETADINE SELECTED TO KILL MOON ORGANISMS

To protect the earth and its inhabitants from possible contamination by "moon bugs", Betadine was used by U. S. Navy frogmen to decontaminate the outside of the special decontamination garments worn by the astronauts during transfer to isolation, Purdue-Frederick Company announced recently. In addition, Betadine was used to spray the spacecraft hatch and interior, while the raft used for transfer to the helicopter was sunk at sea.

C.M.A. RE-ORGANIZATION

CMA General Council met in Toronto on June 9th, 10th and 11th, at which time it was approved to introduce the Council System as a replacement for the Committee System.

Nova Scotia Division representatives to the five CMA Councils are: —

1) Council on Medical Education — Dr. D. C. Brown
2) Council on Community Health Care — Dr. P. C. Gordon
3) Council on Provision of Health Services — Dr. J. A. Smith
4) Council on Personal Services to Physicians — Dr. C. L. Gosse
5) Council on Economics — Dr. K. B. Shephard

It was planned that the first meetings of these Councils would occur in September when plans for the years activities would be laid. Each of the above-named representatives will be reporting to the 5th Meeting of Council of The Medical Society of Nova Scotia scheduled for November 17th and 18th, 1969 at the Hotel Nova Scotian. These reports should be interesting indeed as many significant events have occurred in the past year. Members are encouraged to make plans now to attend the Annual Meeting this coming November.

ESTIMATES OF SMOKING COSTS

In commenting upon a study of the estimated costs of certain identifiable consequences of Cigarette smoking, The Minister of National Health and Welfare, The Honourable John Munro stated on June 18th "In recent weeks, in testimony given to the Parliamentary Committee on Health, Welfare and Social Affairs, we have heard a good deal about the economic importance of tobacco production and cigarette manufacture and sale. It is reasonable for such testimony to be given. However, there are various ways to look at this health problem and I thought it advisable to comment on the other side of the issue — the costs of cigarette smoking in economic as well as other terms — and make available data which indicate the magnitude of these costs. Our estimates suggest that dollar costs are of the order of $400,000,000 per year."

Physicians services for disease attributable to smoking amounted to $2,078,000 with an additional $14,000 for treatment of fire injuries. Hospital services for the two categories accounted for $27,368,000 of the total, while loss of income from hospitalization or other disability accounted for another $102,470,000. The loss of future income resulting from deaths due to cigarette smoking accounted for the majority of the remainder of the estimated cost, being calculated at $246,194,000.

FREE SICKROOM LOAN

There are over 300 pairs of crutches belonging to Red Cross which have been loaned out and which have not been returned.

"This is a serious matter", said the Director of Red Cross Nursing Services. "We urgently request that if you have not returned crutches you obtained through the Red Cross Loan Cupboard to please do so. There are others in need waiting to use these crutches. If you have neglected to return any other pieces of Red Cross equipment on loan, we would appreciate your co-operation.

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