

THE NOVA SCOTIA MEDICAL BULLETIN

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The Physician in a Narcissistic World

There has been a noticeable increase in the number of "free" magazines appearing in the mail of most doctor's offices, usually meant to reach the waiting room and thus the public. The nurse or receptionist is often delegated to decide whether the material reaches the patient waiting area or the garbage can. Further perusal of these magazines might indeed make physicians ponder the society they wish to serve. While narcissism is not new, it reaches extravagant heights in some of the latest periodicals. They are slick, well presented, colourful, health oriented, with advertising appealing to and even glorifying the well-to-do yuppie. They suggest appearance is the thing, if not everything.

Articles on "How To Love Your Body", the pros and cons of breast enlargement, the self-image of the body, are all probably interesting and useful, and even hard to condemn. But the overall impression, especially taking into account the advertising, is of a self-interested, self-concerned, appearance oriented, style conscious, superficial reader. Especially in urban areas this type of reader or patient is altogether too common. The values of self-indulgence are ascendant and we see these overly concerned patients daily in our practices.

How much of our practice time is taken up in cosmetic concerns, anxiety over hair loss, minor nevi, over-use syndromes in sports medicine, concern about body odour, inappropriate anxiety about weight, or explaining that the latest nutritional supplement is not the solution to all the health problems? Of course, to differentiate between good preventive medicine, and the promotion of mental health, and the over concern for self is very difficult.

For instance, psychiatry may define love and meaning in life as the fulfillment of the patient's emotional requirements, and rarely is the patient urged to subordinate his needs and interest to those of others, to someone or some cause or tradition outside himself. Recourse to spiritual values is more difficult in a psychiatric situation with a society that has less faith and is open only to a very individualistic attitude to God.

It is no wonder that our politicians and indeed large numbers of our patients are suspicious of the dedicated professional, "workaholic", or a profession that might claim to have objectives and goals that would benefit the overall health care system, rather than their own self-gratification (witness the understanding regarding extra billing). A "puritan" attitude is no longer understood, let alone accepted. The culture of narcissism leaves us in a precarious position as our political leaders try to convince us to assume the gatekeeper role in the medical system. Concern with the self means there will be a "bottomless pit" of psychiatric or psychological need. There is no end to the consultations needed to achieve the ultimate in health and perfection portrayed in our advertising media or so-called above mentioned health magazines. Over con-

cern with sexual gratification, maintenance of youth and failure to cope with aging are all part of the increasing demands made on the profession.

Christopher Lasch, in *The Culture of Narcissism* has much to say about the failure of medicine and our social system to meet the needs of the old. "... irrational terror of old age and death is closely associated with the emergence of the narcissistic personality as the dominant type of personality structure in contemporary society. He needs to be admired for his beauty, charm, celebrity or power, attributes that usually fade with time."

Free medical consultation has allowed the overconcern with self to flourish. We in fact probably depend for a good portion of our incomes on the concern of the healthy that they might not stay that way. Although it sometimes takes a fair amount of expertise to sort these complaints from the truly sick, it really can change the basic content of practice. One can deal with multiple trivial complaints in the time it might take to fully examine or treat a really ill person, and who can argue or indeed resist the increased income, based on the fee for service basis? Remaining in the

office to deal with the lucrative type of patient is much more financially rewarding for many practitioners than treating hospitalized patients, the sick at home or in special care homes, or even than doing research or teaching. Worse still, as we are using our expertise to sort the ill from those who are merely over-concerned with self, many others are moving into many of the areas that physicians once played a large part. These include the physiotherapists, psychologists, chiropractors, nutritionists, social workers, to mention only some of the hundreds of new allied health personnel in the system. The concern of the public with their health has created a vacuum which we or these people will never fill. Ever increasing numbers and types of people attempting to meet ever increasing needs however has its limits.

It will be difficult to set those limits in a society where individuals have more than a healthy selfworth. We probably cannot combat the whole social evolution that leads to this unhealthy self-concern, but we should remain aware of the part it plays in our practice, and the effect it has on our health care system.

J.F. O'C. □

Notice Re: By-Law Amendments

The By-Laws of the Medical Society stipulate that amendments to them may be proposed at an Annual Meeting of the Society provided they are published in the Bulletin at least one month prior to the Annual Meeting.

The following amendments will be presented by the By-Laws Committee at the 1986 Annual Meeting of the Society.

PROPOSED

THAT Article 5.1.1 of the amended By-Laws of The Medical Society of Nova Scotia be amended by rewording 5.1.1 as follows:

Any group of ten or more members of the Society who are primarily interested in any particular aspect of the science and/or practice of medicine may be recognized as a Section of the Society by making formal application to the Annual Meeting of the Society, providing such application is endorsed by the Executive Committee of the Society.

EXISTING

5.1.1 Any group of ten or more members of the Society who are primarily interested in any particular aspect of the science and/or practice of medicine may be recognized as a Section of the Society by making formal application, providing such application is endorsed by the Executive Committee of the Society.

PROPOSED

THAT Article 15.1 of the amended By-Laws of The Medical Society of Nova Scotia be amended by rewording 15.1 as follows:

Until changed by resolution at an Annual Meeting of the Society shall be located at Halifax-Dartmouth, as defined in the Halifax-Dartmouth Regional Development Plan. □

EXISTING

15.1 Until changed by resolution at an Annual Meeting of the Society the Office of the Society shall be at Halifax.

Adult Hip Disease: New Overview of Diagnosis and Management

William D. Canham,* M.D., F.R.C.S.(C),

Dartmouth, N.S.

The orthopaedic surgeon must think of this problem in terms of the age of his patient. The young adults with hip disease often present with a different etiology and certainly demand different approaches in treatment.

THE PROBLEMS OF THE YOUNG ADULT

A. What Patients Inherit from Childhood that Leads to Early Deterioration In Adulthood.

The young adult with hip disease is often a patient who presents with a long pediatric history. He has often received treatment for congenital dislocation and acetabular dysplasia from infancy or has been treated since adolescence for Legg-Perthes' disease or for a slipped capital femoral epiphysis.

These three uncommon diseases of childhood can and do present as early osteoarthritis in the adult. The diseases as noted by the figures in Table I are indeed rare. The question in my mind, however, is how often a lax hip joint in an infant is neglected and how often does it result at the end of growth in a less than competent acetabulum (acetabular dysplasia) which places very high loads in kilograms per square centimetre on the cartilage surfaces of the articulating hip joint. The result is easy to appreciate — early adult osteoarthritis.

TABLE I

Legg-Perthes' Disease (Osteochondrosis of the Femoral Head)

Facts: Most frequent age group (age 3 to 11 years);
4 times more common in boys;
bilateral in 15%.

Slipped Capital Femoral Epiphysis;

Facts: Most frequent age: Older children and adolescence;
more common in boys;
30% bilateral;
associated with tall thin children;
associated with the obese Frölich type of adolescent.

Legg-Perthes' disease we all studied in medical school and the simple facts about this condition are presented in Table I. The problem is a vulnerable blood supply in the immature femoral head, probably because the epiphyseal plate does not allow blood to pass up the neck and into the femoral head. I suppose

all too often a sprain, viral synovitis, or any factor that results in a mild effusion in the joint capsule of a child or adolescent, could compress and thus block the blood supply through the periosteum and the result is an infarcted femoral head. The "dead" head can repair itself slowly (several months) but soon crumbles under repeated cycles of loading until it flattens. The head ultimately regains its blood supply but often never its spherical architecture. The flat head quickly goes on to osteoarthritis in the adult and presents as a major problem.

There are excellent techniques for treating this problem which are conceptually simple. Dr. Petrie, whose son is known to many of you as Dr. David Petrie, taught us many years ago to simply abduct the hip and keep the dead, weakened bone in the dome of the normal acetabulum and in several months it would recover its blood supply. Its shape would be maintained by the natural mould of the acetabulum. This approach has been used throughout the world by many clinicians, using a variety of abduction splints. It is effective but you must find the condition before the head of the hip flattens. Nature is helpful as these children have pain long before architecture is disrupted, and the pain is often in the knee.

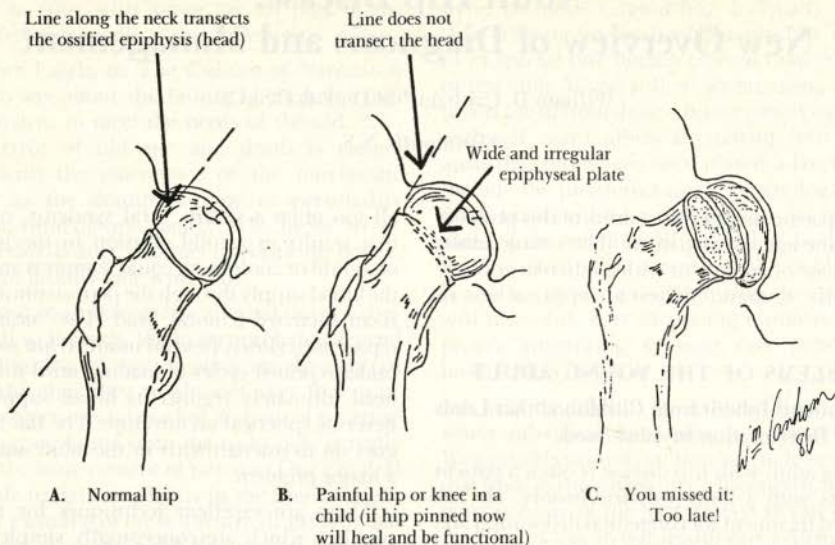
ANY CHILD OR ADOLESCENT WITH KNEE PAIN HAS HIP DISEASE UNTIL PROVEN OTHERWISE

The final disease in the childhood triad is a slipped capital femoral epiphysis. Overweight children often present so much weight to the head of the femur (3 times the child's weight in mid stance) that the head simply shears off at the epiphyseal plate and slides back. The altered joint mechanics in a bad slip quickly result in osteoarthritis (see diagram).

REMEMBER: KNEE PAIN IN THE OBESE ADOLESCENT IS A SLIPPED CAPITAL FEMORAL EPIPHYSIS UNTIL PROVEN OTHERWISE. (X-Ray evaluation may require several views — do not accept a normal report; talk to your radiologist — early diagnosis is subtle at x-ray and requires good views). Study the simple line drawing.

The hip joint, like any other joint, can become infected and this is particularly true in children. This diagnosis is an emergency and any child with an irritable hip must see a surgeon as soon as possible. These children often have few, if any, systemic signs. Treatment gives excellent results — delayed treatment is disaster.

Orthopaedic Surgery, 45 Alderney Dr., Dartmouth, N.S.



I have left two entities until last. The first is juvenile rheumatoid arthritis. This diagnosis should never be considered in children until the above mentioned entities have, with certainty, been ruled out. The final condition that destroys hips in the young is T.B. This I have seen only as a contributing problem in hip disease in adults on one occasion, and this was in an immigrant from the far east. We should take some pride in the effectiveness of the past generation of our colleagues whose efforts allow us to dismiss this previously crippling condition with such ease.

B. The Acquired Problems in the Young Adult

This is the story of trauma and avascular necrosis. Hip trauma in the young adult is probably the major cause of hip disease in this age group. It is more common than the rare childhood diseases that play a role in early osteoarthritis in adults, as it is related to motor vehicle accidents. The occupant of a motor vehicle who is unrestrained by a belt, slides forward, hitting his knee on the dash, and often dislocates his hip posteriorly. In some cases, this injury is accompanied by an acetabular fracture that roughens the articular surface of the joint, and this results in accelerated wear and early arthritis.

A dislocated hip is a Medical Emergency. Why?

10% — sciatic nerve palsy

10% — will develop avascular necrosis of the femoral head, within 2 years.

(These figures can be reduced by early reduction).

Vascular necrosis of the femoral head has many causes and these causes are presented in Table II. Certainly trauma and alcohol, which are both related social evils, are responsible for the majority of cases.

This is a devastating disease in the young adult because available treatment is not satisfactory. Osteonecrosis, it must be emphasised, is bilateral in 40-80% of the cases not involving trauma. This information is valuable to the orthopaedic surgeon as there is good evidence to substantiate the effectiveness of surgical decompression of the femoral head in the contralateral hip. This can be done prior to collapse of the head and loss of its sphericity, saving at least one hip. The other hip in the young patient could be fused if the likelihood of bilateral disease was slight or treated by early total hip replacement. The latter being an unsatisfactory prospect due to the poor 'track record' of hip replacements in young adults and the former being unsatisfactory due to the problem of bilateral disease. We do not yet have a good solution for avascular necrosis.

TREATMENT

The young adult with a destroyed hip from whatever cause presents a difficult treatment problem. The standard treatment a generation ago, when T.B. destroyed many hips, was hip fusion. This is still a reasonable and all too often underutilized approach. Patients with a fused hip can walk with no perceptible limp and are troubled to a minor degree by needing to sit at the edge of a chair. Foot-care, however, including putting on shoes and socks, is difficult.

What About Total Hip Replacement in the Young Adult

One quarter century of total hip replacement experience has given the orthopaedic surgeon powerful techniques to deal with this problem. The studies of

the operation's success in the young, however, have not been optimistic. Critics of my last statement would point to new state of the art devices as viable solutions. These new hips incorporate new technology and at this point optimism is present.

TABLE II

Osteonecrosis: Etiology	(Avascular necrosis)
1. Congenital dislocation of the hip.	
2. Legg Perthes' disease.	
3. Slipped capital femoral epiphysis.	
4. Hyperlipidemia: Associated with	
— steroid therapy (renal transplant patients).	
— alcoholism.	
— idiopathic hyperlipidemia.	
5. Hyperuracemia.	
6. Circle cell disease.	
7. Gaucher's disease.	
8. Trauma (dislocated hips/fracture of femoral neck).	
9. Caisson's disease or deep sea diving.	
10. Irradiation.	

40% to 80% are bilateral if not traumatic

How are 'State of the Art' hip prostheses different from those of a decade ago? Let us look quickly at the design evolution.

The 1950s was when 'orthopods' first began to use a hip prosthesis in large numbers. This was the Moore arthroplasty and it is a metal device that replaces the femoral head. It has served and still continues to serve us well. It is now dated and some would say outdated. It is useful in patients in their 70s and 80s with hip fractures but never should be used in younger people. This device was placed without bone cement and bony ingrowth was supposed to hold it in position. It probably did so rarely but many of these hips functioned well and were the inspiration for early studies of bony ingrowth initially carried out in Canada by a great orthopaedic surgeon, Dr. Ian McNabb. He is best known to many of you for his work on the lumbar spine and for his very good and readable book called *Bachache*. The late Sir John Charnley, who pioneered the use of methylmethacrylate (bone cement), recommended cementing in the Moore's prosthesis due to its tendency to loosen.

Sir John went on to develop his own prosthesis and, coupled with a cup of high density polyethylene, he developed the total hip arthroplasty. For this he was knighted by the Queen. This cemented arthroplasty was probably the most successful design but not the best seller due to North American market problems. Its design problems became apparent with time. The cement mantle could not withstand years of wear, and often cracked and loosened. Some of the early THR stems simply did not have enough metal and broke with use. Newer designs considered these problems

and used heavier stems and wedged the metal tight to the bone with cement — a secondary support.

The use of cement became more sophisticated, with the air being centrifuged out of the cement, with a resultant increase in its strength. Some researchers recommended no cement and porous-coated their metal. This type of hip now makes up a large percent of total hips done in North America because cement can be a significant problem. These newer devices all try to solve old problems but are creating problems we do not appreciate as yet. There is a lack of evidence about performance of contemporary designs in young adults. These answers will be available probably in as little as five years. We may then with a clear conscience do hip replacements in young adults, but at this point a fusion may be a better choice.

HIP DISEASE IN THE MIDDLE AGED AND ELDERLY

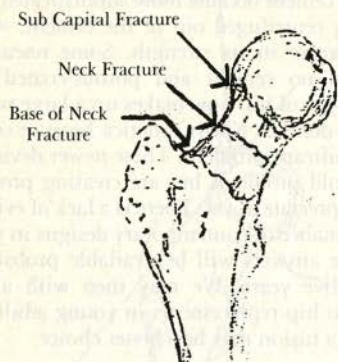
This is the story of hip damage by osteoarthritis and to a lesser degree by rheumatoid arthritis and hip fractures. The elderly suffer from an epidemic of pathological fractures of the hip, precipitated by trivial trauma to osteoporotic bone. Hip fractures are easy to classify and understand. They fall into two general categories. (Review the line drawing)

Fractures of the femoral neck

These may be just beneath the head (sub-capital), in the neck (femoral neck fractures), or at the bottom of the neck (base of neck fractures). They may be a simple crack (undisplaced) or they may be separated (displaced). The head of the femur dies in 15% of undisplaced femoral neck fractures (osteonecrosis of the femoral head) and in 30% of well treated displaced femoral neck fractures.

The treatment is also simple. The patients up to age 70 should be treated with reduction and fixation (*not a prosthesis*, if there is no arthritis). Elderly and debilitated patients in their 70s and 80s, with osteoporosis and senility, can be treated with a hemiarthroplasty (Moore's). They also can be treated with reduction and fixation and in the opinion of Dr. Hunter of Toronto who has researched this problem this may be the better way. He states there is a high mortality rate with hemiarthroplasty. The 15% and 30% who go on to develop osteonecrosis and the need for repeat surgery, leads to debate about this view. It should also be suggested that the tendency for surgeons to place a hemiarthroplasty only in elderly patients with a limited life expectancy, may have influenced the results of his studies. There is a place for the hemiarthroplasty (Moore's prosthesis) in the elderly with a limited life expectancy, as a simple and inexpensive solution to the problem of a displaced neck fracture. There is no place for this in the younger patient who should be reduced and held by fixation.

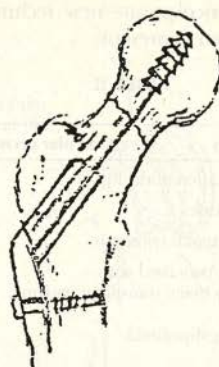
HOW THE HIP BREAKS



Undisplaced 15%
Avascular Necrosis



Displaced 30%
Avascular Necrosis



Hip Screw
Fixation

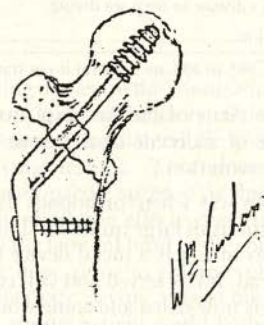
FEMORAL NECK FRACTURES



Stable
Early Weight Bearing



Unstable
Delayed Weight Bearing



Hip Screw
Fixation

INTERTROCHANTERIC FRACTURES FEMUR

AVASCULAR NECROSIS NOT A PROBLEM

The Intertrochanteric Fracture

This fracture between the greater and lesser trochanter and not involving the femoral neck is the second major fracture in the elderly hip. The blood supply to the femoral head is not affected and as a result avascular necrosis does not occur. These fractures are of two types.

The first is a stable, simple crack fracture which may or may not be displaced and requires reduction and fixation only. There are only two major pieces and once held together with fixation the patient can walk with no problems. (The patient may walk immediately)

The second is an unstable intertrochanteric fracture. This fracture can be fixed and held by a hip screw into proper position. However, there is not sufficient undamaged bone to help transmit weight and it must be carried by the internal fixation device. This patient, if allowed to weight bear, will cut the hip screw out

as it has sharp edges. (A management problem in the elderly with organic brain syndrome).

What do you do with a middle aged or elderly patient with a destroyed hip? (destroyed for any reason). The answer is easy — a Total Hip Replacement. It is a good and serviceable procedure as it should serve the patient throughout the remainder of his or her life.

There are many studies about serviceability. Expect 10 years from a total hip in a patient beyond 50 years of age. (Newer designs may give much longer service). Revisions are now possible on early failed total hip replacements and are giving a second chance to many. We do not know how long these will last as studies are difficult to interpret but I am very optimistic with the growth in experience in this area of surgery and the improved capacity of our new technology. Progress is being made.

This concludes a brief overview of adult hip disease. □

The Physician's Approach to the Knee

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APPROACH TO THE KNEE

Knee problems are a very common part of practice, especially emergency work or Family Practice. The knee is a system which gives hinge-like movement and also rotatory movement as it supports a force, while walking, two to three times its body weight. Support for the joint derives from the physical shape of the bones, tough ligaments stretching across the joint, and muscle units which actively prevent dislocation. This fairly complex system can be simplified to allow a fast thorough examination and diagnosis.

Essential to discovering the source of the patient's complaint is, of course, the history. As always, the

factors will also be elicited. Often the disability to the patient, and our knowledge of the natural course and the demands placed on the knee will determine treatment.

The physical examination supports suspicions from the history. Specific tests for the common problems and their usefulness will be discussed. Although the knee has many components, it can be broken down to four main structures to be checked on physical examination: 1) synovium, 2) menisci, 3) joints/compartments, and 4) major ligaments. Problems can originate with one or more of these components. (See Figures 1 and 2)

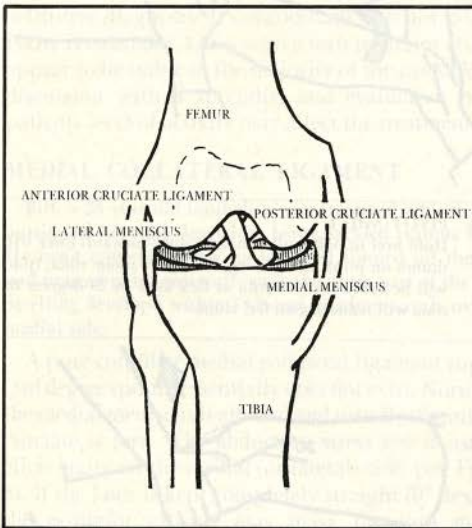


Fig. 1 INTERNAL STRUCTURES OF THE KNEE

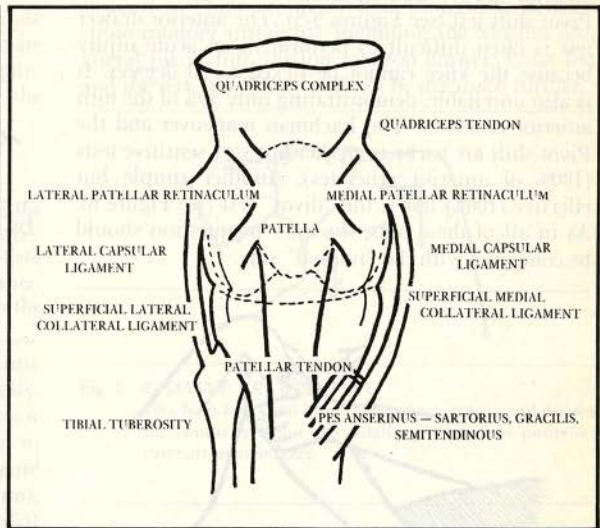


Fig. 2 LIGAMENTS

answers to "what, where, when and how" will give most of the information. What is the complaint? (pain, swelling, clicking, locking or instability). Where is the problem specifically? When did the problem originate and did exacerbations occur? How did the injury or problem first start? How did the knee and leg move? These answers will define the problem, locate the trouble, give a level of suspicion according to the nature of the insult, and describe the remaining deficit. Acute versus chronic, concomitant medical problems, past treatments, aggravating and alleviating

The following cases will highlight key points in the history suggestive of specific pathology and will lead to discussion of some tests used in the physical examination of the knee.

ANTERIOR CRUCIATE LIGAMENT

Joe, a 30 yr. old man who works for an insurance company, injured his right knee 6 months ago while moving a piano downstairs. His partner had stumbled; Joe turned quickly to his right on the second last step to prevent the piano from falling, when he felt immediate pain in his right knee. He could no longer weight bear and noted considerable right knee swelling several hours later. Two weeks afterwards he could walk with a limp but began noting his knee collapsing beneath him. He feels it "moving" when he steps over his daughter's toys and notices it swelling off and on.

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Joe's story is compatible with a chronic laxity or rupture of the anterior cruciate ligament, which is the primary structure preventing anterior movement of the tibia on the femur. A common method of injury is a sudden twisting movement on a planted or fixed foot. It can also occur with hyperextension injuries (usually in association with posterior cruciate damage), internal tibial rotation, sudden decelerations and posterior blows to the proximal tibia. In the past, treatment for an incompetent anterior cruciate ligament was controversial but, in recent studies, a high incidence of joint instability occurred with subsequent joint damage and degeneration as in Joe's case. Early diagnosis is therefore important. Keys to serious intra-articular pathology are swelling within the first 24 hours and the inability to continue the activity.

Physical examination of the anterior cruciate can confirm the diagnosis. Many tests have been used to demonstrate anterior cruciate laxity including the anterior drawer test, Lachman's maneuver and the Pivot shift test (see Figures 3-5). The anterior drawer test is often difficult to perform in an acute injury because the knee cannot be flexed to 90 degrees. It is also unreliable, demonstrating only 50% of the torn anterior cruciates. The Lachman maneuver and the Pivot shift are tricky to master but very sensitive tests (100% of anterior cruciates). Another simple but effective (100%) test is the "divot" test (see Figure 6). As in all of these tests, the knee in question should be compared with the "normal" side.



Fig. 3 ANT (POST) DRAWER TEST

Flex knee to 90 degrees, stabilize foot, pull towards examiner (often with both hands), watch and feel tibia move forward on femur (Do opposite direction for posterior drawer test)

Mark is a 23 year old man who enjoys many sports including hockey, skiing and racquetball. He was checked while playing hockey and hit the boards, right foot first. The leg twisted in and he heard a "pop". The knee was uncomfortable but he continued playing. After the game he noticed swelling of the knee and went to the Emergency Department.

The acute knee is often difficult to examine due to swelling and pain. Also, secondary supports can give false negative results when testing for laxity. The

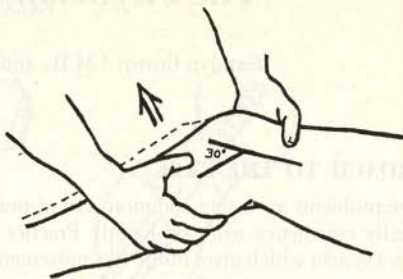


Fig. 4 LACHMAN MANEUVER

Support femur left hand, knee flexed 30 degrees, elevate tibia upward and tibia moves anteriorly, laxity makes divot disappear.

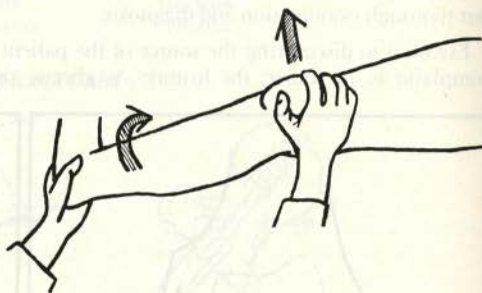


Fig. 5 PIVOT SHIFT

Hold heel in palm, other hand valgus (inward) force with thumb on joint, straight leg, internally rotate tibia, (joint will be subluxed forward), as flex knee to 20 degrees the tibia will reduce, often feel clunk.

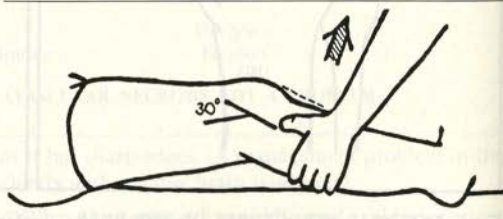


Fig. 6 "DIVOT" TEST

Leg comfortable, relaxed on bed, 30 degrees flexion, lift prox. tibia up, normal divot below patella disappears.

history gives the clues to Mark's anterior cruciate injury: high velocity twisting motion, a popping sound, immediate swelling and pain. Often the patient knows he "did something bad". It must be remembered that 20% of people with significant ligament injuries can finish the game. The suspicion of a major injury requires further investigation or consultation, as, surgical repair should occur if necessary in the acute period (approximately 7-10 days). Joe, (of the first case), was sedentary and may have been tried on conservative treatment first. If a knee injury is diagnosed as minor, a further examination in 24-48 hours may show laxity or instability.

POSTERIOR CRUCIATE LIGAMENT

A 19 year old female was a front seat passenger when an accident occurred. (The car hit the guardrails.) The woman was pitched forward into the dashboard. The car was in a 50 km/hr zone. In Emergency, swelling and pain were noted in her left knee. Her other injuries were superficial. Peripheral pulses were normal.

The "classic" cause of a posterior cruciate tear is hitting the proximal tibia on the car dashboard. It can also occur in hyperextension injuries. The posterior cruciate provides 95% of the resistance to posterior displacement of the tibia on the femur. Often it is difficult to define whether laxity seen is due to damage to the posterior or anterior ligament. Making note of the neutral position is very important (ie. compare with other knee). The gravity drawer test picks up 50% of these injuries while the posterior drawer test demonstrates virtually 100% of the posterior cruciate ligament tears. (see Figures 1, 3 and 7)

As with the anterior cruciate problems, arthroscopy and examination under anaesthesia will give a definitive diagnosis. If concomitant anterior cruciate laxity is ruled out, knees with a torn posterior cruciate appear to be stable in the majority of the cases. Again, discussion with a specialist and evaluation of the patients level of activity may affect the treatment.

MEDIAL COLLATERAL LIGAMENT

Bill, a 28 year old football player, received a blow to the outside of his right leg while being tackled (valgus force). He can't remember how he fell. Bill limped off the field and noticed pain, especially over the inner part of the knee. Swelling developed within 24 hours, predominantly over the medial side.

A pure complete medial collateral ligament rupture (3rd degree sprain) essentially does not exist. Normally, the medial meniscus is affected and usually the anterior cruciate is torn. The abduction stress test is used to elicit laxity on the medial (or lateral) side. (see Figure 8). If the knee is kept completely straight (0° flexion), the posterior capsule may mask the torn medial collateral ligament unless the posterior supports are also damaged. Therefore, flexing the knee to 30° is more sensitive for medial compromise. Significant damage, or complete rupture, is indicated by no endpoint resistance to the valgus stress. Normally this means medial joint opening of 10 mm or greater, but, comparison to the normal side must be made. Lateral collateral ligaments may be tested by applying a varus (outward) force. Pure lateral instability is not common. First and second degree sprains, like Bill's, should be treated conservatively (ice, rest, elevate, compression, physio, strengthen, etc.)

COMBINED LIGAMENTOUS DAMAGE

George, a 33 year old railway worker, was hit on the outer side of his left knee by a railway tie. He noted mild swelling of the knee and bruising on the lateral and medial side. He could hobble about. Pulses were normal. X-rays were

normal. On examination 2 days later, marked laxity was noted medially and he had a positive Lachman's maneuver.

George had the "terrible triad" consisting of damage to the medial supports (superficial and deep), medial meniscus and anterior cruciate; with enough force both cruciates can be ruptured. He noted little pain and swelling because the capsule had been ruptured, preventing its painful distension. He would have considerable rotational movement or rotational instability of the tibia on the femur. If damage exists to the major stabilizing ligaments of the knee, the anterior and posterior cruciates and the medial and lateral collaterals, (either by suspicion from the history or marked laxity on physical examination), further investigation or consultation is necessary. Of note is that extensive damage can give a grossly unstable knee. Dislocations of the knee have a 50% incidence of neurovascular impairment, (popliteal artery). Therefore, discovering rotational instability does not change management although it often means more extensive damage has been done, particularly to the capsular structures. There are many tests thought to demonstrate rotatory instability including the Slocum test, lateral pivot shift, flexion rotation drawer, Lasse test and the jerk test. These will not be discussed further.

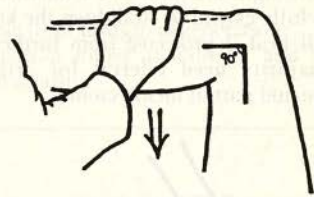


Fig. 7 GRAVITY DRAWER TEST

Flex both knees and hips to 90 degrees, gravity will deepen the concavity below the patella as tibia falls posterior, compare to other knee.



Fig. 8 MEDIAL COLLATERAL LIGAMENT

Hold joint with hand, knee flexed 30 degrees, place valgus (outward) force on knee as shown. Do opposite for lateral ligament test.

MENISCUS — MEDIAL AND LATERAL

Walter, a 44 year old man, otherwise well, complains of right knee pain "right there". (He points to the medial joint line.) He had noticed for a couple of months, occasional sharp pains when he bent his knee. The pain disappeared when he straightened the leg. One week ago, while squatting to pick up firewood, he felt a sharp pain worse than the others. The knee became gradually swollen over the next three days. On examination, he could not straighten his leg completely, had an effusion and was tender over the medial joint line.

Meniscal injuries are often due to a twisting movement with the knee bent and a planted foot. It can also be seen with varus, valgus and hyperextension injuries and in the unstable knee. The medial meniscus is injured more often due to the anatomy. Medial tears are more common in males as they tend to be bowlegged (genuvarus), placing more stress on the medial compartment. They commonly present with a dull pain, recurrent effusions and night pain. Clicking may be noted during activities like climbing stairs. Often patients say "there's something right there getting in the way" while pointing to the joint line. The classic test for the meniscal injuries is the McMurray's test (see Figure 9). It demonstrates 80% of tears, particularly in the posterior position. The most sensitive signs are *joint line tenderness* and the inability to fully extend or straighten the knee. Some menisci will heal if protected from further damage but the majority need referral for arthroscopic examination and partial meniscectomy.



Fig. 9 McMURRAY'S TEST

Reproduces click of meniscus tear. Flex knee and hip, palpate post. joint. For medial meniscus — externally rotate tibia as shown, (for lateral meniscus internally rotate), extend the knee and will feel click.

OSTEOCHONDRITIS DESSICANS

Osteochondritis dessicans (and osteochondral fractures) may present with the same symptoms as a meniscal injury. Osteochondritis dessicans occurs most often in adolescents and young adults and is caused

by a vascular necrosis of the subchondral bone. The area may break off (loose body in the knee), or partially reheel. X-rays will differentiate between problems with the meniscus as physical examination does not make a definite distinction. These patients need arthroscopic examination and treatment.

ARTHRITIS

Osteoarthritis

A 33 year old hockey player had a left meniscectomy in 1975 after he had a meniscal tear. He now complains of pain in the left knee after considerable activity, and in the morning. He is unable to continue playing tennis due to the pain and stiffness. He notes no swelling.

Osteoarthritis, or degenerative joint disease, often presents with pain and little to no inflammation. Predisposing causes include: meniscectomy, unstable joints, increased pressure on the cartilage and a positive family history. Physical examination may show enlargement and deformity, if advanced, or simply, bony spurs around the joint. Crepitus may be felt or heard. The symptoms do not always correlate with the level of disease present on arthroscopy. X-rays show many diagnostic signs. If pressure in the joint is relieved, some cartilage regeneration may take place.

RHEUMATOID AND OTHERS

The knee must not be considered in isolation. Evidence for systemic disease must be sought especially if presented with an acute joint with no preceding trauma. Other diseases including bacterial infection, TB, gout and pseudogout must all be considered. It may be a signal joint for a progressive arthritis.

PATELLOFEMORAL

Sam, a 16 year old girl, complains of dull pain lateral to the kneecap. She point specifically to the upper outer area of the kneecap. It began 3 months ago and is exacerbated by phys-ed at school and running any distance. It does not swell but she notices some "noises". On examination, the patella was an odd shape and by palpation, she appeared to have a bipartite patella.

A number of problems can cause patellofemoral pain. The patient usually aids in the diagnosis by pointing to the location of the patella which causes the pain. Common causes are chondromalacia, subluxation or dislocation of the patella, overuse injuries and osteochondral problems. The shape of the patella, the tightness of its restraints, and anatomical or malalignment problems can all contribute to patellofemoral pathology. Symptoms often include a dull pain which can be associated with instability and stiffness, effusion, locking and the inability to extend the knee. Pain, causing quadriceps inhibition, is the most frequent cause of the knee "going out from under me". Examination should include visual inspection for abnormal position of the kneecap, palpation for tender patellar ligaments or

joining surface and for patellar crepitus. The apprehension test (feeling the patellar will sublux when pushed laterally), can suggest repeated subluxation as the diagnosis. X-rays including patellar views should be done.

OTHER

Gail, a 23 year old university student, is on the varsity basketball team. She complains of pain in her right knee especially after practice. She has noted it for three weeks. Ice has not relieved the discomfort and it is getting worse. The pain is on the inferior border of the patella.

There are many structures around the knee. Normally the patient can point to the problem area and it is then a matter of deciding which structure in that anatomical location is causing the discomfort. In this case the young woman is pointing to the patellar tendon at the base of the patella. Patellar tendonitis or Jumper's knee, an "overuse" injury, is the diagnosis. Other structures, other than tendons, are bursae which can become aggravated and inflamed.

CONCLUSION

The knee has only a defined number of components. It has one synovium (eg. rheumatoid arthritis or acute injury), two menisci (eg. meniscal tears), three joints/compartments (eg. patellofemoral problems), and four ligaments (eg. acute tears). Other minor characters in the play, although common, include bursae (eg. bursitis) and tendons (eg. tendonitis). The following is a summary of the history and physical examination.

History

- Complaint pain (site, radiation, quality, quantity, aggravating, alleviating)
 - clicking
 - locking
 - swelling
 - instability
- Other medical problems
- Duration problem, note exacerbations
- Injury or precipitating cause
 - Setting, speed, how happen, initial and final body position
 - Did you know you had done something bad?
 - Could you continue?
 - Swelling within 24 hours?
 - Could you weight bear?
- Past treatments (ice, rest, meds, physio, surgery)
- What are the demands on the knee? eg. Olympic athlete, desk job
- What is the disability?

Physical Examination — 2-3 minutes — Always compare with good side

- Watch patient walk in
- Look knee standing
- Blind man's sign (feel quadriceps for wasting)
- Look knee (red, swelling etc.)
- Palpate around patella, joint space, tendons, Apprehension test, Q angle
- Flex knee (crepitus, range of movement)
- Test lateral and medial stability
- "Divot" sign, Lachman's maneuver and Pivot shift
- \pm McMurray Test
- Check hip and foot

X-rays

- Child and adolescent (stress films for epiphyseal fractures)
- Stress views may support diagnosis laxity (normally not needed)
- Patella-Skyline views/30,60,90 degrees flexion to assess tracking
- Diagnostic osteochondritis dessicans/fracture often
- Can demonstrate osteoarthritis although arthroscopy more sensitive

Hints

- Unstable joint leads to degeneration
- Examination under anaesthesia and arthroscopy often diagnostic

□

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A Study of Some Background Factors in Major Affective Disorder

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A study of 119 patients with major affective disorder was carried out to investigate the frequency of a number of previously-described background factors in the illness. The main thesis, that twins were to be found in excess among depressive patients, was not confirmed. Trends were shown to be present as regards an excess risk of undergoing surgery among depressive women, as to a previous history of head injury, and as to certain forms of parent-child discord among subgroups of patients with major affective disorder.

INTRODUCTION

During the mid-1960s one of us (A.M.) investigated the effect of adverse early life experiences as possible etiological factors in severe depressive illness. Unexpectedly, the depressive group proved to contain an excess number of twins, as compared with a group of non-psychiatric controls and with the general population data for twin frequency.

This finding had potential practical implications, since important evidence on the inheritance of major affective disorder comes largely from twin studies. If it happened that twinning was especially common in depressive illness, this could seriously contaminate the results of such studies. No follow-up study of this has been carried out anywhere since the original publication.¹

In the spring of 1986, a brief study on *Concomitants of Major Affective Disorder* was carried out by the two authors. This looked at etiological factors in severe depressive illness similar to those of the first investigation and the opportunity was taken to study the frequency of twin births in a group of Nova Scotians with the condition.

THE INVESTIGATION

During one month in Spring 1986, U.J. interviewed all cases of major affective disorder admitted to the adult psychiatric inpatient units in Metro Halifax, including the cases present in hospital at the beginning

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**This study was carried out as a student elective when Dr. Jain was a 4th year medical undergraduate.

of the study. This amounted to 119 individuals (67 female, average age 44.2 years; 52 males, average age 45.7 years). 77 patients were unipolar (depression only) and 42 bipolar (manic-depressive). Diagnostic criteria were previously agreed upon and a questionnaire was completed on each patient by the interviewer.

The hypotheses to be tested were as follows:

1. Patients with major affective disorder are more likely to be twins than people in the general population.
2. Twins with major affective disorder:
 - a. develop the illness earlier than non-twins with the condition,
 - b. have a positive family history of severe mental illness more often than non-twins,
 - c. are more likely to report a disturbed relationship with father during childhood.
3. Patients with major affective disorder are more liable to lose mother by death prior to age of 26.
4. Patients with major affective disorder report death of mother due to cancer significantly more often than death of father by cancer.
5. Females with major affective disorder have undergone more surgical operations in the previous two years than males with this same illness.
6. Unipolar and bipolar forms of major affective disorder differ significantly as regards each of the factors mentioned in the above hypotheses.
(N.B. Most of these hypotheses arose from findings obtained in the earlier study).²
As there was no normal control group, comparisons were made between subgroups of the patients. These comparisons were:
 - a. Males v. Females
 - b. Unipolar v. Bipolar
 - c. Primary affective disorder v. secondary affective disorder (i.e. obvious recent precipitating factors).

RESULTS*

Hypothesis 1

No significant excess of twins was found. Among 119 patients there were only 3 twins (2 male, 1 female).

*Significance was calculated by the simple Chi-square method.

In Western countries twin births occur about 1 in 80 times, so one expects approximately one twin for every forty people in a general population. This was almost exactly the number found here. Because of small numbers, hypotheses 2a), 2b), and 2c) could not be tested.

Hypothesis 3

No obvious excessive loss of mother by death occurred in the patients' early lives.

Hypothesis 4

No obvious excessive maternal death due to cancer was noted.

Hypothesis 5

Females with major affective disorder appear more likely to undergo surgery in the two years prior to the depressive illness as compared with males. (Females 19 out of 67 compared with males 4 out of 52. $\chi^2 = 6.170$; 1 d.f.; $P < .025$).

Hypothesis 6

Comparing unipolar to bipolar patients, only one trend becomes apparent. 9 out of 77 unipolars had a history of serious head injury compared with 13 out of 42 bipolars. ($\chi^2 = 4.416$; 1 d.f.; $p < .05$).

In the total group, 5 out of 52 males, and 20 out of 67 females, reported a poor relationship with mother during childhood. This was significant at the $P = .005$ level ($\chi^2 = 9.260$; 1 d.f.). No sex-difference was found as regards early relationship with father. However, when the total group was divided into primary and secondary depressives, it was found that there was a trend to disturbed early relationship with father among the secondary depressives. (14 out of 32 secondary depressives compared with 16 out of 87 primary. $\chi^2 = 4.390$; 1 d.f.; $P < .05$).

DISCUSSION

The findings fall into four categories — the frequency of twinning in depressives; the tendency of female depressives to be at excess risk of undergoing surgery; a previous history of head injury; and evidence of poor relationships with parents during childhood.

1. It is disappointing that the original finding of an excess of twins among depressive patients was not confirmed by this study. On the other hand, this is good news for investigators studying the genetics of major affective disorder (see above). It is difficult to know why the results were so different in the two studies. Although the first study was Scottish and the second Nova Scotian, the two populations were similar, and the diagnostic criteria were almost identical. The original result must therefore remain an isolated finding and continues to be worthy of further investigation.

2. As regards the risk of surgery, one of the present authors noted in another study that women with major affective illness were excessively liable to undergo surgery (especially gynaecological) in the two years prior to admission for their psychiatric disorder.³ This may reflect physical morbidity patterns in middle-aged and elderly women, but there was some evidence that it also reflected excessive hypochondriacal complaining in the prodromal stage of depressive illness (which may be quite prolonged). There was a trend in the present investigation towards women undergoing more surgery than men prior to clinical onset of their depression. We would suggest that depressive hypochondriasis is an important differential diagnosis in middle-aged and elderly women with physical complaints, especially if they are not matched by convincing physical findings.

3. 22 out of 119 patients reported a history of significant head injury at some time in life. This was especially common among bipolar patients. The association here can only be guessed at, but since bipolar illnesses tend to come on earlier in life than unipolar, it may be that head injury is an additional provoking factor working on an existent hereditary tendency.

4. Depressive patients often report disturbed early relationships. In this case, female depressives reported an excess of poor relationships with mother. On the other hand, secondary ("reactive") depressives seemed more likely to have had difficulties with father as children. One might speculate whether a particular type of parent-child discord can influence the eventual form of an affective illness and also modify risk factors.

It is concluded that there is considerable scope to study possible etiological factors in major affective disorder, and to try to explain why two very similar studies in different localities can produce, at least in some instances, quite dissimilar findings. Had circumstances allowed, the use of a normal comparison group in the present study would undoubtedly have been helpful. □

ACKNOWLEDGEMENT

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Primary Surgical Management of Early Stage Cancer of the Cervix

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Since the early 1920s gynecologic malignancy has been a primary interest of the Department of Obstetrics and Gynecology, Dalhousie University, and the treatment of cervical cancer has been of particular interest. The diagnosis, treatment, and follow-up of patients has been enhanced by the establishment of the Tumor Clinic, and Pap Smear Registry in Nova Scotia.

A study of invasive carcinoma of the cervix in Nova Scotia from 1965 to 1978 was reported by Tupper, *et al.* The study showed that in Nova Scotia there was a decrease in the incidence and mortality of invasive carcinoma of the cervix.¹ Treatment results in Nova Scotia have been identified to compare favourably with those of other centres in the world.²

The present study will evaluate the surgical treatment which has been utilized for early stages of carcinoma of the cervix (Stages I_a, I_b, II_a).

We will attempt to answer the following questions:

1. What is the survival rate of patients undergoing primary radical hysterectomy compared with rates for conventional irradiation therapy?
2. What are the complications and risks of surgical procedures?
3. Do risk factors such as lymph node metastasis or vascular and lymphatic invasion alter survival rates?
4. What is the role of lymphangiogram and computerized axial tomography in evaluating early stage cervical cancer?
5. Has the pap smear screening program been effective in identifying patients with disease?

MATERIALS

From 1970 to 1984 inclusive, 90 patients were clinically staged as I_a, I_b, II_a carcinoma of the cervix. The Federation of International Gynecologists and Obstetrics staging system was used. These patients underwent primary radical Wertheim surgery at the Victoria General Hospital, Halifax, Nova Scotia.

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Surgery was performed by members of the Gynecologic-Oncology management team. Wertheim hysterectomy includes a radical hysterectomy, bilateral pelvic node dissection, upper vaginectomy, and bilateral salpingo-oophorectomy. However, in selected younger patients ovarian preservation was favoured.

Twenty-eight (31%) patients between 1970 and 1978, and sixty-two (69%) patients were managed surgically from 1979 to 1984 inclusive. Seven patients received preoperative intracavity radiation (cesium or radium). Seven patients received postoperative radiation, five due to lymph node metastasis found at operation, and two because surgical resection margins were involved with tumor.

FINDINGS

Histological review of surgical specimens could be sub-divided into three groups: 1) squamous cell carcinoma; 2) adenocarcinoma; and 3) adenosquamous carcinoma. The majority, 70 patients had squamous; 17 had adenocarcinoma, and three had mixed adenosquamous.

At the time of their operations, four patients were less than 25 years of age, 24 were 25-34, 32 were 35-44, 17 were 45-54, and 13 were over 55, for an average age of 41.5 years.

In the past few years, lymphangiograms and CT scans have been incorporated into the preoperative evaluation for patients with early stage carcinoma of the cervix, to determine if spread of cancer could be identified prior to exploration.

TABLE I
COMPARISON OF LYMPHANGIOGRAMS WITH HISTOLOGICAL RESULTS

Lymphangiograms	Histological Results (lymph nodes)		
	Positive	Negative	Total
Positive	1	5	6
Negative	4	26	30
TOTAL	5	31	36

Table I shows that 36 patients had lymphangiograms performed. Of this number, five were proven to have lymph node metastases following histological

examination of the surgically removed nodes. In our experience, the specificity of lymphangiogram screening is an acceptable 83.8%; however, the sensitivity of such screening is 20% and the predictive value of a positive test is 16.7%, these results are not acceptable for clinical management purposes.

Preoperative CT scans were performed to evaluate disease spread in 23 patients. In our limited experience, this does not appear to be a sensitive indicator of positive pelvic nodes (0%).

PAP SMEARS

Thirty patients in this study had pap smear reports on file with the Nova Scotia Pap Smear Registry. The total patient group was comprised of patients from Nova Scotia, New Brunswick, Prince Edward Island, Newfoundland, and St. Pierre et Miquelon.

Of 30 patients undergoing pap smears over a six-year period prior to diagnosis and subsequent surgical treatment, only 15 (50%) were reported to have malignancy by pap smear prior to treatment. Eight cases were shown to have changes suggestive of malignancy. Surprisingly, there were six patients whose pap smears showed only CIN (three with CIN III, and three with CIN I and II). One patient had a negative but abnormal pap. One patient with adenocarcinoma of the cervix was reported to have negative pap. This further supports previous recommendations that women with *any* abnormal pap smear should, in the absence of any obvious lesion, have the benefit of a colposcopic evaluation.⁵

From our study it would appear that only five patients (16%) were actually having regular pap smears for more than one year prior to being diagnosed. One very concerning, but not unexpected, finding of this report is that there were four women who had "negative" pap smears within one year prior to cancer being diagnosed.

The annual pap smear must remain part of the medical evaluation for women.

COMPLICATIONS

There were 21 patients (23%) who developed postoperative complications. Eleven patients had voiding problems, five had lymphedema/lymphocysts, and two had both urinary and lymphatic complications. One patient developed a pelvic abscess, one a pulmonary embolism, and one a venous thrombosis. In only one patient with a pelvic lymphocyst was surgical drainage necessary. All other complications were managed appropriately without surgical intervention, and all were resolved.

RISK FACTORS

Vascular invasion and/or lymphatic emboli found histologically at the primary tumor site are thought

to place the patient at greater risk for subsequent development of metastatic disease. Lymph nodes positive for malignancy are a form of regional metastasis. These patients, as well as those with tumor present at the surgical resections margins, obviously have an increased risk. Table II reveals that in our series, 19 of the 90 patients (21%) had these risk factors identified. Nine of these had pelvic lymph nodes positive for metastatic disease at the time of operation.

TABLE II
PATHOLOGY RESULTS OF HYSTERECTOMY SPECIMENS

Factors Increasing Risk For Subsequent Metastases	Node Status At Time of Operation	
	Positive (9)	Negative (10)
Vascular invasion	1	1
Lymphatic emboli	2	3
Vascular/lymphatic invasion	1	3
Malignant broad ligament nodule	0	1
Tumor on resection margin	0	2
Other (No vascular invasion)	5	0

Of the patients with positive lymph node metastasis two (20%) died of their cancer within two years of surgical management. Both had received postoperative radiation therapy. The remaining seven patients with positive nodes are still very early in their follow-up (less than two years), but to-date no evidence of recurrent cancer has been present.

Of the two patients with tumor present at the surgical resection margins, one has died of her cancer and the other has been disease free for one year.

FOLLOW-UP AND SURVIVAL

Of the 90 patients studied, one has been lost to follow-up (see Table III). Four of the remaining 89 have died of their disease (95% survival). Two of the 89 have developed evidence of vaginal dysplasia. Overall, 90% of the patients are alive with no sign of recurrent cancer. Twenty-eight (31%) of the patients have been followed for five years or more since their treatment.

TABLE III
SUMMARY OF FOLLOW-UP INFORMATION

Disease Status	Lost	1 yr.	1 yr.	2-3 yrs.	3-4 yrs.	5+ yrs.
Free From Disease	1	21	23	8	5	26
Disease Still Present or recurrence	0	0	1	1	2	2
TOTAL	1	21	24	9	7	28

CONCLUSIONS

1. Radical surgical management of early stage cervical cancer has a survival/disease free rate of 93% in our experience. This compares favourably with radiation treatment for this stage of disease³, and with results obtained from other surgical centers.^{4, 5}
2. A complication rate of 21% is acceptable for this operative procedure. In this series no mortality ensued and prolonged morbidity was infrequent. All but one problem was resolved without surgical intervention.
3. Of the four patients who died of their cancer, two had lymph node metastasis and one had tumor at the resection margins. These patients would appear to have an increased risk of dying of their disease. It should be noted that four of the nine patients with positive pelvic nodes did not receive postoperative radiation. They remain clinically disease free; however, their follow-up is currently less than five years. The role of radiation therapy in these patients remains unclear at the present time.
4. Lymphangiograms and CT scans do not appear to be a reliable means of predicting lymphatic metastasis in early stage cervical cancer. For those patients acceptable for surgical management these procedures appear to be no longer indicated for investigative purposes.
5. Pap smears continue to be mandatory to screen women for cervical cancer and/or its precursors. However, of the 30 patients with pap smear records, six revealed dysplasia and one had a

negative but "abnormal" pap. This reaffirms our recommendation that women with any abnormality of their pap smear should be assessed by an experienced colposcopist.⁶

Four women having negative pap smears within one year prior to the diagnosis of cervical carcinoma suggests that pap smears can be unreliable, and/or some cancer progresses very quickly through the preclinical phase.

This further emphasizes our previous recommendation for annual clinical and cytologic evaluation for women at risk to develop cervical neoplasia and colposcopic examination *when* any abnormal cytology is identified. □

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An investigative reporter who thought mountain climbers roped themselves together for safety, found it was really to keep the sensible ones from going home.

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A Five Year Review of Ruptured Abdominal Aortic Aneurysms at a Regional Referral Centre

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INTRODUCTION

Since the much celebrated article on Repair of Abdominal Aortic Aneurysm by Dubost, *et al*, 1951¹, there has been an explosive growth in the surgical treatment of abdominal aortic aneurysms, both elective and ruptured. This has been followed by the publication of numerous articles on the outcome of this surgical intervention. A wide variety of pre-operative determinants of outcome, intra-operative techniques, and post-operative supportive care strategies have been identified and commented upon. Even though survival rates for ruptured abdominal aortic aneurysms vary considerably from one centre to another, there is now an accepted range of survival data to use for comparison.

Since 1980, two certified surgeons have offered a 24-hour 365-day a year coverage in peripheral vascular surgery out of Sydney City Hospital, Sydney, Cape Breton Island. It was the purpose of this review to study the first five years of the operation of this service with respect to ruptured abdominal aortic aneurysms. Since Cape Breton Island is a geographically distinct area containing roughly 175,000 people and since we are the only hospital offering such a continuous service, we believed it would be useful to examine our experience from an epidemiologic point of view. In particular, we were interested in any characteristics associated with individual cases which might be valuable as predictors of survival.

PATIENTS

Patients reported in this study were all referred between January 1, 1980 and December 31, 1985. There were 31 cases, 21 male and 2 female. The age range was 61 to 85, with a mean age of seventy. The retrospective chart review of all of these cases was undertaken in chronological fashion. A wide variety of data was extracted from each chart.

METHODS

A predominant principle in all of these cases, once identified, was to shorten the transport time to the operation and subsequent placement of the aortic cross-clamp as soon as possible. When a case presents

during working hours to Sydney City Hospital, this could be as short as 5 or 10 minutes. When cases were referred in the small hours of the morning (after midnight and before 6 a.m.), mobilization of staff, assistants, and anesthetists, while done very expeditiously, can still take as long as 45 minutes. Minimum good weather travel times for these patients to arrive in Outpatients Department are listed in Table I.

TABLE I
REFERRAL PATTERNS 1980 - 1985

Origin of Referral	Number	Travel Time
Sydney	11	15 Min
Northside	11	45 Min
Glace Bay	1	45 Min
New Waterford	1	30 Min
Inverness Victoria	6	60-120 Min
Richmond County	1	60-120 Min
TOTAL	31	

The procedure in the Outpatients Department Resuscitation Room was to confirm the diagnosis first and secondly, to prepare the patient for rapid transfer to the O.R. Large bore I.V.'s were placed along with Foley catheter and, if time permitted, a skin prep of the patient while the operation room was being prepared. All cross-matching and routine bloods were done immediately upon arrival in the Outpatients Department, as well as an EKG. No effort was made to move the patient to obtain any type of chest or abdominal Xrays unless the diagnosis was seriously questioned. The distribution of arrival time in the Outpatients Department at Sydney City Hospital is shown in Table II. Our impression over the years that many of these patients tend to arrive late in the day or after midnight, is borne out by this data which shows that only six patients arrived during regular working hours and the majority much later in the day than that.

Upon arrival in the operation room, every effort was made to secure a rapid smooth placement of proximal aortic control as the first priority. The anesthetist would often defer placing any other indwelling lines or central catheter until this procedure had been carried out. One of us (M.A.N.) uses a subdiaphragmatic aortic occluder for temporary control while infra-renal dissection is carried out. In

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one case associated with massive intra-operative bleeding, intra-thoracic control of the aorta was attempted, but eventually that patient succumbed to massive intra-operative hemorrhage. In the remainder of cases, an aortic clamp could be placed rapidly on the aorta just below the renal arteries, or temporarily just above the renals, being shifted to an infra-renal position as soon as possible.

The use of heparin was varied according to the presentation of the patient. Those patients with small retroperitoneal hematomas in stable condition were treated almost as elective aneurysms and were fully heparinized. Those in profound shock with large hematomas were either operated on without heparin or using regional heparinization down the common iliacs later in the procedure. Twenty-seven of our patients had woven tube grafts of appropriate sizes inserted. We have found this technique significantly shortens operative time and probably blood loss. Four patients required aorto-bifemoral grafts because of the unsuitability of the distal end of the aorta and bifurcation to accept the tube graft. Two required additional procedures for emboli to the femoral vessels. Prior to declamping, sodium bicarbonate is routinely administered to combat wash-out acidosis. Frequent use was made of mannitol in cases where intra-operative oliguria was severe and clinical shock was present.

All patients were then transferred to the Intensive Care Unit where post-operative care was usually assisted by an internist and often involved the placement of Swan-Ganz catheters, intra-arterial lines for pressure monitoring, and ventilatory support. Many of these cases pursued a surprisingly smooth course, but a variety of complications did occur, concentrated in a relatively small proportion of these patients. Renal dialysis was a necessary adjunct in three patients. Further operative procedures such as cholecystectomy (gangrenous cholecystitis) and colostomy (ischemic colon) and resuturing of wound (two patients) were occasionally necessary.

TABLE II
ARRIVAL TIME IN O.P.D.

8 A.M. - 4 P.M.	6 Patients
4 P.M. - 12 Midnight	12 Patients
Midnight - 8 A.M.	10 Patients
*TOTAL	28

* 3 transferred already operated upon; by one of us in nearby hospitals (St. Rita, 2; New Waterford Consolidated, 1)

RESULTS

The physical findings and history of patients with abdominal aortic aneurysm rupture have been described extensively in the literature. Our patients, when assessed, had the usual array of physical findings and symptoms (see Table III).

TABLE III
PRESENTING SYMPTOMS AND SIGNS

Severe abdominal pain	20 patients
Severe back and flank pain	9 patients
Pulsatile abdominal mass	22 patients
Flank ecchymosis	4 patients
Hematoma under inguinal ligament on left side	2 patients
Convulsions	1 patient
Mottling of lower abdomen and both lower extremities	10 patients

In 25 out of 31 patients, the diagnosis at the time of the referral was correct. However, conversations with referring physicians reveal that many of these patients initially had been observed for probable renal colic, diverticulitis, or abdominal pain, N.Y.D., for a variable period of time. Six out of 31 patients were assessed by one of us for abdominal pain with an incorrect diagnosis; one was suspected diverticulitis; three suspected renal colic; and two abdominal pain, undiagnosed.

TABLE IV
TIME INTERVAL FROM ONSET OF SYMPTOMS UNTIL ARRIVAL IN O.R.

	Time (Hrs.)					
	0-4	5-8	9-12	13-24	25-48	49
Survivors	7	6	5	3	1	1
Non-survivors*	3	3	1	0	0	1
TOTAL	10	9	6	3	1	1

* 30-day in-hospital mortality

The delay in transporting patients with a diagnosis of ruptured abdominal aortic aneurysm to the operating room is widely recognized as being a critical factor. In Table IV, the time interval from the onset of symptoms until the arrival in our operating room, is presented. We take this as being the closest approximation we can present representing a time from original bleed or rupture of the aneurysm until the time repairs have actually begun. This includes transport time to our hospital. On occasion, patients had been kept in a hospital under observation for periods of up to 48 hours before the true diagnosis became apparent. Review of the data in the table shows that most patients were referred very rapidly, but even those who had great delay in the diagnosis and subsequent transport to the operating room were counted amongst the survivors.

Some patients presented in extremis in the Emergency Department and there were actually three patients presenting with cardiac arrest. However, it

was our subjective impression that those patients who could be resuscitated rapidly and achieve a reasonable systolic blood pressure, even as high as 80 or 90 mm, did much better. In Table V, we present the best systolic blood pressure obtainable in the Emergency Room before transfer to the O.R. There was rarely enough time to transfuse with blood in the Outpatients Department. These patients were almost all resuscitated with Ringer's lactate while preparations were rapidly being made to transport them to the Operating Room. The number recorded is the best systolic blood pressure obtained just before transport to O.R. There were no mortalities in those patients having a systolic blood pressure of 120 mm or greater. Clamp time has been related to patient survival and post-operative renal failure in some studies (Wakefield, *et al*, 1982).²

TABLE V
BEST SYSTOLIC BLOOD PRESSURE IN
EMERGENCY ROOM (mm Hg)

	0-60	61-90	91-120	121-150	151-180
Survivors	6	4	6	4	2
Non-survivors	2	5	2	0	0
TOTAL	8	9	8	4	2

TABLE VI
AORTIC CROSS—CLAMP TIME (Min)

	45 Min	46-60	61-75	76-90	91-105	105
Survivors	4	4	7	3	2	1
Non-survivors	0	0	3	3	2	1
TOTAL	4	4	10	6	4	2

Our aortic cross-clamp time was recorded in all intra-operative records and is presented in Table VI. Patients with less than 60 minutes of cross-clamp time all survived, but there were survivors even up to greater than 105 minutes of cross-clamp time. Much of the excess time in some of these cases is due not to technical difficulties, but to the instability of the patient when the clamp is released, necessitating frequent re-clamping until a satisfactory perfusion pressure can be obtained.

Total operative time, which includes time from arrival of the patient to the O.R. suite, until the time

TABLE VII
TOTAL O.R. TIME (hr.)*

	3	3-4	4-5	5-6	6
Survivors	6	8	4	2	2
Non-survivors	0	2	5	2	0
TOTAL	6	10	9	4	2

* as recorded by anesthetist

the patient is discharged to the ICU unit, has also been inversely related to patient survival (Wakefield, *et al*). While our statistics presented in Table VII suggests that patients with very short O.R. times all survived, once again there were survivors, even with very long operative times of greater than six hours.

The best systolic blood pressure obtained in the O.R. after clamp-release, appeared to sharply segregate out patients into two groups, as seen in Table VIII. All patients with systolic blood pressures of greater than 100 mm survived. All the mortalities were associated with systolic pressures less than this. No patients with a pressure of less than 60 mm, as the best obtainable pressure after clamp-release, survived. The value of this criterion as a predictor of outcome has been stressed by Wakefield, *et al*.

The amount of intra-operative crystalloids delivered to a patient has been suggested to be inversely related to long-term survival. Again, Wakefield, *et al*, found statistically increased mortality rate amongst patients receiving greater than seven litres of crystalloids; our data showed no such trend (Table IX). By contrast, the amount of blood transfused intra-operatively showed a remarkably sharp demarcation at 10 units: those receiving less than this amount all survived, whereas all mortalities were in patients with large transfusions of 10 units or greater, as described in Table X.

TABLE IX
INTRA-OPERATIVE CRYSTALLOID*
(in litres)

	2-3	3-4	4-5	5-6	6-7
Survivors	8	4	4	3	3
Non-survivors	1	3	2	2	1
TOTAL	9	7	6	5	4

* almost all Ringer's lactate

TABLE VIII
BEST SYSTOLIC BLOOD PRESSURE (mm Hg) AFTER CROSS-CLAMP REMOVAL IN O.R.

	50	51-60	61-70	71-80	81-90	91-110	101-110	111-120	121-130	131-140	141-150
Survivors	0	0	1	2	3	4	5	5	1	1	1
Non-survivors	2	1	2	1	1	1	0	0	0	0	0
TOTAL	2	1	3	3	4	5	5	5	1	1	1

TABLE X
INTRA-OPERATIVE BLOOD TRANSFUSION
(expressed in units)

	0-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18
Survivors	1	2	1	10	4	0	3	1	0
Non-survivors	0	0	0	0	3	3	1	1	1
TOTAL	1	2	1	10	7	3	4	2	1

TABLE XI
APPROXIMATE ANEURYSM SIZE
(transverse diameter in cm)

	0-4	4.1-5.0	5.1-6.0	6.1-7.0	7.1-8.0	8.1-9.0	9.1-10.0	10.1-11.0	11.1
Survivors	2	3	4	7	4	2	1	0	0
Non-survivors	0	0	1	1	2	1	2	1	1
TOTAL	2	3	5	8	6	3	3	1	1

Intra-operative assessment of aneurysm size was carried out, usually using a linear scale in centimetres. Obviously, this, could only be done after control of the bleeding and all estimates are, of necessity, only approximate. The largest aneurysm was in excess of 15 cm in transverse diameter and one was smaller than 4 cm. Although these have been examined in terms of survival, there did not appear to be any trend that we could identify in our small series (Table XI).

The major post-operative complications that we identified are presented in Table XII. Several of these often occurred in a single patient. In our series, the two patients having myocardial infarctions within 48 hours of the surgery both died. The two patients requiring renal dialysis but who renal failure did not improve, both died, and those patients requiring prolonged ventilatory support greater than seven days, all went on to succumb to their ruptured aortic aneurysm. Ischemic colon was a serious post-operative complication and three out of four of those patients expired. The single patient with post-operative pancreatitis pursued a fulminating course and expired.

In all, 9 of the 31 patients died, for an overall mortality rate of 29 percent. The principle cause of death in each of these cases is listed in Table XIII.

While time to the O.R. is a critical factor in the survival of all of these patients, our own data have suggested that some patients who have had symptoms of surprisingly long periods of time, namely, greater than three days, may still survive. We presume that the main reason for this apparent anomaly is the great variability in the rupture patterns of abdominal aortic aneurysms. The literature clearly supports, as does our clinical experience, the idea that some of these patients almost instantly bleed out from a ruptured abdominal aortic aneurysm. Typically, however, there will be several episodes of pain associated with bleeding and

shock, followed by periods of relative stability, followed again by more bleeding, pain, and shock. In some instances, the initial bleeds are very small and shock may not be a feature for a surprisingly long period of time.

TABLE XII
MAJOR POST-OPERATIVE COMPLICATIONS

	Number	Eventual Mortality (30 days)
M.I. 48 HR.	2	2
Reversible Renal Failure	1	0
Reversible Dialysis	1	0
IRR Reversible Dialysis	2	2
Colon Ischemia	4	3
Respiratory Failure 5 days	7	7
Wound Dehiscence	3	1
Gangrenous Cholecystitis	1	0
Pancreatitis	1	1
Venous Thrombosis (D/C) + Gangrene	1	1
TOTAL	23	17

TABLE XIII
PRINCIPAL CAUSE OF DEATH

Complication	Number
Intra-operative hemorrhage	1
Myocardial infarction	2
Multi-organ system failure	2
Colon ischemia	3
Pancreatitis	1
TOTAL	9

It is this variability that has often been used to explain some of the marked differences in survival rates reported amongst various papers published on this subject. These have varied from a low of 15% (Lawrie, *et al.*¹¹) to as high as 68% (DiGiovanni, *et al.*¹²). It

is assumed that the patient populations select themselves by having those with the most massive bleeds expire before reaching hospital in areas where some distance is required to reach a referring hospital. It is possible that our own series may have been affected to some degree by such a selection factor in view of the distance involved in transport to Sydney City Hospital from parts of Cape Breton and the inclement weather many times of the year. Our rate of 29% mortality for frankly ruptured abdominal aortic aneurysm is on the lower end of that mortality spectrum as reviewed by Hoffman, *et al.*

With respect to mortality prediction, we looked specifically at five areas reported in other papers as having some predictive value, but found in our small series no significant correlation. These included time of onset of symptoms to operation, aneurysm size, location of rupture, amount of crystalloid given in the O.R., and age of patient. In Table XIV, we present some parameters which did seem to have a trend that, possibly in a larger series, would have attained statistical significance. A cross-clamp time of less than one hour, a total O.R. time of less than three hours, and a best blood pressure in the Emergency Room of greater than 120 mm, all seem to be predictors of a good outcome.

TABLE XIV
MORTALITY PREDICTION PARAMETERS
WHICH DID SEEM TO MATTER

	1 HR	1 HR	P-values**
Cross-Clamp Time	0/8 (0%)*	9/23 (38%)	0.1
	3 HR	3 HR	
Total O.R. Time	0/6 (0%)	9/25 (36%)	0.1
	120 mm Hg	120 mm Hg	
BP in E.R.	0/6 (0%)	9/25 (35%)	0.1

* percent mortality

** based on χ^2 determinations

In Table XV, we list those parameters which are significant to a .05 level of confidence or better. The most impressive predictor was the amount of blood required in the operating room. Patients requiring more than 10 units had a high mortality rate as did patients requiring more than five days of mechanical ventilation. Patients with less than 100 mm systolic pressure at the end of the case also had a high mortality rate. All of these parameters, to a greater or lesser extent, are simply related to the degree of shock sustained by the patients secondary to the cumulative blood loss from the ruptured aneurysm as well as the repair of that aneurysm. The pre-operative risk factors, such as previous myocardial infarctions and a multiple of other medical problems, have all been documented as important considerations in the ultimate outcome but are certainly beyond the control of the surgeon at the time when the patient presents with this ruptured aneurysm. The only thing the medical team can hope

to accomplish at that point of time is to limit the blood loss and the length of time during which the patient must experience profound shock to avoid the sequelae of multi-organ system failure, including particularly, renal and respiratory failure, as well as myocardial infarction, stroke, and ischemic bowel.

TABLE XV
PARAMETERS WHICH WERE SIGNIFICANT
PREDICTORS

	10 U	10 U	P-values*
Units Blood Given	0/17 (0%)	9/14 (64%)	0.01
	5 Days	5 Days	
Mechanical Ventilation	0/13 (0%)	6/15 (40%)	0.05
	100 mm Hg	100 mm Hg	
BP end of case	0/13 (0%)	9/18 (50%)	0.05

* Based on χ^2 determinations

DISCUSSION

The epidemiology of abdominal aortic aneurysms has been well studied. A complete review is published by Bickerstaff, *et al.*³ In their study, an incidence of about 21 aneurysms per 100,000 person/years was noted. This would be equivalent in our series with a population base of 160,000 of about 30 new diagnoses per year. Again, these authors noted a rupture rate of about 20%, which would be about six per year in our population base. Since we had 31 patients in 5 years, clearly these numbers are very close. No doubt there are some patients referred elsewhere and some patients who simply do not make it to hospital, so our probable incidence of ruptured aortic aneurysms may be slightly higher in Cape Breton. This would not be surprising in view of our somewhat skewed age structure in our population which tends to be weighted towards the upper end.

Almost all series of any size have noticed that abdominal aortic aneurysms occur in males more often than females, but the usual rate quoted is around 3 or 4 to 1, males to females. For some reason, in our small series, that ratio is much higher, being 29 males and 2 females. The reason for this is not clear.

The age range we have described is quite standard according to that described in the literature. Several papers (Bickerstaff, *et al.*; Hoffman *et al.*⁴; Lundell, *et al.*⁵; Rantakokko, *et al.*⁶; Bottsford, *et al.*⁷; Wakefield, *et al.*² and Hiatt, *et al.*⁸) have all examined the effect of age on survival in ruptured abdominal aortic aneurysms. There is a general consensus that advanced age does not preclude a successful result, although a very careful study carried out by Soreide, *et al.*⁹ demonstrated that advanced years are generally associated with a lower survival rate. In a large series examined with sophisticated statistical techniques, he reports a mortality rate of 37% at age 50 compared to 62% at age eight-five. Our oldest patient was 85

with severe chronic obstructive lung disease and, despite suffering a frank cardiac arrest prior to being taken into the O.R., he was able to survive the procedure. He was discovered at time of aneurysm repair to have a simultaneous almost-obstructing carcinoma of the sigmoid which was exteriorized, and removed later. He eventually returned to have his colostomy closed at a later date under a local anesthetic and survived a further 18 months before succumbing to a respiratory demise. It would seem then, that notwithstanding the increased mortality at advanced age, an aggressive approach to repair of ruptured aneurysms is still warranted, since some will survive.

Our assessment of patients as they have presented to hospital has led us to the conclusion that there has been an improvement in the assessment of these patients by primary physicians all over this Island. Furthermore, once the diagnosis is suspected, the proper course of action, which is immediate transferral to a centre where definitive repair can be accomplished, is being taken more often. Diagnosis is still being delayed, however, because of the sites to which pain is often referred in these patients. Severe pain of some type in the abdomen or back, plus shock, are the hallmarks of this condition. The pitfalls in the diagnosis of this condition has been carefully reviewed by Merchant, *et al.*¹⁰ and the pathways for the pain referral are reviewed. Nonetheless, in at least 90% of cases, careful physical examination before the patient drifts into profound shock, invariably will reveal a tender pulsatile mass.

SUMMARY

Thirty-one patients were treated for ruptured abdominal aortic aneurysms in Sydney City Hospital, a regional referral hospital on Cape Breton Island. These patients were referred from many areas of this Island over a 5-year period. The mortality rate was 29% and there was one intra-operative death. These survival statistics are in line with those published series from much larger centres and the intra-operative death rate (3%) also compares favorably with data from small hospitals as well as major referral centres.

A ruptured aneurysm is no longer a death sentence and survival rates are improving. It is our opinion that a 24-hour service with appropriately trained surgeons, anesthetists, and the back-up facilities of Intensive Care and Renal Dialysis Units, and internists interested in critical care medicine, are the minimum critical mass of expertise required to obtain best results.

Medical staff can do very little to control the pre-operative risk factors or the condition in which the patient presents to hospital. However, in our patients, once treatment was started, the most important determinants of survival were measures of the degree of shock sustained. These included a short aortic cross-

clamp time and short total O.R. time and also the attainment of a good systolic blood pressure in the Resuscitation Room prior to transport to the O.R. Patients who required a lot of blood in the O.R. (greater than 10 units), prolonged mechanical ventilation (> 5 days), or in whom a systolic blood pressure of 100 mm was not attained at the end of the case, had a statistically significant increase in mortality over 30 days.

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The Open Heart Patient Support Group at the Victoria General Hospital

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An Open Heart Patient Support Group was established at the Victoria General Hospital in October, 1984. Its purpose is to assist the open heart patient by alleviating anxiety prior to and/or following cardiac surgery. This goal is achieved, either at home or in the hospital, by having a successfully recovered individual visit the patient. To date, 75% of all candidates for open heart surgery are being visited at the Victoria General Hospital. Over 800 visits have been made since the inception of the support group.

This article describes the program and plans for future development.

Ischemic heart disease remains the leading cause of death in Canada, despite the significant and consistent decline in ischemic heart mortality since the late 1960s.¹

Coronary artery bypass graft surgery (CABG) is established as a major therapeutic technique in the management of ischemic heart disease. Over the past fifteen years there has been a substantial increase in the number of procedures being performed and a significant decrease in the complications and mortality rate. Statistics reveal that deaths have been reduced to almost 1%; and the decline in surgical risk has occurred despite the fact that less favorable patients are subject to the operation.² The results of valvular heart surgery parallel those of CABG surgery in that the operative mortality has been significantly reduced. In the 1960s the mortality rate ranged from 18%-40%, today it is less than 10%.³

However, there is a danger that as health professionals we may consider open heart surgery and the recovery process as routine and thus ignore the total needs of the patient and family. We must be continually aware of the major physiological⁴⁻⁶ and psychosocial⁷⁻⁸ complications which persist in the immediate post operative and rehabilitative periods. Dracup noted that "a review of the literature yields general agreement among investigators regarding the responses of patients and spouses to a cardiac event. Anxiety, depression, low self-esteem, marital and sexual dysfunction and psychosomatic symptoms have been consistently documented up to one year following a myocardial infarction or cardiac surgery".⁹

Throughout my experience as a nurse, caring for cardiac surgery patients and their families, I have observed that heart surgery is perceived by patients as an operation which carries great risk. Patients view it as a new and awesome procedure. The fact that the heart has been symbolized as 'containing the soul' and the 'key to life' may account in part for the high degree of apprehension attached to the operation. From my experience, the concerns of candidates for heart surgery are similar to those raised by patients facing any major surgery: What are my chances of surviving the surgery? What will my life be like after surgery? How will my body be scarred? In addition, questions specific to heart surgery are repeatedly asked: Will I have brain damage? Will my chest pain end? Will I be less susceptible to a sudden heart attack? These questions indicate that patients experience fears which are real and they should not be ignored by health professionals.

Our present health care system emphasizes technology; patients report difficulty in finding a health professional who can understand and assist them in dealing with their fears and anxieties. As helping professionals we may not be able to discuss the patient's fears at a meaningful level. If the patient and family member can meet with someone who has faced the same questions and concerns then some apprehension may be relieved. This contact could stimulate discussion of questions the patient has been unable to ask the health professional or to which he has not received a satisfactory answer.

An Open Heart Patient Support Group was established in October 1984, at the Victoria General Hospital, Halifax. It was formed as an auxiliary group of the Maritime Heart Center and an official volunteer group under the Department of Volunteer Services, Victoria General Hospital. It was developed by myself and Professor Frances Gregor, of the School of Nursing, Dalhousie University and assisted by Dr. David Murphy, Head of the Division of Cardiovascular Surgery, Victoria General Hospital, and Judge Peter Nicholson, a successfully recovered open heart patient.

The main goal of the support group is to assist the patient in alleviating anxiety prior to and/or following cardiac surgery. This is achieved by having an individual who has recovered from open heart surgery visit the patient either at home or in the hospital.

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The support group at the Victoria General Hospital is composed of eighteen volunteer men and women who have had either coronary artery bypass surgery or valvular surgery. The interaction of the volunteer and patient is directed by the role description established by the Open Heart Patient Support Group. The role of the volunteer visitor is based on the following beliefs:

- the visitor is a 'living proof' of a successful surgery and rehabilitative process
- the visitor has 'first hand knowledge' of the fears, anxieties and questions confronting the patient
- the visitor's positive mental and physical status will be communicated to the patient and family

Guidelines have been established to steer the interaction of the visitor with the patient, family and health personnel. The guidelines describe the 'Do's and Don'ts' of effective visiting.

At the time the patient is notified by the Maritime Heart Center of the date of surgery, a visit from a support group volunteer is offered. Once the patient has consented to see a volunteer, a visit may take place in the home or in hospital; before or after surgery; and either through a personal visit or a telephone call. Currently the majority of visitor-patient contacts take place in the hospital prior to surgery and one third of the visits occur in hospital following surgery.

The open heart patient support group meets quarterly to assess, plan and evaluate the program and to receive educational information from health personnel.

Since the inception of the program in October 1984, over 800 visits have been made and an estimated 75% of all patients undergoing open heart surgery at the Victoria General Hospital have been seen by a support group volunteer. The responses of the patients to the program are overwhelmingly positive. Comments noted on the visitor report form include: "Visiting is a fantastic idea". . . "Seeing you feeling well gives me a boost". Another report noted "I very much appreciate your visit and my fears are allayed by talking to a 'living proof' that the operation is worthwhile". The cardiovascular surgeons report that patients who received a visit by an open heart volunteer are less anxious before and after surgery.

The personal satisfaction experienced by the volunteers has served to promote their commitment to the program. After two years of operation the original group of 12 volunteers are still active in the program. The support group recognizes that individuals differ in their need for moral support, and the volunteers should therefore be available at various

points in time before and after surgery. They repeatedly state that there are several stressful periods for the patient and the family. These are:

- waiting to hear the results of the cardiac catheterization
- waiting to hear the date of surgery
- waiting to go to hospital for surgery
- awaiting surgery in hospital
- the first few weeks at home following surgery.

In future the support group hopes to broaden the scope of the visiting program to include all phases of the stressful cardiac event. To achieve this end the group is now working on the development of similar, but independent, groups throughout Nova Scotia.

Providing open heart patients with the opportunity to meet and talk with an individual who has undergone similar surgery is an important component in the cardiac patient's rehabilitation. The visitor acts as a buffer in helping the patient and family cope with a major stressful event and also acts as an adjunct support to the health professional in facilitating the patient and family's attainment of optimum health.

Further information about the program may be obtained by contacting:

Maritime Heart Center, c/o Room 3063, Dickson Building, Victoria General Hospital, Halifax, N.S., B3H 2Y9, 428-2356.

□

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Liver Therapy for Pernicious Anemia: A Nova Scotia Connection

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INTRODUCTION

Pernicious anemia (PA) is the most common cause of vitamin B₁₂ deficiency in temperate climates. In PA, intrinsic factor (which is required for the absorption of vitamin B₁₂) secretion fails secondary to atrophy of the gastric mucosa. The mainstay of treatment is replacement therapy. Replacement is administered parenterally in our era but, prior to the isolation and purification of vitamin B₁₂, treatment was by orally administering large quantities of liver. An interesting connection between Nova Scotia and this historical form of therapy is that the beneficial effects of liver were first convincingly documented in a native Nova Scotian.

BACKGROUND OF LIVER THERAPY

It was long recognized that individuals suffering from PA could experience apparently spontaneous remissions. Speculation regarding the effects of diet on PA dates back to 1863, seven years after the publication of Addison's second description of the disease.¹ Osler in 1885 wrote "cases appear to have got well with change of air and a better diet after resisting all ordinary means."²

In this background of interest there appeared reports by Whipple and colleagues concerning the effect of food on "blood regeneration."³ Their work showed the beneficial effect of certain foods — especially liver — on accelerating blood regeneration in dogs who were bled. George Minot and William Murphy became aware of this work. They apparently recommended eating liver to some of their office patients suffering from PA in the early 1920s with inconclusive results.⁴ It was proposed by them to investigate the effects of liver therapy in PA systematically. Patients were to be hospitalized in the Peter Bent Brigham Hospital so that their clinical and hematological responses could be carefully observed. The prescribed daily diet (called the "high purine diet") was as follows:

- From 120 to 240 gm of cooked calf's or beef liver.
- 120 gm of beef or mutton muscle meat.
- 300 gm of vegetables.

- 250-500 gm of fruit.
- 40 gm of fat derived from butter and cream.
- If desired, an egg and 240 gm of milk.
- Also — breads, potato, and cereals to allow a total intake of 2-3,000 calories composed of 340 gm carbohydrate, 135 gm protein, and 70 gm fat.

On January 14, 1926 a 44 year old machinist with PA was admitted to hospital. He was of German descent, had been born in Nova Scotia, and had emigrated to Boston at the age of 12. His admission complaint was of "weakness and shortness of breath." On physical examination he was thin, had "lemon"-colored skin, and his tongue was smooth. His red blood cell count was 776,000/mm³ with a reticulocyte count of 2,000/mm³. It was felt that he had the "typical appearance, history and blood findings of PA" (quote from chart).⁴ He was started on the high purine diet sometime between Jan. 24 and Jan. 31. For the first five days of treatment he appeared to be getting worse.⁵ Around midnight of the fifth day his reticulocyte count began climbing and he subsequently showed rapid improvement. By the 14th of February his red blood cell count was 3,700,000/mm³ and he was discharged from hospital on the 21st of February, 1926. This marked the first convincing evidence for the utility of liver therapy in PA.

EPILOGUE

As a tribute to their contributions, Minot, Murphy, and Whipple were awarded the Nobel Prize in Physiology and Medicine for 1934. As for the first patient we have Dr. Murphy's word that "he not only survived but lived for many years."⁵ □

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Current Topics in Community Health

Prepared by: Dr. Frank M.M. White
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CONFERENCE REPORT

A NATIONAL FORUM ON MISSING CHILDREN Toronto, April 27-30, 1986

This Forum was sponsored by the Solicitor General of Canada, and was attended by one hundred and sixty delegates among whom were representatives of government, corporate and voluntary sectors, police and the media.

Delegates were given the opportunity to review The Federal Law Relevant to Missing Children and the Provincial Legislation Addressing the Problem of Missing Children. The laws that the federal government have brought into force are:

- 1) The Hague Convention on the Civil Aspects of International Child Abduction;
- 2) Amendments to the *Criminal Code* and
- 3) The *Family Orders and Agreements Enforcement Assistance Act*.

Provincial statutes have been enacted that deal with some civil aspects of parental-child abduction, including child protection legislation, that deal indirectly with the problem of runaway children. To date there are no existing provincial laws relating to stranger-child abductions, nor to unexplained disappearances or lost children.

The specific elements of the problem of missing children addressed were:

- 1) Runaway children
- 2) Abductions: a) parental abduction
b) the stranger abduction
- 3) Prevention and Protection

The Forum raised the awareness of the delegate and provided a deeper insight in the national dimension and complexity of these, always social and sometimes criminal, justice problems faced by Canadians.

In the case of "runaways", the nature of these children, who they are, where they are and what they are running from, was explored. It was suggested that at this time there is no common definition of a "runaway child". Many reasons for children leaving home have been identified, but it is difficult to place a particular child into one category because there may be a combination of reasons for running away. This compounds the difficulty of understanding the behaviour of "runaways".

The phenomena of abductions were reviewed with a comparative look at parental and stranger abductions. It was emphasized that parental abductions cannot be taken lightly. It is a crime in Canada and children are the victims. It is known that abduction by parents account for a large number of all missing children. The prevention of this crime and the protection of the victims must be viewed as a shared responsibility which goes beyond the traditional approaches to criminal or social justice.

The extent of the problem of stranger abductions is not known with any precision. The need to review police policy and procedures in this matter was noted, not only in finding the children but making sure that the families of these children are treated with sensitivity and given the information and support they need. It was recognized that in order to accomplish this, the police will need the cooperation and support of all those involved in child care and safety.

Many people in Canada have been working hard to address some aspects of these problems, both domestically and internationally. Legislation has been put in place but laws must be kept up to date and properly enforced to respond adequately to current social problems. The Corporate and Volunteer sectors, the media and the police shared their programs and explored their achievements. It was generally recognized that, although a tremendous amount of work is being done in all sectors, there is not a strong enough mechanism in place at all levels of government to counteract these syndromes; however, the need and willingness to do more was evident. It was emphasized that if these syndromes are to be brought to an end, Criminal Justice, Social Welfare and the Health Care professionals must work together.

The consensus of the delegates was that to ensure progress there is a need for a defined mechanism to provide a focal point to promote awareness and action in disseminating information and achieving cooperation. The Solicitor General has proposed a Federal/Provincial working group to work at government level toward the creation of a national centre to provide coordination, continuity, and long term planning. That office has also proposed that . . .

"in one years time a second national forum will review the proposals of the working group; review the implications of our research and statistical findings; review our progress; and ensure that we continue together in a direction that will help missing children, their families and all who are

engaged in finding better solutions" (opening remarks by the Honorable Perrin Beatty, Solicitor General of Canada, to the Press Conference on Missing Children, Toronto, 1986).

Source: Ruby Dewling, Chairman, Family Health Division
Canadian Public Health Association

ACKNOWLEDGEMENT

We thank the Canadian Journal of Public Health for permission to carry this report.

MORTALITY IN CAPE BRETON, NOVA SCOTIA, 1971-1983

This report was prepared at the request of Nova Scotia health authorities. It results from concerns which have been expressed regarding possible environmental and occupational health hazards in the Cape Breton region, and consists of an analysis of mortality patterns in Cape Breton County for the period 1971-1983.

The available mortality data indicate an overall excess for several causes in Cape Breton County. Mortality from stomach cancer among men 35-69 years of age was significantly elevated compared to Nova Scotia. Rates were highest in Glace Bay, New Waterford and Dominion. Stomach cancer has been positively associated with a diet low in vitamin C and high in pickled vegetables and dried/salted fish. It has been negatively associated with a high intake of fruits, vegetables and dietary fibre. Stomach cancer has also been positively associated with coal mining. The New Waterford and Glace Bay regions have a long history of coal mining. Further evidence of an occupational effect was the fact that stomach cancer mortality was elevated among males only.

Respiratory disease mortality especially from pneumoconiosis was also found to be significantly elevated, but again only among males. Non-malignant respiratory diseases, in particular pneumoconiosis, have also been associated with coal mining. The coal mining towns of New Waterford and Glace Bay, as well as an adjacent subdivision, all had significantly elevated male pneumoconiosis mortality.

Lung cancer was found to be elevated among many communities in Cape Breton. Sydney has important steel and coke oven plants. Extensive epidemiologic studies of coke oven workers have found that exposed workers experience an increased risk of cancer, especially of the respiratory tract. Polycyclic aromatic hydrocarbons (PAH) are of particular concern, of which benzo(a)pyrene (BaP) is often used for measurement purposes. Effects to the general public at normal ambient air levels have not been demonstrated. Environment Canada has measured PAH and BaP levels while the Sydney coke ovens were operating at

about 50% capacity and found levels which were comparable to other cities in Canada and the U.S. with coke oven facilities.

Elevated mortality from circulatory diseases was observed among both sexes in Cape Breton County. Important aspects of primary prevention include reducing elevated serum cholesterol (related to obesity and eating habits), the treatment and control of high blood pressure, smoking cessation and physical exercise.

Several causes of death were found to be elevated in Cape Breton. Excess deaths from pneumoconiosis were almost certainly associated with coal mining. Other elevated causes such as lung cancer may be related to the coke oven facilities, but are more likely related to high levels of cigarette smoking. A lack of information regarding personal exposure to PAH's and cigarette smoking renders it impossible to know the relative importance of these factors. A case-control study of lung cancer in Cape Breton would help to elucidate the risk factors.

Source: Mortality in Cape Breton, Nova Scotia 1971-83, Chronic Diseases in Canada, Special Report No. 11, 1985.

Comment

The above item is a synopsis culled from the introduction and discussion sections of this report. A copy of the full report (16 pages including tables and figures) is available on request. □

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Correspondence

To the Editor:

Your *Bulletin* of June 1986 has come into my hands.

Your guest editorial writer, himself a Newfoundlander, needs a few reminders of the real facts regarding Orthopaedic Surgery in the Atlantic Provinces.

Newfoundland became a Canadian province on April 1, 1949, and then the Atlantic Provinces were created. Therefore, if one is going to refer to Orthopaedic Surgery in the Atlantic Provinces, it should include the time after Confederation up to the present, and not just limit it to the time before Confederation, when the Atlantic Provinces did not exist as such. We must remember that the Maritime Provinces existed as they do now, consisting of Nova Scotia, New Brunswick and Prince Edward Island.

So, we must make mention of the situation in Newfoundland shortly after Dr. Conroy's death in 1962. I was appointed Chief of Orthopaedic Surgery at the St. John's General Hospital in October 1962. In 1963 we requested our teaching programme to be evaluated by the Royal College and, in 1963, Dr. Donald Webster visited us. As result of this visit, we were granted approval for two years training, and we were to arrange a third year elsewhere, this third year being one of the required core years. Memorial University of Newfoundland did not have a Medical School at that time, and was still in the planning stages. I realized the importance of a university affiliation, and I approached Dalhousie. In spite of Dr. Antoni Trias' support, the then Head of Surgery at Dalhousie saw fit not to develop an affiliation.

We did, however, affiliate that year with McGill University and later, in 1969, through the efforts of Dr. Bianco and Dr. D. Landells, the Mayo Clinic. These affiliations ended in 1978, when our own Medical School was quite mature, and graduating classes of 50 and more.

The M.U.N. Program was fully accredited when I left St. John's in 1978 but, unfortunately, the accreditation dropped to provisional accreditation in 1982 and in 1983 it seemed that affiliation with another centre would be necessary. Hence, the approach in 1984 to Dalhousie.

A number of graduates in Orthopaedic Surgery have gone through the St. John's program in the nearly 20 years of its existence. Five of these have returned to practise in St. John's. Others are scattered, with three on the staff of the Mayo Clinic, at least two in Quebec City, several in Montreal, and at least one in Toronto. Others are practising in various parts of the United States.

Dr. Yabsley's editorial portrays, inadequately, the story of Orthopaedic Surgery in the Atlantic Provinces.

I ask you to publish the above facts, so that the records will be complete in your journal.

Yours sincerely,

A.E. Shapter, M.D., F.R.C.S.(C), F.A.C.S.,
James Paton Memorial Hospital,
Gander, Newfoundland.

To the Editor:

"In his letter concerning the content of my guest editorial (June, 1986), Dr. Shapter has misunderstood its intent. As well, he is peeved that I omitted what he feels is significant historical information.

Its purpose was to tell briefly the non-Orthopaedic reader who the pioneers were in Orthopaedic Surgery in Canada's four most easterly Provinces, and to indicate the present training arrangements which exist at this time.

As a sixth generation Newfoundlander, I am aware of the political history of Newfoundland! The reminder of the distinction between the terms "Maritime Provinces" and the "Atlantic Provinces" has now become rather tiresome and unnecessary.

A detailed historical account of Orthopaedic training would have been inappropriate. Nevertheless, readers will appreciate in his personal and incomplete account the frustrations and disappointments of attempting to establish and maintain a training program, and have its graduates remain to practise in the community. There is a critical shortage of Orthopaedic manpower in Newfoundland at the present time."

With best regards,

R.H. Yabsley, M.D., F.R.C.S.(C),
Chief, Division of Orthopaedic Surgery,
Victoria General Hospital, Halifax, N.S.

To the Editor:

I was interested to read the article about the blood pressure survey in Whycocomagh (*Nova Scotia Medical Bulletin*, Vol. 65, No. 4, p. 127).

The conclusion of the survey reads, "It indicates that even in rural areas of Nova Scotia monitoring of blood pressure by physicians is being practised".

I am glad to see that condescension by urban academics is alive and well even in Dalhousie University.

Yours Sincerely,

Robert Stokes, M.B.,
Baddeck, N.S. □

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