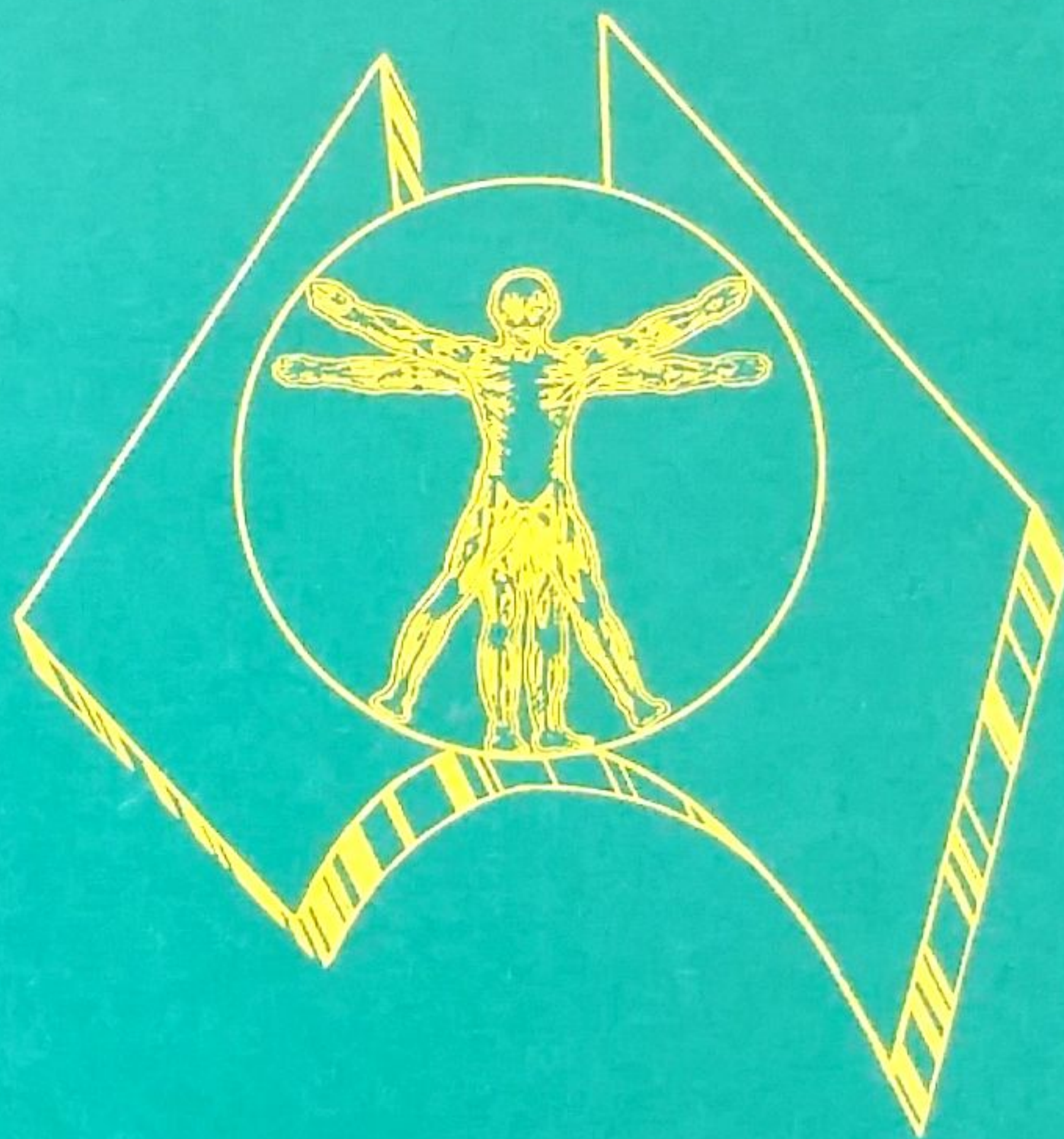


Australian Association of Musculoskeletal Medicine

Bulletin



The Acromioclavicular Joint

Abridged Product Information
Kenacort-A 10 contains triamcinolone acetonide suspension, 10mg/ml. **Indications:** For intra-articular, peri-articular, intrabursal or intradermal administration.
Contraindications: Absolute: Acute psychosis, ocular herpes simplex, serious fungal or viral infections, tuberculosis meningitis, alleviation of joint pain arising from infectious states such as gonococcal or tuberculous arthritis.
Relative: Pregnancy, myasthenia gravis, metastatic carcinoma, diverticulitis, fresh intestinal anastomoses, active or latent peptic ulcer, renal insufficiency, chronic nephritis, hypertension, thromboembolic tendencies, osteoporosis, diabetes mellitus, psychotic tendencies, acute or chronic infections.
Warnings: Because it is a suspension, Kenacort-A should be administered intravenously. Strict aseptic technique is mandatory. Rare cases of anaphylactoid reactions have been reported.
Precautions: Intra-articular administration: Following intra-articular steroid therapy, patients should be specifically warned to avoid overuse of joints in which symptomatic benefit has been obtained. Intra-articular injections should not be repeated. Rare cases of anaphylactoid reactions have been reported.
Adverse effects: Following intra-articular administration: Some cases of transient instability.
Adverse effects: Following intrabursal administration: Any due to the drug.
Adverse effects: Following intradermal administration: Local irritation, depigmentation, local reversible atrophy. Dosage and Administration: For intra-articular or intrabursal administration and injection into tendon sheaths or ganglia: 2.5 to 5mg for smaller joints or 5 to 15mg for larger joints is usually sufficient to relieve symptoms. Dosage may be increased if initial results are inadequate or too transient. For treatment of ganglia: Conditions such as peritendinitis, tenosynovitis, bursitis, rheumatoid nodules, fibrositis, and collagen ligament strains and sprains in the knee may be treated by infiltrating the preparation into the area of greatest tenderness. For treatment of dermal lesions: Kenacort-A 10 is injected directly into the lesion, i.e. intradermally or subcutaneously. The vial should be shaken immediately before use to ensure a uniform suspension.
Presentation: Kenacort-A 10, 10mg/ml, 1ml ampoules, 50, KRT 167 EVA

A most potent mobilising force:

NHS SP for intra-articular or peri-articular infiltration.

Amps. 5 x 1ml

Kenacort-A 10 is triamcinolone acetonide 10mg/ml, a potent, long acting, low dose injectable corticosteroid which produces minimal pain on injection.

Indications include local inflammatory conditions involving joints, bursae or tendon sheaths: e.g. traumatic or rheumatoid arthritis, osteoarthritis, bursitis, synovitis, tendonitis.

Kenacort-A 10



Product information is attached, further information is available on request to The Director of Medical Services, E.R. Squibb & Sons Pty Ltd, 556 Princes Highway, Noble Park, Victoria, 3174.

Australian Association of Musculoskeletal Medicine

Bulletin

Vol.6 No.3

October 1990

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The A.A.M.M. Bulletin is produced by the Australian Association of Musculoskeletal Medicine for medical practitioners interested in the aetiology and management of musculoskeletal disorders. Opinions expressed are those of the authors and not necessarily those of the editor or the Association. Editorial comment may reflect the opinions of the editor alone. Contributions on any relevant topic are welcome for submission to the editor, Dr. Wade King, 82 High Street, Taree, NSW, 2430, telephone (065) 51 0662, or to any member of the A.A.M.M. Committee. Published by Belser Type Services, PO Box 1083, Tamworth, NSW, 2340, telephone (067) 66 6399, fax (067) 66 5440.

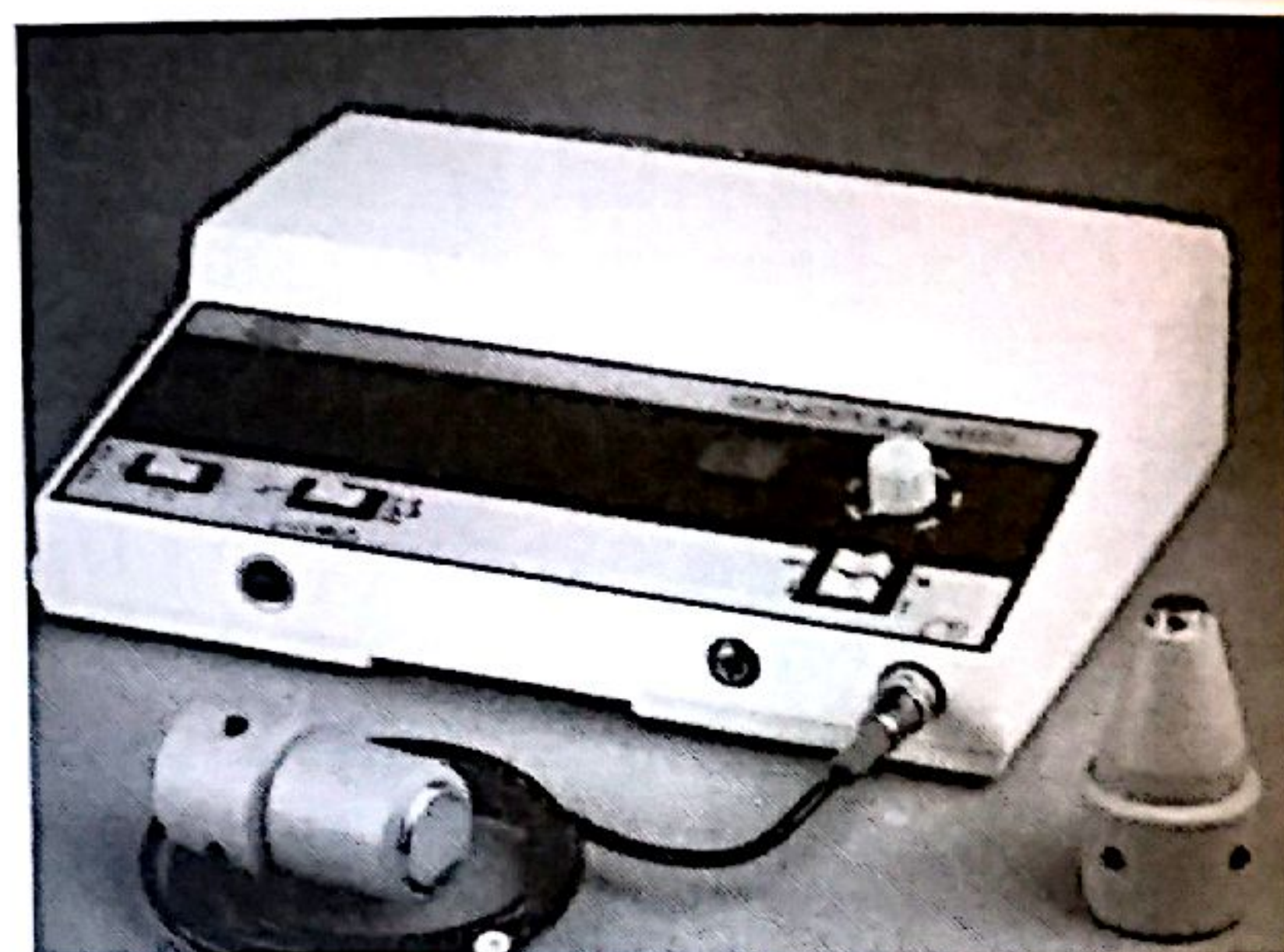
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AUSTRALIAN ASSOCIATION OF MUSCULOSKELETAL MEDICINE OFFICE-BEARERS 1990

The following members were elected to office at the annual general meeting in Sydney on 3rd February, 1990.

PRESIDENT:

Dr. David Vivian MB, BS

441 Bay Street, Brighton, Vic., 3186
telephone (03) 596 7211



HON. SECRETARY:

Dr. Norman Broadhurst MB, BS, MSc, PhD,
DipEd, DipRACOG, FRACGP

7 Brighton Road, Glenelg, S.A. 5045
telephone (08) 295 1890



HON. TREASURER:

Dr. Wade King MB, BS

82 High Street, Taree, N.S.W., 2430
telephone (065) 51 0662



COMMITTEE MEMBERS:

Assoc. Prof. Nik Bogduk	Newcastle, N.S.W.	(049) 68 5718
Dr. Phil Funnell	Eastwood, N.S.W.	(02) 477 9123
Dr. Ian Hewett	Dalkeith, W.A.	(09) 367 9778
Dr. Bob Michael	Rosedale, Qld.	(07) 345 8999
Dr. Ron Palmer	Herston, Qld.	(07) 252 1128
Dr. Roger Watson	Townsville, Qld.	(077) 71 3084
Dr. Vic Wilk	Brighton, Vic.	(03) 596 7211

STATE REPRESENTATIVES:

ACT:	Dr. Goff Nelson	(062) 95 6773
NSW:	Dr. Barry Abeshouse Dr. Bruce Miller	(02) 427 2829 (02) 621 2323
QLD:	Dr. Gordon Byth Dr. Bob Michael	(07) 345 8999 (07) 345 8999
SA:	Dr. Bob Gower Dr. Bill Morrison	(08) 43 6266 (08) 79 9920
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VIC:	Dr. Murray Deerbon Dr. Max de Clifford	(03) 729 4011 (03) 873 1764
WA:	Dr. Arnold Jones Dr. Marius Loeffler	(09) 390 4444 (097) 33 5220

Editorial

The management of musculoskeletal pain problems in Australia is often far from ideal. Many patients with musculoskeletal complaints receive little help from their medical advisors and some are even treated as though the very reporting of musculoskeletal symptoms is indicative of some psychological disorder. As a result they suffer the double discomfort of not having their symptoms relieved and having to endure suggestions that their problems are either exaggerated or imaginary. That this should occur when monetary compensation is involved would perhaps be understandable (although still inexcusable). However, it tends to happen to patients with musculoskeletal problems whether they are compensable or not and to an extent that suggests the acceptance of a prejudice by many members of the profession. The existence of this type of attitude is curious amongst a group who would no doubt consider a similar approach negligent if it was used for patients with pain from other anatomic sites, such as cardiac pain.

The main reasons for this apparent lack of care are insufficient knowledge and consequent feelings of insecurity amongst doctors faced with problems they do not understand. Patients entering the medical system through contact with such doctors seldom have the physical causes of their symptoms identified accurately. As they move through the system it is often by referral to other practitioners with similar attitudes. Any management they receive is based on the particular biases of the doctors involved and it is really not surprising that the final stage of such management often relies heavily on psychological strategies. Many of the pain clinics which have been established in recent years are essentially psychological clinics, where operant conditioning is applied in sophisticated ways to persuade patients not to complain of physical symptoms. That this is often done principally for the benefit of third parties such as employers and insurance companies makes it even worse and invites comparison with the psychological "treatment" of political dissidents in repressive states. It is interesting to speculate on the probable effects of applying this operant conditioning model to patients with ischaemic heart disease, carcinoma of the lung or glomerulonephritis, and then to wonder just how these conditions differ essentially from chronic musculoskeletal problems in this respect.

This is not, of course, to deny the legitimate use of psychological modalities to help those who suffer the psycho-social consequences of chronic pain and disability. It is also acknowledged that there are often difficulties in separating these natural concomitants from the features of the causative condition itself. However, the distinction must be made if the patient's needs are truly to be met and certainly the primary cause must be addressed if resolution of the problem is to be achieved.

Aspects of these problems are explored in the article by Broadhurst in this issue of the Bulletin, together with some suggestions for improvement of the current situation. In particular, Broadhurst stresses the need for "centres of excellence" (academically-supported clinics in teaching hospitals) as resources for the development and dissemination of management strategies based on scientifically established facts. He also places emphasis on the need for educational programmes at both undergraduate and postgraduate levels, to provide the profession with access to the wealth of scientific knowledge produced by research into the musculoskeletal system in recent years.

No longer should ignorance and prejudice be allowed to cause inappropriate management of patients with musculoskeletal problems. Large amounts of pertinent data are in existence and if definitive treatment is not yet available for the resolution of all musculoskeletal problems, at least those modalities that are in use can be evaluated, and their indications determined, on the basis of demonstrable facts. The establishment of centres for the propagation of rational management practices is a matter of urgency. The needs of those who suffer, and the sheer wastage of economic resources associated with chronic musculoskeletal problems, demand attention at the earliest possible time.



A Word from the President

The Accident Compensation Commission in Victoria has on its books some 17,000 workers who have currently been out of work for more than a year. These workers are paid 80% of their original salary up to a certain level. A recent Act of Parliament in Victoria stated that if workers have a "less than 15% level of impairment" then their wages will be cut to 60% of their original salary.

The evaluation of this impairment is based upon a medical examination, a Workcare disability assessment and a handicap weighting scale. These three components can be correlated to produce an impairment figure.

The medical impairment rating has been adapted from the original Board of Trustees report from the American Medical Association. The different conditions or systems that are examined are as follows: the extremities, spine and pelvis; the nervous system; the respiratory system; the cardiovascular system; the haematopoietic system; the visual system; the ear, nose throat and related structures; the digestive system; the reproductive and urinary systems; the endocrine system; the skin; mental and behavioural disorders.

The medical impairment assessment in relationship to the peripheral musculoskeletal system largely involves examination of joint mobility. Normal mobility is defined and if the joint moves to these ranges then there is said to be no disability, despite X-ray changes or the possibility of the patient being generally hypermobile. Some allowance is given for definite surgical conditions, e.g. meniscectomy, hip replacement, but for most joints no allowance is given for such conditions.

In the spinal assessment, some allowance is given for radiological abnormality. Some examples include: Vertebrae Compression fractures:

Amount of Compression	Percentage impairment of whole person
25%	3%
50%	6%
greater than 50%	10%

Fracture of posterior elements is rated at 3% impairment.

Most of the spinal disc impairment assessment is related to ranges of movement and this would seem to penalise those patients who are co-operative and move well and to reward patients who are either stiff, hesitant to move or deliberately exaggerating their degree of stiffness.

If an injury to the spine has occurred, then additional impairment ratings are established by looking at neurological impairment; these values are combined to produce an overall medical assessment. The parameters for these assessments are set out in a booklet of some 245 pages, which goes into considerable detail of the methods to be used. It is quite an interesting document and can be ordered by writing to the Accident Compensation Commission of Victoria. The booklet is called 'A.M.A. - Guide to the evaluation of Permanent Impairment' Second Edition and costs \$20.00.

The next factor that is taken into consideration is the Workcare Disability Severity scale. This scale is used to derive a disability severity score for a worker, based upon interview and examination with weighting of the topics raised according to a scoring system.

The disability categories are: locomotor disabilities (locomotion), locomotor disabilities (climbing and transfers), dexterity disabilities, body disposition disabilities (general), body disposition disabilities and activity tolerances, manual handling disabilities, behavioural disabilities (behaviours), behavioural disabilities (cognitive), communication disabilities and other disabilities. The three greatest disabilities are added together using a complex formula and this produces a further score.

An example is the manual handling disability. A few of the categories are: unable to handle and move any load (79), unable to lift reliably (62), unable to walk with heavy load, e.g. side of lamb, bag of wheat (28).

A handicap weighting scale is then used to adjust the disability score (by multiplication). The resultant score depends upon the worker's profile. The greatest handicap weighting is 1.5 and this is used for a worker aged 45 - 54, who has not worked for over two years and who does not speak and write English well. The smallest handicap weighting is 1.02, for a worker who is less than 25 years of age, has worked within the last two years, has gone to Years 11-12 at school, who speaks and writes English well and who lives in Melbourne or Geelong.

Finally, the medical impairment level and the disability and handicap rating are combined on a cross grid and the statistical analysis of this grid will reveal whether the patient is more or less than 15% impaired.

If an individual is considered to be less than 15% impaired, his regular payment will be reduced to 60% of the original salary.

Definitions of terms used in this context are as follows:

Impairment: This is abnormality of damage to an organ
Disability: This is the change in function related to an impairment.
Handicap: This is the psychosocial consequences of disability and impairment related to e.g. age, sex, job opportunity, etc.

The disability and handicap scale was produced in Victoria by a working group which consisted of a number of doctors, under the aegis of a Workcare tripartite committee.

It will be interesting to see how these assessments affect the long term outcome of Workcare in Victoria. Although this system has a number of faults, it would appear that it is a step in the right direction, to provide some control of the long term costs of injury. It would also seem to be a reasonable way of starting to assess the relationship between medical impairment and disability.



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From the Hon. Secretary's Desk

This is the last edition of the Bulletin for 1990 and it is fair to say that the Association has continued to make significant progress this year in terms of advancing the causes of musculoskeletal medicine for those who are interested in it.

With regard to courses, the Association has been active in teaching both one day and weekend courses in at least three of the six states of our Commonwealth. It is unfortunate that the burden of everyday practice does not enable more members to arrange teaching sessions for colleagues wishing to further their knowledge and skills.

The course work for the recognition of musculoskeletal medicine as a separate discipline is moving slowly forward. The Flinders University has agreed in principle and a postgraduate diploma course will be launched in 1991. The course at Flinders offered by the Department of Primary Care and some topics will be open to other disciplines. This is a first step and hopefully those who will become involved will be sufficiently interested to continue studies in the form of research projects leading to masters and doctorate programmes at a later date.

Another encouraging development is the setting up of the diploma course at the University of Newcastle. The structure of this course differs significantly from that of the Flinders course and reflects the skills of those who will be teaching in their respective areas. Also there is limitation on the amount of funding which has been obtained. Unfortunately the hard financial times in our country restrict the availability of money for many projects. We therefore must be very thankful that at least two university courses in musculoskeletal medicine are getting under way.

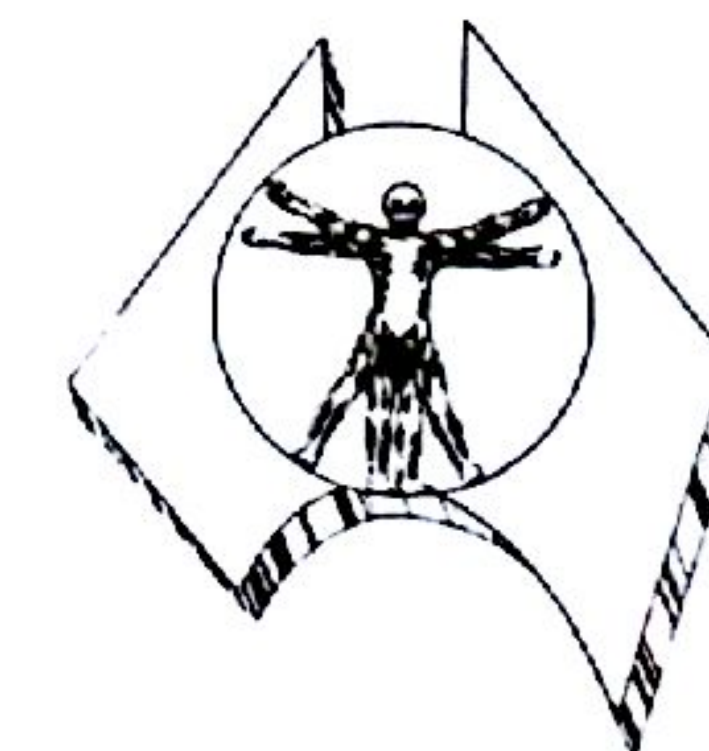
Further information about these two courses may be obtained from myself and from Nik Bogduk.

Further developments are occurring in the area of sports medicine and it is important that our Association work in co-operation with the sports physicians as well as the Sports Medicine Federation. At this particular time it would be unfortunate for other members of the medical profession to view musculoskeletal medicine as an area where there is a large degree of dissent. We need to demonstrate the efficacy of our discipline as well as the cost savings, which to all of us, are demonstrably evident.

There is a large amount still to be done. We need to gird our loins and work hard to establish at least one centre of musculoskeletal medicine in a public hospital in every capital city in the country. It is only by getting recognition within a teaching hospital that we can hope for recognition and possibly time, acceptance as a specialty in its own right. Both of these goals are obtainable and I firmly believe that the amount of learning and expertise required in this area of medicine equals that of other specialties.

I look forward to meeting many of you at the Annual Conference and in working together there to increase the momentum which has been generated. Hopefully, this can be done through the enthusiasm of all members, especially those on the committee and those who are state representatives.

At this time I would like to wish all of you a blessed Christmas season and hard working New Year.



Incorporation of the A.A.M.M. has been suggested by the committee as being appropriate at this stage of the Association's development. Such a step is not to be taken lightly, involving as it does the technical termination of the old entity and its re-formation on a new constitutional basis. However, the advantages have been judged as outweighing the disadvantages and the issue will be put to the membership at an Extraordinary General Meeting to be held in conjunction with the Annual General Meeting in Melbourne on 30th November, 1990. A new constitution, of the type required by the relevant government bodies, has been prepared and all members should have received a draft copy with the appropriate notice of motion.

The document is necessarily much longer than the previous constitution and it contains a number of provisions on subjects not previously addressed. Members are encouraged to read the draft carefully and to send any suggestions or questions they may have to the Hon. Secretary as soon as possible.

The twentieth Annual Scientific Meeting, to be held in Melbourne from 29th November to 1st December, 1990, certainly has the most varied programme of any conference staged by the Association to date. The range of topics to be addressed reflects the development of the discipline in the relatively short period of twenty years since the Association was founded by a group of doctors with a common interest in spinal manipulation. The meeting will focus on lower back disorders and the numerous speakers will consider pathological, neurogenic, mechanical, psycho-social and medico-legal aspects of these complex problems. Associated meetings and courses will be held on the days before and after the conference, offering those who attend a smorgasbord of educational experiences from which they may select things of particular interest. Details of the programme will be found on the Meetings, Conferences and Courses pages of this Bulletin.

During the annual conference in Melbourne there will be a meeting of those involved in education in musculoskeletal medicine. Its purpose will be to review past and current educational programmes and to plan strategies for more intensive vocational training in musculoskeletal medicine (including postgraduate diploma courses, etc.). It will also consider more effective programmes for continuing medical education. All members are invited to contribute to these deliberations. Those who wish to do so should put their ideas into writing and forward them to the Hon. Secretary before the conference.

The burgeoning of the Association's activities has brought about a considerable increase in the number of matters requiring committee members' attention. It seems likely that this trend will continue and as a possible solution to the growing demands of the administration of the Association's affairs, it has been suggested that committee members be allotted "portfolios" or areas of special interest for which they would be primarily responsible. Such a system would allow each committee member to devote particular efforts to furthering the Association's interests in that area, with progress reports being made to committee meetings and/or annual general meetings as appropriate. This would make the Association's management much more efficient and allow

a great deal more to be achieved in some areas. Possible "portfolios" include Accreditation, Education, Bulletin Editor (or Assistant Editor), Publicity and Membership (Recruiting). Members may wish to consider what they have to offer the Association in one of these areas and perhaps to offer themselves for election to the committee at the A.G.M. on 30th November.

Wedding bells will be ringing in late November for stalwart Victorian member **Max de Clifford** and his fiancée **Linda Hughes**. After considering all sorts of exotic venues, Max and Linda have decided to have their honeymoon at the Regent Hotel, Melbourne, where they can share it with the hundreds of delegates to the Association's annual conference. Such devotion to duty should surely earn them nomination for the A.A.M.M. Order of Merit! No doubt all members will join with the committee in offering Max and Linda their congratulations and wishing them every happiness.

The A.A.M.M. scheme for accreditation in musculoskeletal medicine is provoking a great deal of interest and a number of members have now qualified for Part 1. A small number have also completed Part II by submitting satisfactory theses and some others have applied to sit for the written examination instead. The first Licentiateships will be awarded at the Annual General Meeting to those who have qualified by then. It is not too late to be included in that number. Application forms are available from the Hon. Secretary.

A number of New South Wales members recently spent a weekend at Pokolbin, working on the shoulder unit of the Association's modular course in clinical patient assessment. Pokolbin is, of course, right in the middle of the Hunter Valley winemaking area and many members will recollect a previous gathering of the Association there in 1988. Those who attended the shoulder workshop managed to find a few spare moments for sampling the local product and all agreed that the mixture of work and pleasure made it a very worthwhile weekend. Organisers of the course modules in other states may care to take note; weekends of this sort may prove to be an effective way of encouraging members to work through the modular course.

Membership subscriptions for 1990-91 are due and those who have not already paid will have recently received a reminder notice. It would be very helpful if these could be returned with the appropriate cheques to the Hon. Treasurer as soon as possible.

Many members will be interested to know that **Dr Karel Lewit** has produced a video film entitled "Mobilisation and Relaxation Techniques for the Spinal Column". It is a professionally made teaching film of three hours duration, spoken in English by his wife **Iris**, and would serve as a useful reminder of things seen on the many courses Dr. Lewit has conducted in Australia. The price is US\$360 and the film (on a single video cassette) can be ordered from the Central Railway Health Institute, iltalska 37, 120 00, Prague 2, Czechoslovakia.

The Association's twenty-first Annual Scientific Meeting will be held in Adelaide. Tentative dates are 24th to 26th October, 1991, shortly before the Adelaide Grand Prix, and the theme of the meeting will be "injuries of the Cervical Spine". Planning is already in progress and members can assured be of yet another interesting programme.

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Meetings, Conferences and Courses

Local AAMM Meetings

In **Sydney** meetings are held at 7.30pm on the third Monday of each month in the Department of Rehabilitation Medicine, Royal Prince Alfred Hospital. The programme usually consists of a lecture or discussion on a selected topic, followed by case presentations and a practical session of diagnostic and management techniques. The meetings are open to all interested medical practitioners. Those wishing to attend are asked to telephone (02) 550 3837 during the preceding three working days to confirm the arrangement.

In **Melbourne** the 1991 meetings will be held in conjunction with Sports Medicine. The venues and some of the topics are listed below; all meetings commence at 8pm. Those interested in attending are requested to contact the clinic beforehand on the telephone numbers listed.

- | | |
|--------------|--|
| February 12 | 'Biomechanics in Overuse Injuries - with case studies'.
Olympic Park Sports Medicine Centre, Swan Street, Richmond
telephone (03) 427 0366 |
| March 12 | 'The Difficult Back; advanced physical techniques, exercises and other management' with workshops.
Brighton Spinal & Sports Medicine Clinic, 441 Bay Street, Brighton
telephone (03) 596 7211 |
| April 9 | Malvern Sports Medicine Centre, 330 High Street, Ashwood
telephone (03) 885 8961 |
| May 14 | Alphington Sports Medicine Clinic, 339 Heidelberg Road, Northcote
telephone (03) 481 5744 |
| June 11 | Croydon Sports Medicine Centre, 383 Dorset Road, Croydon
telephone (03) 725 2444 |
| July 9 | Olympic Park Sports Medicine Centre |
| August 13 | Metropolitan Spinal Clinic, 302 Malvern Road, Prahran
telephone (03) 529 1988 |
| September 10 | Prahran Sports Medicine Centre, 316 Malvern Road, Prahran
telephone (03) 529 8899 |

Regular meetings, practical sessions and courses are conducted in many other centres around Australia by state branches, local groups and individual members of the Association. These activities are mainly for the benefit of members living in a particular area and they will generally be advised by letter or by local notices of dates, times and venues. Anyone who is not receiving information about local activities, or who would like more details about what is going on, should contact one of the local organisers listed below.

In **Adelaide**, Dr. Norm Broadhurst, telephone (08) 295 1890.

In **Brisbane**, Dr. Bob Michael on (07) 345 8999.

In **Canberra**, Dr. Goff Nelson on (062) 95 6773.

In **Hobart**, Dr. Ron Heddle on (002) 34 5990.

In **Newcastle**, Prof. Nik Bogduk on (049) 68 5749.

In **Perth**, Dr. Marius Loeffler on (097) 33 5220.

In **Taree**, Dr. Wade King on (065) 51 0662.

In **Toowoomba**, Dr. Jeff Phillips on (076) 38 4800.

In **Townsville**, Dr. Roger Watson on (077) 71 3084.

Those who live in other areas and who would like to organise or participate in local meetings should contact one of their state representatives, who can arrange publicity and other assistance from the resources of the Association.

Annual Scientific Meeting of the AAMM

Theme: **"Lower Back Disorders"**

The Association's Twentieth Annual Conference will be held at the Regent Hotel, **Melbourne** on 29th and 30th November and 1st December, 1990. Pre- and post-conference meetings and courses will be held for those interested in taking part. The full programme for the conference will be as follows:

Thursday, 29th November

9.00am	Welcoming address	
	Pathological aspects	
9.10am	Where is the pain coming from?	Prof N. Bogduk
9.40am	Instability	Mr G. Schneider
10.05am	Biomechanical pathology	Prof L. Twomey
11.00am	Spondylolysis - does it hurt	Prof N. Bogduk
11.30am	Radiology of disc degeneration	Dr G. Buirski
1.30pm	Surgical intervention for back disorders	Mr G. Speck
2.10pm	Needle intervention for back disorders	Dr D. Vivian
2.30pm	Biomechanical consequences of surgery	Prof N. Bogduk
3.00pm	Panel Discussion - Questions/Answers	
4.00pm	EGM of A.A.M.M.	
4.15pm	AGM of A.A.M.M.	

Friday, 30th November

	Neurogenic aspects	
9.00am	Sympathetic mediated pain	Mr S. Rosengarten
9.25am	Thermographic assessment	Dr D. Cullum
9.40am	Neuromodulation	Mr U. Rossi
	Mechanical aspects	
10.30am	Back pain in general practice	Prof J. Murtagh
10.50am	Examination systems for the back	Dr C. Kenna
11.10am	Pelvic instability	Dr N. Broadhurst
11.25am	Clinical biomechanics of the S-I joint	Dr W. King
11.50am	Buttock pain	Dr N. Broadhurst
1.30pm	Postural influences on back pain	Prof H. Burry
1.50pm	The lifting model - is it precise?	Prof N. Bogduk
2.20pm	Backtesting machines - validation, limitations and role	Dr P. Henke
3.30pm	2 minutes - 2 slides *	

Saturday, 1st December

	Psycho-social, including medico-legal, aspects	
9.00am	Rehabilitation in chronic back pain - treatment models	Dr P. Lowthian
10.00am	A Back Rehabilitation Programme	Dr L. Twomey
11.00am	Imaging algorithm for back pain	Dr G. Buirski
11.30am	Medico-legal aspects of spinal practice	Prof H. Burry
12.00pm	Does trauma precipitate spondyloarthropathy	Dr S. Hall
2.00pm	Lawyer's view: Medico-legal systems	
2.30pm	Hypothetical on medico-legal practice	Mr R. Stevenson

* **One paragraph submissions are required for the "2 minutes - 2 slides" presentation. These should be sent to: Dr David Vivian, 441 Bay Street, Brighton, 3186, no later than 30th September, 1990.**

Conference Secretariat: MCS Conventions, P.O. Box 335, Heidelberg Vic 3084,
telephone: (03) 499 6722 facsimile: (03) 499 7137

Associated Meetings

Scientific Basis for "RSI"

7.45am Friday, 30th November, 1990

Presentation of the current research findings on the bio-chemistry, pathology, and neuro-physiological basis.

Cost - \$40

Dr P. Henke

Resuscitation Techniques Applicable to Musculoskeletal Practice - an update

7.30am Saturday, 1st December, 1990

Cost - \$40

Dr A. Ross

Peripheral and Central Neuroanatomy pertaining to the Musculoskeletal System

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Introduction to basic anatomy, physiology, biomechanics and assessment of the lower back.

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3 days - Monday, 3rd December to Wednesday 5th December, 1990, at the Metropolitan Spinal Clinic, 302 Malvern Road, Prahran.

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2 days - Tuesday, 27th November and Wednesday 28th November, 1990, at the Metropolitan Spinal Clinic, 302 Malvern Road, Prahran.

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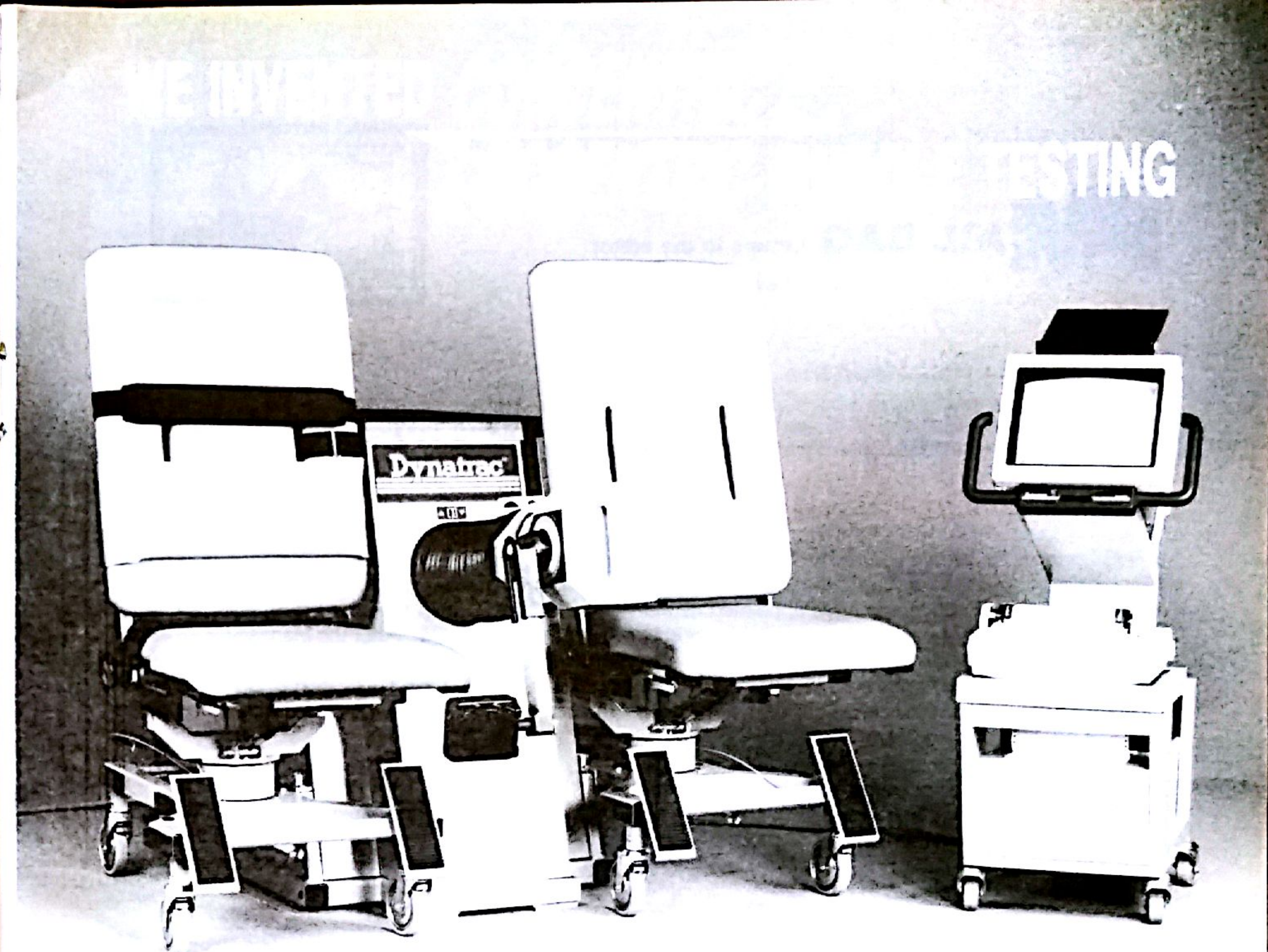
Your enquiries, suggestions, contributions, etc., will be gratefully received, and free papaers and posters are invited. Contact: A. R. Lut, Medicura, Medical Consulting, Florastrasse 30, CH-8008 Zurich, telephone [0(041)1 383 02 02], secretary of the Swiss Pain League.

XI World Congress of the International Federation of Physical Medicine and Rehabilitation (IFPMR)

"Trends of the Physcial Medicine"

September 14th - 18th, 1992, Kulturpalast, **Dresden**, GDR.

For further information contact the secretariat Professor Jurgen Kleditzsch, Secretary of the XI World Congress of IFPMR, Medical Academy "Carl Custav Carus", Clinic of Orthopaedics, 74, Fetscherstrasse, Dresden GDR - 8019.



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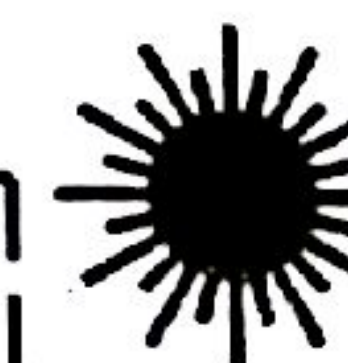
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MAIL BAG Letters to the editor

"I had written him a letter...."



Journal or Manual Medicine

The Managing Editor of the F.I.M.M. journal "Manual Medicine" has written to our Association seeking support (by way of subscriptions) for the publication. His letter is reproduced below.

Dear Sirs,

In 1983 Springer Publisher in Germany offered FIMM the publication of the Journal of Manual Medicine as an official journal of FIMM. The first meeting of the Editorial board was held in Zurich at the FIMM International Congress, where Dr. Greenman and Prof. Moritz were appointed as Managing Editors. Due to irregular issues, also because of insufficient submission of papers, Springer Publisher changed their policy in 1988. After the Managing Editors had resigned, I was asked to take over the Management of this Journal. I agreed and promised Springer that the Journal would come out regularly for the next two years. On the other side I was expecting a PR-support by Springer, as well as the support of all national societies of FIMM, as related to a subscription to the Journal included within their annual fees.

Concerning the regular appearance of the journal the promise was kept for the year 1989 (Vol. 4) and as well for 1990 (Vol. 5). Enclosed you will find a register of these numbers. Today we have sufficient papers to complete Volume 5 and Volume 6 (1991). In this respect the effort of all editors of the Journal, of the coordinating editor in the United States, Dr. Gilliar, and of Springer Publisher are bearing fruits to our satisfaction. The regular appearance and information about the national associations of Manual Medicine is a well received policy of the Journal.

To the disappointment of the Editors and Springer Publisher we have to realize, that presently, by end of August 1990, a total of only 714 subscribers were gained.

As Managing Editor I am addressing and urging the presidents of the national societies as well as the executives of the FIMM to support the Journal concerning subscriptions. I cannot understand why big countries like Australia, Denmark, New Zealand, The Netherlands, Norway, Sweden and Great Britain altogether have only 76 subscribers, and Germany, who already has its Zeitschrift for Manuelle Medizin has more than them. Does it indicate that the Journal is of such poor quality that there is no reason to buy it or are the members of the Associations not interested at all in what is happening around the world? We are responsible to answer such question to the Editorial Board, as well as to Springer Publisher, who has lost by now half a million D-Mark with this project.

After a long discussion with the management of Springer Publisher, they gave us another six months period of time for a drastic increase of subscribers. If, after that, we do not have at least 2,000 subscribers, the Journal of Manual Medicine will vanish from the scene to the disappointment of many supporters, authors and potential readers.

At this moment we have to realise that the Journal of Manual Medicine is the only official journal of Medical profession dealing with manual medicine. It is also the official organ of the FIMM, where we have the opportunity to spread our ideas and results of our clinical and experimental research work. If the national associations and the FIMM allows the Journal to drop, even though we kept the promise for regular appearance and improvement of quality, this will be a major step backwards in the development of international collaboration and coordination in the field of manual medicine among the medical profession. We have to act immediately, there is no time to postpone the decision to subscribe or not.

If I did not express myself clearly enough, I can be reached for further information any time by phone, fax or mail.

Sincerely yours,

(Dr.) J. Dvorak
Managing Editor
Head of the Department of Neurology
Spine Unit W. Schulthess Hospital
Zurich, Switzerland.

PS Annual subscription:

1990: 4 issues Deutsche Mark 116.- If ordered in bulk DM 81.20, or DM 58., if the distribution is done by the society. In large bulk orders a possible price reduction might be discussed. The Journal can be ordered immediately from Nr.3, Vol 5 FIMM papers, Nr. 4, Myofascial Syndromes. Vol 6, Nr. 1, Complication of Manipulation of cervical spine, etc.

In reply, the President wrote as follows:

Dear Jiri,

I received your letter dated 30.8.90. We will publish this letter in our next Bulletin for the perusal of our membership.

One of the major problems has been the cost of the journal. At present our membership rate is A\$60 per year. For this, our members receive three excellent journals a year, plus other services.

For us to subscribe to the magazine that produces one or two editions a year would seem out of keeping with the cost of our membership, particularly when the prices quoted are as follows in Australian dollars. If ordered in bulk, Deutschmarks 81.20 equals Aust \$64 approx., and the other price mentioned, Deutschmarks 58 is A\$48.

Thus, I consider that for even four magazines a year, the product is fairly expensive by Australian standards and I do not feel we could raise the membership fee by \$50 to cover this cost. All we can do at this stage is to ask our members to consider subscribing.

We would certainly like to hear of any price reductions you could offer to our membership. Once you give us the lowest possible quote, we could perhaps offer membership at two levels, one for a standard membership at A\$60 and another membership that included subscription to the Journal of Manual Medicine for around \$90. We would certainly have to have more than two journals a year from Europe in order to justify this, however.

If the arrangement with Springer-Verlag fails, we in Australia may well be in a position to publish this journal, as we intimated before.

I enclose information about a Conference we are holding in November, 1990. It promises to be an excellent and comprehensive conference and would perhaps offer the Journal of Manual Medicine an excellent opportunity to become known in Australia. This could be done by either sending us a poster display, so that we could put information about the journal on a poster, or by you sending us 200-300 copies of the magazine to be handed out free to the participants so that they could peruse the journal and then either subscribe individually, or encourage our society to introduce the extra membership subscription to enable each member to receive the journal.

I look forward to hearing from you.

Yours

David Vivian

Whiplash Injuries

Dear Sir,

The letter to the editor by Dr. Renouf (Bulletin Vol.6 No.2) uses an erroneous description of the pathophysiology of whiplash to make inappropriate conclusions regarding the nature of damage to the postvertebral cervical musculature in this injury. His letter therefore invites a reappraisal of the literature regarding the events of whiplash and its clinical sequelae.

Dr. Renouf states that during the initial hyperextension phase of the head and neck following a rear-end motor vehicle accident, "reflexes have now been altered and muscles tend to resist the anticipated forced flexion". This hypothesis is not supported by the literature and is incorrect for several reasons. The entire sequence of events in whiplash (rear-end collision followed by hyperextension of the head and neck followed by hyperflexion of these structures) is completed in approximately 500 milliseconds¹¹. Presumably the reflexes to which Dr. Renouf refers are stretch reflexes from stretch receptors in the prevertebral structures, although his use of the words 'anticipated forced flexion' implies some form of cortical involvement. Regardless of the type of reflex, any such mechanism will be initiated only by stretching of the prevertebral structures during the extension phase. However, because of the short time course involved, any reflex contraction of muscles would not occur until well into the hyperflexion stage. The cervical muscles are not subjected to 'eccentric contraction' as suggested by Dr. Renouf, but rather their involvement in whiplash is entirely passive. Regardless of the effects of eccentric contraction on muscles, the hypotheses concerning the nature of injury to the neck muscles in whiplash by Dr. Renouf are invalid because the muscles are not subject to this contraction.

The injuries from whiplash are compression or stretch injuries sustained during either the extension or flexion phase. Therefore the postvertebral muscles are exposed to stretch injuries during the flexion phase. Strain or rupture of these muscles has been reported both clinically¹² and in animal experiments^{13, 14}, and avulsion of these muscles from the occiput has been postulated but not proven¹⁵. Stretch injuries result in increased muscle tone elsewhere in the body, and presumably the same mechanism applies to the neck muscles.

However, the postvertebral muscles are not the only structures damaged during whiplash, and in terms of severity of injury, they are relatively unimportant. The most common lesions sustained during whiplash are strain of the anterior longitudinal ligament, muscular strain or rupture (mainly of the sternocleidomastoid and longus cervicis muscles), zygapophysial joint fractures and capsular damage, and a variety of brain injuries (for a comprehensive review of the pathology of whiplash see Bogduk¹⁶). Damage to any of these structures will result in local or referred pain. To suggest that the pain following whiplash originates solely from the postvertebral muscles (Renouf) is clearly incorrect. Anecdotal evidence as presented by that author should not be interpreted as scientific fact, and must be correlated with established pathological evidence.

A wide variety of symptoms following whiplash have been reported¹⁶. These include neck, shoulder and scapular pain, headache, dizziness, paraesthesia and blurred vision. While it is not the purpose of this letter to address these symptoms in detail (see Bogduk¹⁶) it is appropriate to stress the wide variety of pathology, symptoms and signs caused by whiplash. Many of the injuries of whiplash are not visible on standard investigations, such as plain radiography or CT scan, and require special procedures to detect them for example discography, MRI and biomechanical studies. While the practitioner who is confronted with a patient complaining of whiplash should be aware of psychological factors which may influence the presentation, he should not dismiss persistent complaints as litigation neurosis or malingering until a thorough search for each of the lesions seen in this injury has been completed. Similarly, a diagnosis of 'soft tissue injury' is unsatisfying to the patient and not a diagnosis of pathology, but rather a failure to identify a specific lesion, without which treatment cannot be correctly directed.

Notwithstanding the incorrect statements contained in the bulk of his letter, Dr. Renouf does raise an interesting proposition regarding early mobilisation of whiplash injuries. However, he failed to identify that his suggestion is appropriate only for the treatment of muscular injuries. Complete management of the whiplash patient requires specific diagnosis and appropriate treatment of each pathological lesion.

Yours faithfully,

Adrian Nowitzke
33 Endeavour Drive,
Banksia Beach, Qld., 4507.

References

1. Martinez J L, Garcia D J. A Model for Whiplash. *J Biomech* 1968 1:23-32.
2. Jeffreys E. Disorders of the Cervical Spine. Butterworths 1980, 82-86.
3. La Rocca H. Acceleration Injuries of the Neck. *Clin Neurosurg* 1978: Vol 25; 209-217.
4. MacNab I. The Whiplash Syndrome. *Clin Neurosurg* 1973 20: 232-241.
5. Braaf M M, Rosner S. Whiplash Injury of Neck - Fact or Fancy. *Int Surg* 1966 46: 176-182.
6. Bogduk N. The Anatomy and Pathophysiology of Whiplash. *Clin Biomech* 1986 1;92-101.



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The Acromioclavicular Joint Pathophysiology and Management

Victor Wilk

441 Bay Street, Brighton. 3186.

Abstract

This article outlines the functional anatomy of the acromioclavicular joint. Sprains and dislocations of the acromioclavicular joint commonly lead to long term disability. Mechanisms of injury are outlined and severity of injury graded using Allman's classification.

The rationale of conservative versus operative treatment for grade III injuries of the acromioclavicular joint is discussed. Review of the recent literature suggests that dislocations should be treated conservatively initially using the Kenny Howard splint (also called the acromio-clavicular immobiliser), for six weeks.

When compared to surgical open reduction and internal fixation, conservative management leads to an earlier return to activities and equivalent long term results.

Acromioclavicular joint injury accounts for about 12% of shoulder dislocations^[1] and is a frequent topic in the literature. Controversy still exists with regard to operative intervention in severe joint dislocations. Urist provided one of the first detailed studies of the anatomy, mechanism of injury and clinical follow-up treatment^[2,3]. Several others have added information regarding the long term follow-up of injuries to this joint [2,3,6,7,8,16,19,20,21,24,25].

Because it is a synovial joint numerous disorders can manifest themselves in the acromioclavicular joint. Rheumatoid arthritis, degenerative osteoarthritis, infections, hyperparathyroidism and idiopathic osteolysis have all been reported to affect this joint. For the young athletic population, trauma to this joint is the most frequent pathologic entity and will be the main thrust of this article.

Functional Anatomy

The acromioclavicular joint (A-C joint) is a plane joint connecting the outer end of the clavicle to the medial portion of the acromion. A fibrocartilagenous ring that resembles an intra articular meniscus may exist. At the age of two years no joint space exists; the acromion and the clavicle are connected by a fibrocartilagenous bridge. At the age of three years, a joint space appears consisting of two synovial cavities, one at the end of the clavicle with its convex facet, the other at the acromial end, with an interposed disc.

The disc becomes meniscoid by the second decade and articular cartilage develops on the joint surfaces. After the second decade the disc and the articular

surfaces undergo progressive degenerative changes that may become marked by the fourth decade^[4]. The disc may be completely absent in up to 50% of shoulders^[29]. The A-C joints bony configuration is unstable and therefore stability is provided by the surrounding ligaments and muscular structures.

The capsule of the joint is thickened superiorly to form the superior acromioclavicular ligament and a weaker inferior structure also exists. The clavicle is firmly attached to the scapula by the two coraco-clavicular ligaments; the laterally placed trapezoid ligament and more medial conoid ligament. The manner of attachment of these ligaments prevent the scapula from rotating about the A-C joint, and helps maintain a constant relationship of the scapula to the clavicle.

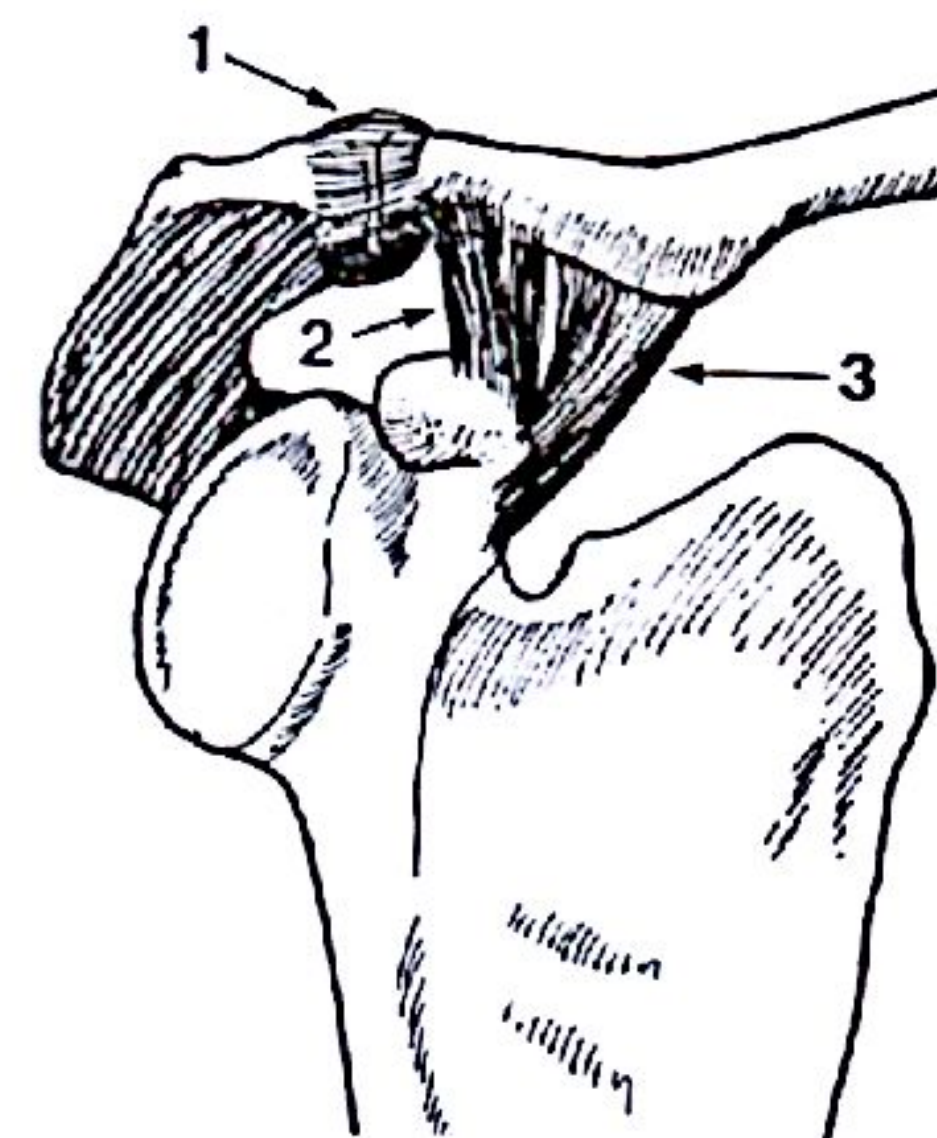


Fig 1
1. Acromioclavicular capsule and ligaments
2. Trapezoid ligament
3. Conoid ligament

Movements of the A-C joint were initially described by Inman as occurring primarily about 2 axes^[14]. Elevation of the outer end of the clavicle of about 20° occurs with abduction of the arm whilst there is also clavicular rotation of up to 40° about its long axis occurring during shoulder flexion. Since then other authors have variously described the ranges of motion with values up to 60° of total clavicular elevation, some of which is contributed to by the clavicular rotation^[4,26]. Shrugging the shoulders results in elevation of the clavicle with minimal rotation.

The long configuration of the joint varies widely. In an X-ray study of one hundred and forty normal shoulders, Pettrone and Nirschl described five different joint appearances^[18]. In 14% of the normal shoulders there was an upward displacement of the clavicle in relation to the acromion. On unstressed antero-posterior X-ray films the normal width of the A-C joint is between 1 to 3mm, and the coracoclavicular distance is 8mm^[13,19]. However with stress the coracoclavicular distance can increase to an additional 7mm with intact coraco-clavicular ligaments^[29]. For this reason it is always wise to compare the injured to the other side.

Mechanism of Injury

The most common mechanism of injury is a fall on or a direct blow to the top and side of the shoulder, forcing the scapula downwards and medially. The relatively weak acromioclavicular ligaments rupture first, next the deltoid and trapezius muscle attachments tear and then the coraco-clavicular ligaments give way as the downward movement of the clavicle is blocked by the first rib. Rarely the coracoid process may be fractured^[5,27].

Other mechanisms of injury are:

1. a direct lateral blow to the shoulder causing intra-articular damage without ligament disruption.

2. a posteriorly directed force injuring the capsular ligaments and trapezoid ligament, but sparing the conoid ligament resulting in posterior displacement with minimal upward component^[23].
3. fall on the outstretched arm driving the humerus up into the acromion, tearing the A-C joint capsular structures but not injuring the relaxed coraco-clavicular ligaments^[3].
4. rarely subcoracoid dislocations of the lateral end of the clavicle may occur with very forceful abduction and external rotation of the arm^[11].

The usual type of sprains or dislocation of the A-C joint results in superior displacement of the clavicle and is usually classified into types or grades. Allman's classification is generally accepted^[1].

Grade 1 - Acromioclavicular ligament sprain, joint stable, normal X-ray films acutely.

Grade II - Acromioclavicular ligament and capsule torn, coraco-clavicular ligaments stretched but intact, X-ray elevation of clavicle less than width of clavicle.

Grade III - complete rupture of coraco-clavicular ligaments, X-ray elevation of clavicle above superior surface of acromion.

Rockwood went on to describe additional types IV, V and VI varying only in the degree of direction of displacement of the distal clavicle^[19].

A-C joint injuries are commonly seen in sports; prominently featuring in rugby, cycling, skiing, gymnastics, wrestling, polo, skateboarding and snowboarding^[7,17,18,24,26,28].

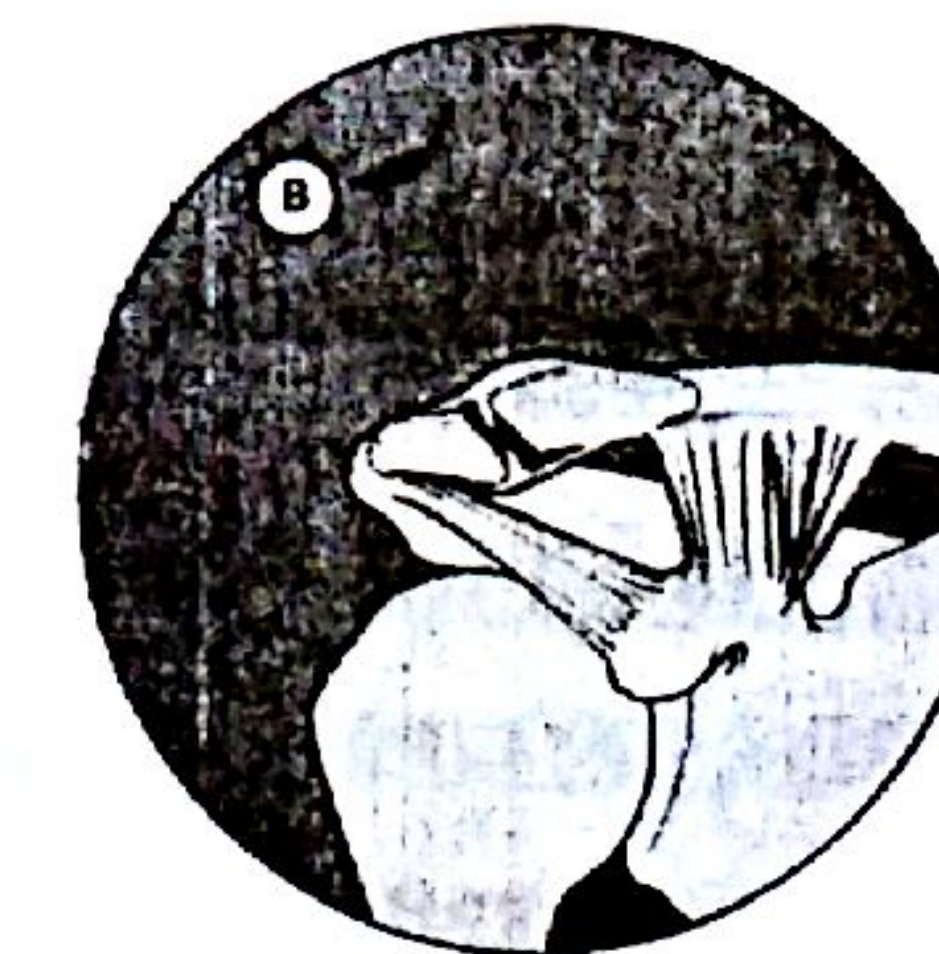


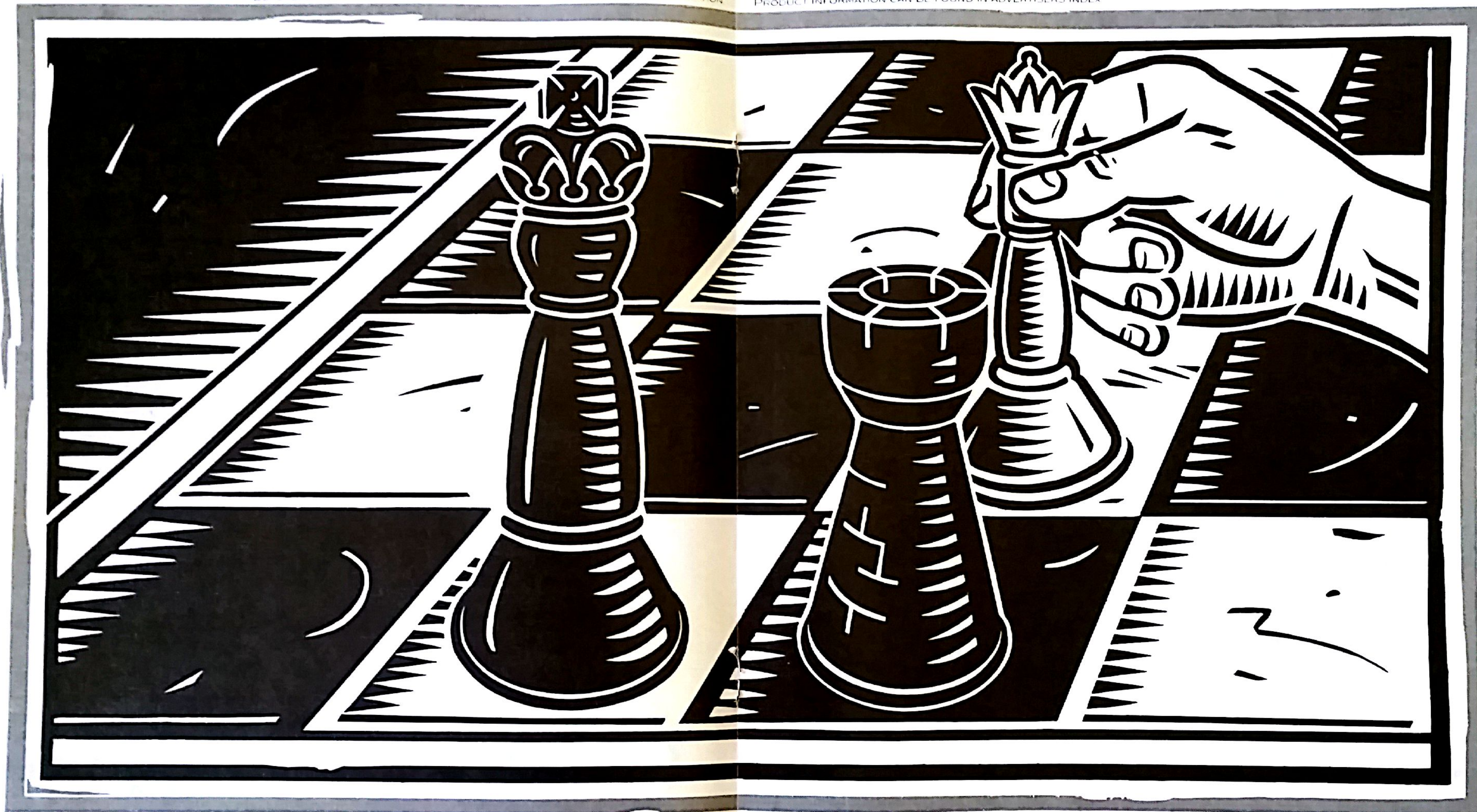
Fig 2
Grade I
Mild strain A-C ligaments only. No significant displacement



Grade II
Rupture A-C ligaments
Stretch of coracoclavicular ligaments



Grade III
Rupture all ligaments



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Physical Examination

The pain of A-C joint sprain is usually very well localised by the patient to the joint itself and with the more severe injuries there will be local swelling and varying degrees of displacement of the clavicle easily visible in the thin individual.

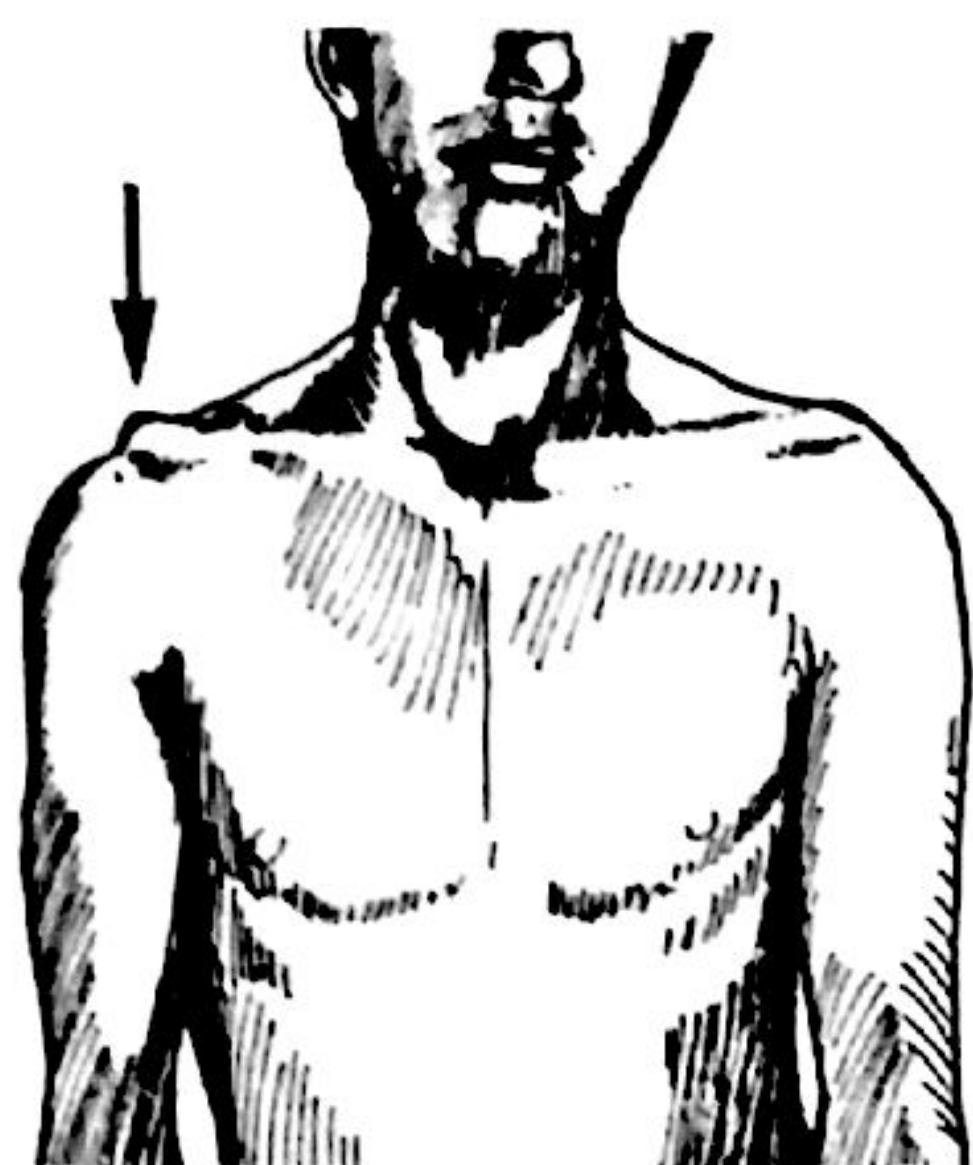


Fig 3
Bump of upwardly displaced clavicle in type II and III injuries diagram

As already mentioned upward displacement of the clavicle occurs only with tearing of the coraco-acromial ligaments, and there are instances where there is no visible step clinically or on X-ray, but total disruption of the acromioclavicular ligaments. The patient should be examined in the standing position and a palpating finger placed over the joint whilst the arm is taken through a full range of motion to detect crepitus and instability. Simple shrugging of the shoulders will highlight verticle instability and will be accentuated by hanging a weight from the wrist.

Shoulder adduction will tend to compress the joint surfaces accentuating pain of chondral pathology. Moving the shoulders, backwards and forwards with the arms by the sides stresses the A-C joints but not the rotator cuff tendons.

Standing X-ray films should include; an antero posterior view of both shoulders to compare the two sides, films taken with the X-ray tube angled 15 to 30 degrees in a cephalad direction (giving a better view of the A-C joint and coracoid process) and in more severe injuries axillary views are advisable to exclude fractures of the coracoid process^{5,27}.

Taking stress views with weights suspended from the wrists was once thought to be mandatory to determine the need for surgery²⁶. A coraco clavicular distance of 13mm, or more than 20mm between the inferior surface of the clavicle and the inferior surface of the acromion is said to be diagnostic of torn coraco-clavicular ligaments²⁶. In the past these were usually operated on.

Review of the literature over the last five years shows increasing evidence that surgery does not yield superior results and therefore stress views may be unnecessary^{16,21,24}.

Treatment

Management of stable type I sprains is symptomatic. A sling may be used for seven to ten days for comfort to rest the joint. Ice applied locally in the first forty eight hours will minimise the local swelling and pain. Early rehabilitation should be encouraged as soon as it can be tolerated. Return to sport or work is allowed when the patient is symptom free. A lateral compressive force can cause significant articular damage in the joint with minimal instability and these patients may have persisting pain^{3,7,26}.

Type II injuries are also treated symptomatically. They are usually given a sling for ten to fourteen days. However the tendency is for the trapezius muscle to pull up on the clavicle, while the weight of the arm pulls down on the acromion via the deltoids. Thus if there is some displacement this will tend to persist. In Cox's study the degree of displacement was markedly reduced using a Kenny-Howard splint, also called the acromioclavicular immobiliser splint⁷. The use of this specific splint also led to a significantly lower rate of persisting symptoms in the long term²¹.



Fig 4
The acromioclavicular Immobiliser or Kenny-Howard Splint

One should aim for slight over reduction of the dislocation during treatment as some loss of the reduced position will occur in at least half of the patients following splint removal. The splint should be worn day and night and requires frequent adjustments to ensure that reduction is maintained. For mild Type II injuries three to four weeks is sufficient, but for severe Type II and all Type III injuries the splint should be worn for six weeks to allow collagen maturation.

The treatment of Type III injuries still remains controversial. A review of the recent literature still shows some proponents of surgery^{2,19,22,25}, but more and more articles favour initial conservative treatment^{7,8,16,21,24}. Surprisingly most of the papers examining short and long term outcomes describe using a broad arm sling for two weeks only^{8,16,24}, only the papers by Cox and Taft specify using the Kenny-Howard splint^{7,21}.

The commonest operations are:(a) use of the Bosworth screw fixing the clavicle to the coracoid process, (b) the use of two Kirshner or similar wires through the acromioclavicular joint and more recently (c) the use of dacron and other synthetic materials to reinforce the ligaments. The average complication rate for these operations is in the order of 30% and include loosening or breaking screws, screw pullout^{2,16,22}, migrating wires¹², dacron breaking¹⁰, and one case of stress fracture of the clavicle cause by the dacron graft⁹. The inserted pins must be removed by a second operation at about eight to ten weeks. The Bosworth screw can be left longer.

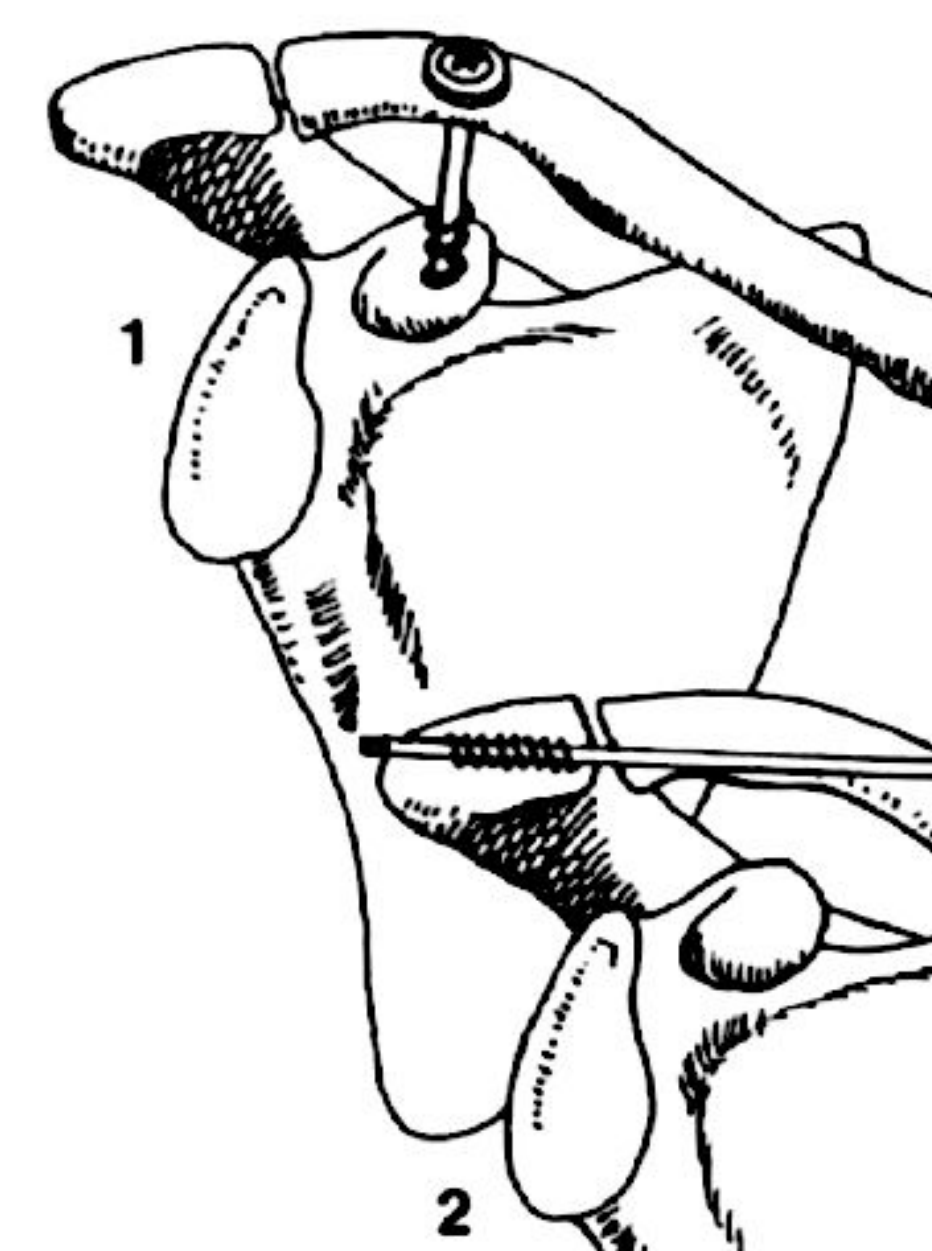


Fig 5
1. Bosworth screw fixing clavicle to coracoid process
2. Threaded pin fixing clavicle to acromion through the joint.

Recent studies comparing use of a simple sling for two to four weeks compared to operation for grade III tears showed no significant difference in long term outcome when assessment included parameters of pain, strength, range of motion, return to work and need for repeat surgery^{2,6,8,16,21,24}.

Secondly, operations were associated with a longer rehabilitation phase, delayed return to sport and work and higher complication rates. Despite the increasing weight of evidence some authors still advocate surgery for severe degrees of displacement^{2,6,22,25}.

Taft et al, studied one hundred and twenty seven patients with grade III A-C joint dislocations and compared surgery to conservative treatment²¹.

They concluded that good anatomical reduction led to a lower incidence of post traumatic arthritis. In the long term there was no significant difference clinically between the group treated with the Bosworth screw compared to using the Kenny Howard splint. However X-rays taken showed better anatomical reduction in the operated group. Those patients treated with acromioclavicular pins developed a higher incidence of late degenerative changes presumably because the pins pass through the articular cartilage of the A-C joint²¹.

Initial operative treatment was associated with a longer period of time off work, a longer rehabilitation phase and delayed return to sport. In addition, the complications and re-operation rate was significantly higher in the operated group.

Despite good anatomical reduction one in four patients will be seen to develop significant post traumatic arthritis on X-ray. However there was no strong correlation between X-ray changes and the level of symptoms. Persisting pain may arise from joint stiffness, inelastic scar tissue or myofascial pain. Initial treatment should include the usual physiotherapy and manual medicine modalities including a strengthening program. Local injection of cortisone may be very useful as a adjunct to physical therapy.

However, a small group will have significant damage to the articular cartilage preventing them from working or returning to sport. These patients respond extremely well to removing the outer 1.5cm of the clavicle at operation. This procedure results in a fibrous union between clavicle and acromion and usually allows a full return to activities with no loss of strength and a full pain free range of movement^{21, 26}.

The long term outcome of these patients is very good^{21,26}.

Conclusions

- Grade II and III sprains should be treated conservatively initially in a Kenny-Howard Splint, for up to 6 weeks.
- Maintaining good anatomical reduction during the healing phase reduces the incidence of post traumatic arthritis.
- Operations to reduce the dislocation are indicated where there is pain and unacceptable deformity following removal of the splint after 6 weeks. The use of acromioclavicular pins is not recommended.
- Persisting pain from post traumatic arthritis (not responding to conservative measures) is best treated by excision of the outer end of the clavicle.

References

1. Allman F L. Fractures and ligamentous injuries of the clavicle and its articulations. *J Bone J Surg* 49A, 774, 1967.
2. Bannister G C, Wallace W A, Stableforth P G and Hutson M A. Management of acute acromioclavicular dislocation. *J Bone J Surg* 71B(5), 848-50, 1989.
3. Bergfeld J A, Andrich J T, and Clancy W G. Evaluation of the acromioclavicular joint following first and second degree sprains. *AM J Sports Med* 6: 153, 1978.
4. Caillett R. Shoulder Pain. 2nd Ed. PP 28-37. F A Davis & Company, Philadelphia, 1981.
5. Carr A J, Broughton N S. Acromioclavicular dislocation associated with fracture of the coracoid process. *J Trauma* 29(1), 125-6, 1989.
6. Cook D A, Heiner J P. Acromioclavicular joint injuries. *Orthop Rev* 19(6), 510-6, 1990.
7. Cox J S. The fate of the acromioclavicular joint in athletic injuries. *AM J Sports Med* 9:1, 50, 1981.
8. Dias J J, Steingold R F, Richardson R A, Tesfayohannes B and Gregg P J. The conservative treatment of acromioclavicular dislocation. *J Bone J Surg* 69B(5), 719-722: 1987.
9. Dust W N, Lenczner E M. Stress fracture of the clavicle leading to non union secondary to coraco clavicular reconstruction with dacron. *AM J Sports Med* 17(1) 128-9, 1989.
10. Fullerton L R Jnr. Recurrent third degree acromioclavicular joint separation after failure of a dacron ligament prosthesis. *AM J Sports Med* 18(1), 106-7: 1990.
11. Gerber C and Rockwood C A. Subcoracoid dislocation of the lateral end of the clavicle. *J Bone J Surg* 69A, 924-927: 1987.
12. Habernek H and Walch G. Secondary wire migration following percutaneous bone wire fixation of acromioclavicular dislocation. *Aktuel traumatol*: 19(5), 218-20: 1989.
13. Imatani R J, Hanlon J and Cody G W. Acute complete acromioclavicular separation. *J Bone J Surg* 57A, 328: 1975.
14. Inman V T, Saunders J B and Abbott C C. Observations on the function of the shoulder joint. *J Bone J Surg* 26:1- 1944.
15. Jacobs B and Wade P A. Acromio clavicular joint injury. *J Bone J Surg* 48A, 475: 1966.
16. Larsen E, Bjerg-Nielsen A and Christensen P. Conservative or Surgical treatment of Acromioclavicular dislocation. *J Bone J Surg* 68A(4) 552-5: 1986.
17. Pino E C and Colville M R. Snowboard injuries. *AM J Sports Med* 17(6), 778-81: 1989.
18. Pettrone F A and Nirschl R P. Acromioclavicular dislocation. *AM J Sports Med* 6:160-3: 1978.
19. Rockwood C A. Injuries to the A-C Joint In Fractures, edited by Rockwood C A and Green D P. 2nd Ed. Vol 1 860-910. J. P. Lippincott, Philadelphia: 1984.
20. Rowe C R. Symposium on surgical lesions of the shoulder. Acute and recurrent dislocation of the shoulder. *J Bone J Surg* 44A: 997. 1962.
21. Taft J N, Wilson F C, Oglesby J W. Dislocation of the Acromioclavicle joint. *J Bone J Surg* 69A No 7: 1045-1051: 1987.
22. Tsou P M. Percutaneous cannulated screw coraco clavicular fixation for acute acromioclavicular dislocations. *Clin Orthop* 8(243), 112-21: 1989.
23. Urist M R. Complete dislocations of the acromioclavicular joint. *J Bone J Surg* 28:813: 1946.
24. Walsh W M, Peterson D A, Shelton G and Newmann R D. Shoulder strength following acromioclavicular injury. *AM J Sports Med* 13(3), 153-158: 1985.
25. Warren-Smith D D and Ward M W. Operation for acromioclavicular dislocation. *J Bone J Surg* 69B(5) 715-718: 1987.
26. Wickiewicz T L. Acromio clavicular and stemo clavicular joint injuries, *Clinics in Sports Med* Vol 2: No 2, 429-438: 1983.
27. Wilson K and Colwill J C. Combined A-C dislocation with coraco clavicular ligament disruption and coracoid process fracture. *AM J Sports Med* 17: 697-8: 1989.
28. Wright J R, Hixson E G and Rang J J. Injury patterns in nordic ski jumpers. *AM J Sports Med* 14(5), 393-7: 1986.
29. Zanca P. Shoulder Pain: Involvement of the acromioclavicular joint. Analysis of 1000 cases. *AM J Roentgenol* 112: 493: 1971.



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Dynamic Ultrasonography of the Rotator Cuff

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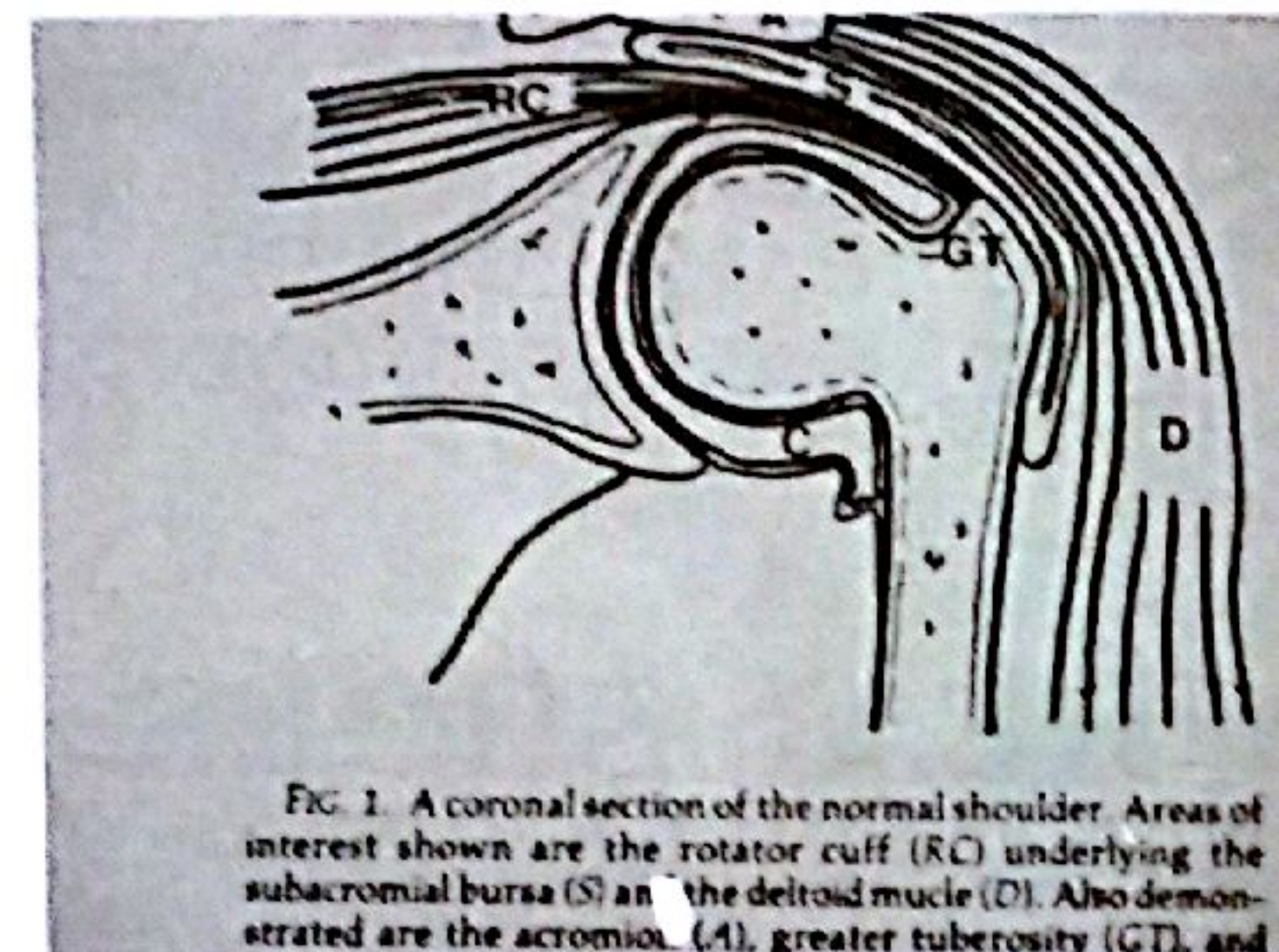
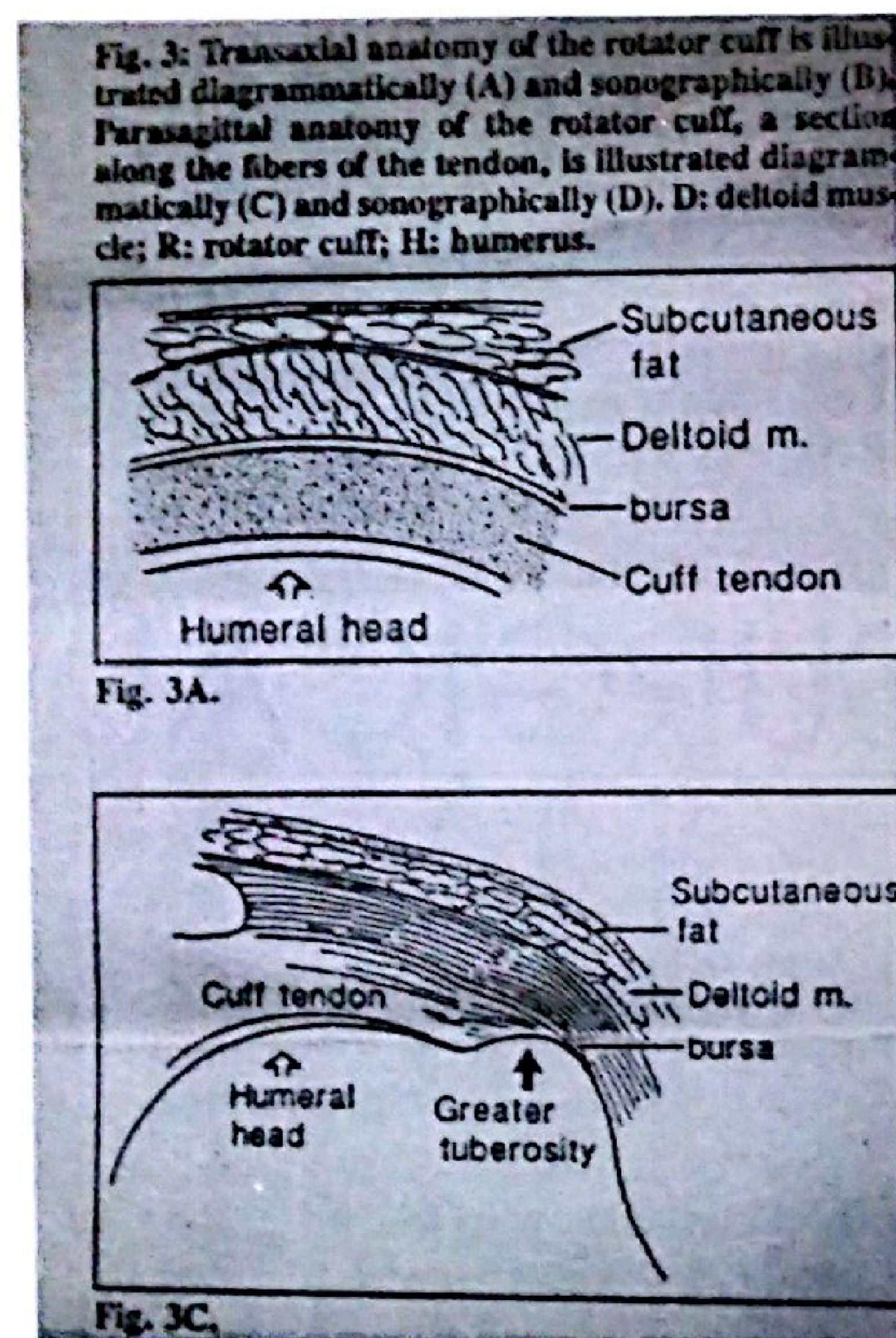
ABSTRACT

The use of ultrasound in the investigation of shoulder injuries is discussed. Dynamic ultrasonography is described as an alternative to radiological arthrography in confirming the diagnosis of rotator cuff tears and the shoulder impingement syndrome.

INTRODUCTION

Most of the current literature on this topic only addresses the diagnosis of rotator cuff tears and not the use of ultrasound in confirming the diagnosis of shoulder impingement syndrome, which will be discussed below.

The rotator cuff is a name given to the combined tendons of subscapularis, supraspinatus, infraspinatus and teres minor, which coalesce and insert into the humeral head (fig 1 & 2). This tissue can be imaged by ultrasound not only to diagnose partial or full thickness tears but also (probably just as importantly) to diagnose the shoulder impingement syndrome. Anatomy of the biceps groove and integrity of the biceps tendon also can be assessed.



The technique is simple yet the images are difficult to interpret. It is pain free (a factor patients will appreciate), more cost effective and able to yield more information than arthrography. Arthrography is an invasive procedure that assesses only the inferior surface of the rotator cuff; it does not give information as to the presence of insubstance or superior partial thickness tears. Correlation with size and location of tears is difficult with arthrography.

Magnetic resonance imaging is a static examination which is no more sensitive than ultrasound in excluding very small tears. M.R.I. does not yield five times the information of ultrasound yet it is five times more expensive.

The only advantage of C.T. examination is for diagnosing labral problems which cannot be shown on ultrasound.

Plain radiography is still important with the outlet view giving valuable information in the prediction of rotator cuff damage e.g. the shape of the acromion and spurring particularly of the inferior acromio-clavicular joint margins. In complete tears of the rotator cuff, the humeral head can abut onto the undersurface of the acromion and this appearance is diagnostic.

Overall, ultrasound, is the best modality for static and dynamic imaging of the rotator cuff. However, it is

extremely operator dependent and in inexperienced hands and with inferior equipment, interpretation of the images can be very misleading.

EQUIPMENT AND TECHNIQUES

An A.T.L. Mark 9 ultrasound machine is used with a 5mHz linear transducer. Both shoulders are examined at rest, with the arms hyperextended and internally rotated, and during active function. The subscapularis tendons are examined with the arms externally rotated. Coronal and sagittal scans are performed. Selective frames are recorded on hard copy films and the functional study recorded on video for discussion with the referring practitioner if indicated.

By hyperextending and internally rotating the shoulder, more rotator cuff tissue comes into view from under the acromion. The critical area of the rotator cuff is in the lateral portion of the supraspinatus tendon adjacent to its insertion into the greater tuberosity of the humeral head. The critical area is of low vascularity and subjected to the most physical stress; consequently this area is most likely to be damaged.

NORMAL ULTRASOUND FINDINGS

The normal ultrasound demonstrates tissue of uniform echogenicity as a thin band between the subdeltoid bursa and the humeral head.

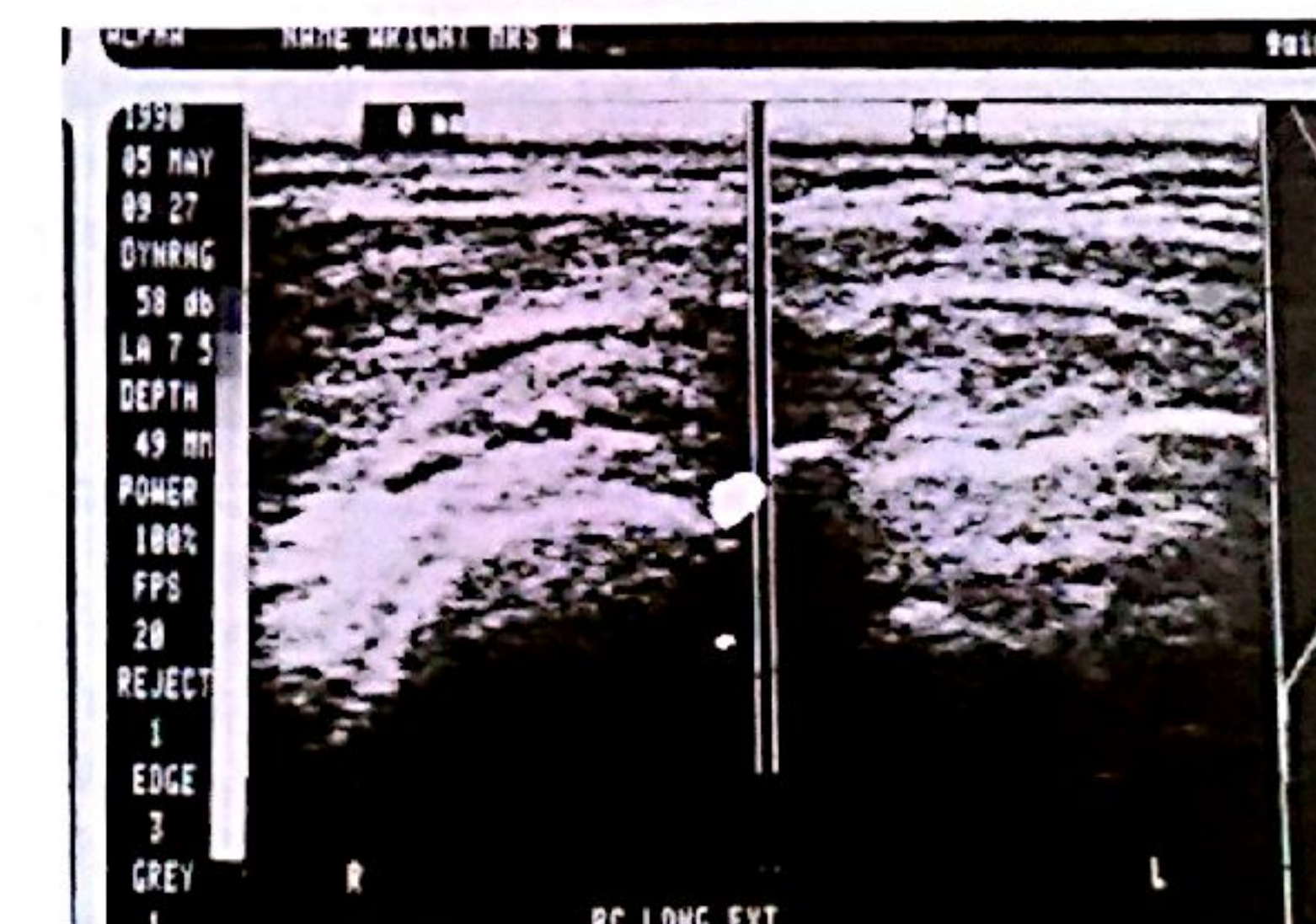
ROTATOR CUFF TEARS

Broadly, tears can be classified into:

1. partial thickness tears
2. full thickness tears.

The partial thickness tears can involve:

1. the superior margin of the rotator cuff,
2. the inferior margin of the rotator cuff, or
3. be insubstance and not reaching either the superior or inferior margin of the rotator cuff (see fig. 3 & 4).



All such tears usually involve either the critical region of the rotator cuff or the more lateral insertional region. One or more tendons of the cuff can be involved.

Tears can be diagnosed by:

1. nonvisualisation of the rotator cuff in a complete tear with the subdeltoid bursa lying directly on the humeral head (fig. 8).



2. discontinuity of the uniform echogenic pattern (fig. 5 & 6).



3. focal thickening due to retraction from a full thickness tear.
4. concavity of the overlying subdeltoid bursa or focal thinning due to partial thickness tears or small full thickness tears (fig 7).



5. fluid in surrounding bursae or the bicipital sheath. Note that echogenic areas are not reliable indicators of tears.

SHOULDER IMPINGEMENT SYNDROME

Basically, this is the name given to symptoms of discomfort or pain which develop in the shoulder or upper arm with certain activities or attempted use of the shoulder with the arm abducted at or above 90 degrees, particularly in forward flexion. The rotator cuff is actually abnormally compressed between the humeral head and the acromion or the humeral head and the coraco-acromial ligament. Uncommon cases of subacromial impingement have also been diagnosed. The movement of the humeral head in being inferiorly depressed during abduction is also observed. Inadequate depressor activity can be helped by strengthening the appropriate muscles.

The rotator cuff is observed in the coronal plane as it moves under the acromion and coraco-acromial ligament region. Normal movement is smooth with no change in thickness of the tendon as it passes beneath these two structures. With impingement, which can be mild, moderate or severe, the cuff tissue actually buckles and appears to thicken as it is compressed by the offending structure. In severe cases, virtually all the rotator cuff tissue will be seen to buckle and bunch up external to the outer edge of the acromion very early in abduction. In mild cases, one may only see slight buckling very late in abduction.

It is of interest that the onset of the buckling of the cuff tissue corresponds with the onset of the symptoms. Probably the most common form of impingement is that which is secondary to swelling of the cuff, which is itself presumably secondary to intrinsic damage caused by an initial trauma such as a hard football tackle or repetitive actions such as swimming or throwing.

CALCIFICATION

Calcification is not always seen on plain films and is usually seen in degenerating cuff tissue. It can be confused with small tendon avulsions. Large fragments of calcium can obscure underlying tendon and small tears.

BICIPITAL GROOVE AND TENDON

The shape of the bicipital groove is variable. Shallow grooves have been associated with subluxation of the biceps tendon and narrowed grooves have been associated with bicipital tendonitis.

The integrity of the bicipital tendon can also be assessed particularly in possible partial ruptures, which can be seen in body builders.

SKELETAL ABNORMALITIES

The cortical margin of the humeral head can be well demonstrated and it is not uncommon to detect previously undiagnosed fractures.

INFLAMMATION

At this stage, the only ultrasound change demonstrated is swelling of the cuff and variability in the echogenic pattern; there is not necessarily increased or decreased echogenicity.

SUMMARY

Only in the last two years has ultrasound technology reached the stage where examination of the rotator cuff by this modality is a true alternative investigation to arthrography. Current literature is only just beginning to include images from state of the art equipment. This will lead to better diagnosis of rotator cuff pathology.

Static and dynamic rotator cuff sonography is an extremely valuable aid to the clinician in the diagnosis of shoulder problems, particularly cuff tears and the impingement syndrome. Many people who have had repeated steroid injections, acupuncture, physiotherapy and other failed treatments for shoulder problems have benefited from an ultrasound examination which has revealed a significant cuff tear or impingement.

The technique is extremely operator dependent, requiring experienced execution and interpretation. In order to avoid serious pitfalls, ultrasonic assessment of the rotator cuff should not be performed by the occasional operator. Like all radiological procedures, it has limitations which one must be honest about and good follow up and co-operation with surgical colleagues is essential.

FURTHER READING

1. *Sonographic Detection of Rotator Cuff Tears.* Middleton et al. *AJR* Feb 1985. 144:349-353.
2. *Ultrasound Evaluation of the Rotator Cuff.* Mack et al. *Radiology*; 157,1:205-209, Oct 1985.

3. *Status of Rotator Cuff Sonography.* William Middleton. *Radiology* 1989; 173:107-309.
4. *The Shoulder Volume II.* Rockwood and Matsen. Copyright 1990. 565-660.



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Problems in Musculoskeletal Pain Management

Norm A Broadhurst

Department of Rehabilitation Medicine, Queen Elizabeth Hospital, Woodville, 5011.

ABSTRACT

Problems in musculoskeletal pain management include why patients suffer chronic pain, the stigma of chronic pain, the role of management in work absence, the rarity of accurate diagnosis, inappropriate referrals to specialist surgeons, unnecessary use of expensive ancillary investigations and the suitability of treatment.

Possible solutions for these problems include the establishment of "centres of excellence", formal postgraduate training, early diagnosis, appropriate use of investigations, liaison with the legal profession and correct use of rehabilitation services.

INTRODUCTION

The diagnosis and management of musculoskeletal pathology provides challenges and dilemmas that do not occur in other branches of medicine. Acute musculoskeletal pain problems are often relatively easy to treat with gratifying results. However, chronic musculoskeletal pain has been a problem of humanity for thousands of years with little to diminish its extent in the twentieth century.

Throughout the world various government agencies have set up compensation and rehabilitation programmes for the relief of injured workers. The establishment of such programmes is often justified because workers have not had fair treatment for their injuries. However, the converse is also true in that some workers have not responded with integrity in respect of their injuries and have tried to make financial gain out of the system. Whatever the rights and wrongs of the situation, government-funded Workers Compensation programmes have become part of the working environment.

Much has been said about workers who are employed by government agencies and large corporations. A recent study by Greenough and Fraser has indicated that the incidence of disability, psychological disturbance, unemployment and time off work, were all far greater in a group of people with low back pain who were being compensated, compared with those who were self-employed⁽¹⁾. Those who were self-employed and who went back to work did so with their pain but learnt to work through it until there was either resolution or acceptance and the development of coping strategies which enabled them to be functional. Apparently the prospect of financial ruin is a motivating factor of such strength that people can learn to endure chronic pain and cope with associated disability.

The challenge facing the health care provider is that of diagnosing, treating and returning the injured worker to his or her full functional capacity as soon as is practical.

PROBLEMS

Numerous problems face the medical profession with regard to competent practice in the area of musculoskeletal pain. The purpose of this paper is to explore some of these problems and then to suggest possible solutions.

Problem I

Why do patients continue to suffer pain long after the usual healing period?

It has long been established that the natural course of low back pain problems is as shown in Figure 1. This indicates that a high proportion of patients suffering low back pain have spontaneous resolution of their problem. However, many people do not return to work free of pain within four to six weeks, which is the time generally considered necessary for natural healing⁽²⁾.

NATURAL COURSE OF LOW BACK PAIN:

- 60% back at work in 1 - 2 weeks
- 80% back at work in 6 weeks
- 90% back at work in 3 months
- 95% back at work in 6 months
- 97% back at work in 12 months
- 3% never go back to work
- 2% require surgery

Fig 1 What can be expected as the natural healing time for back injuries when no treatment is given.

A simple explanation of this would be that all patients suffering pain longer than four to six weeks are malingers and therefore not compensable. This is far from the truth and patients should be considered to be genuine until proven otherwise. However, it is true that the longer the pain continues, the more the psycho-social consequences of the injury need to be considered, and this adds to the difficulty of resolving of the patient's problem.

Problem II

The stigma of chronic pain.

Many medical practitioners seem to consider that injured people who do not recover quickly are simply seeking financial gain. Such an assertion provides a convenient defence mechanism for doctors who are unable to resolve their patients' problems and who do not wish to become involved in associated litigation.

Unfortunately this attitude of disbelief in chronic pain is often fostered by employers, insurers and their legal representatives in an effort to minimise compensation payments. The attitude has been accepted by many in the general community, who have traditionally respected views put forward by members of the medical and legal professions, and a stigma has become attached to those with chronic pain.

Undoubtedly there are some who invent or exaggerate symptoms for secondary gain but this is certainly not true for the majority of people who suffer chronic disability. Many studies, especially those relating to neck injuries which result from rear end collisions, have clearly indicated that people continue to suffer pain long after settlement of their claims. The main reason for these people continuing to seek medical help is that their

injuries are still present, long after those who had attempted to discredit them have ceased to be interested in the situation. It is little wonder that patients suffering prolonged pain become frustrated, angry and disillusioned with a system in which they are treated with contempt, stigmatised and then ignored by the very people to whom they have traditionally looked for help.

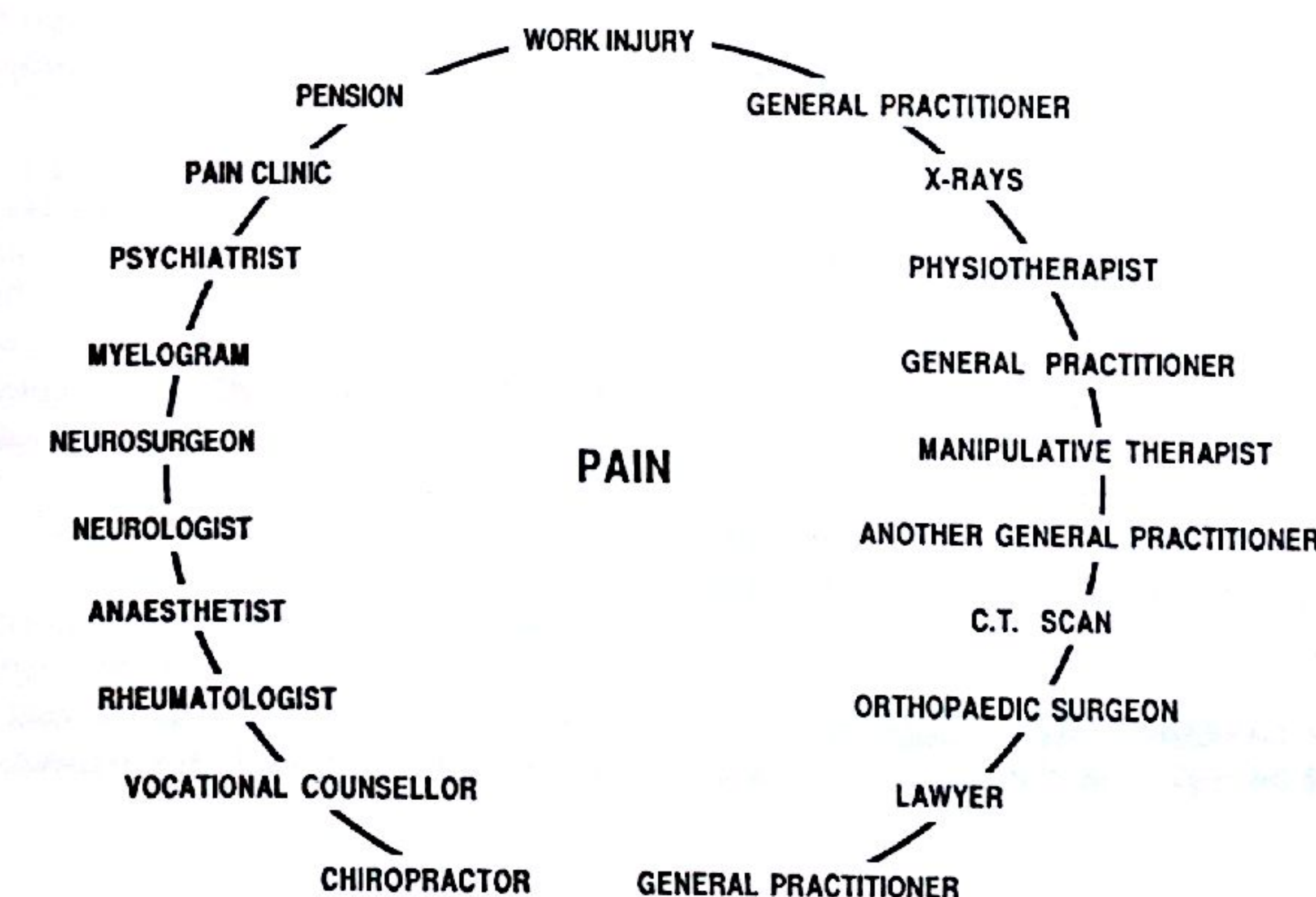
Problem III

How much is management to blame for the prolonged absence of the injured worker?

Numerous studies done in different countries have indicated that medical care is not the prime factor in returning people with chronic musculoskeletal pain to the workforce. Such factors as monotony of work tasks, unhappiness (at home and at work) and poor attitudes by management contribute far more significantly to workers' rehabilitation than does medical input⁽³⁾.

At the International Pain Conference in Adelaide in April 1990, the paper presented by Nachemson, a Swedish orthopaedic surgeon, indicated that workers injured at a factory in Sweden returned to work more readily when encouraged by others in the workforce, including those in the various levels of management. This study involved the injured worker being contacted several times a week by fellow workers and then once a week by their immediate superior and once or twice during their illness by more senior management. All these contacts were aimed at building up the self image of the worker, indicating that they were respected and that their presence at the workplace was missed, in effect that other people cared. This in turn raised the morale of the workforce and demonstrated the very important role that the psyche plays in the rehabilitation of the injured worker.

WHEEL OF MISFORTUNE



**Our task is to be actively engaged
to prevent AIDS
i.e. to keep injured workers from entering the**

**Accident
Insurance
Disability
Syndrome**

Wynn Parry, writing in *Pain* in 1980 concluded that the single most effective manoeuvre that reduces pain in the injured worker is the absorption of that worker back into the workforce⁽⁴⁾. What this means is that a person who is mobile can work through chronic pain provided that there is no undiagnosed underlying problem likely to lead to progressive disability. This is indeed the case in the vast majority of musculoskeletal injuries which happen in the workplace.

Problem IV

An accurate diagnosis of tissue damage is a rarity in musculoskeletal dysfunction.

Undergraduate education in musculoskeletal medicine is sadly lacking in most medical school curricula throughout the world. It therefore comes as little surprise that most musculoskeletal injuries are casually diagnosed as soft tissue strain which should get better in a short period of time without residual deficit.

It seems reasonable to assume that if the medical practitioner of first contact was competent in diagnosing and treating musculoskeletal dysfunction, a large proportion of chronic musculoskeletal problems would be avoided.

Figure II indicates what happens when incorrect or incomplete diagnoses are made. The wrong diagnosis is likely to result in inappropriate treatment and prolongation of the symptoms. Then begins the wheel of misfortune which produces a large amount of expense and a great degree of unnecessary human suffering.

In the current context health care workers must be concerned that the appropriate diagnosis has been made and if the patient does not respond to the appropriate treatment in a short period of time review of the case becomes mandatory. It is a sad fact that many patients have treatment by numerous therapists over a prolonged period of time, often of months or years, with no resolution of their symptoms and no diagnosis of the underlying pathology.

Every patient should be given a specific diagnosis at an early stage. Unjustified pseudo-pathological diagnoses

must be avoided and the troublesome structure(s) identified so that rational management can be planned⁽⁵⁾. If this cannot be done then the patient should be told that the cause of their problem is unknown or indeterminable and they probably would do well to seek help elsewhere.

One hallmark of medical education in the past was that musculoskeletal pain was best managed by rest with some kind of sedation. If a joint was involved then immobilisation would also be considered.

Studies by Waddell have indicated that rest has little place in the treatment of most conditions causing low back pain and this probably can be extended to other regions of the vertebral column, as well as in the appendicular skeleton⁽⁶⁾. Waddell further advocated that active rehabilitation is more likely to be effective and should be considered to be the treatment of choice for those people who are suffering chronic musculoskeletal pain. The problem therefore comes down to the defining of what and who should be involved in active rehabilitation. Certainly at this stage there does seem to be a dearth of people who are competently trained and experienced in achieving this.

Problem V

Specialist referral is often inappropriate and emotionally conceived.

A major problem which faces the treating physician is that if a patient is not getting better quickly (and especially if they are being compensated) referral to a surgeon, either orthopaedic or neurological, is traditionally thought to offer salvation for all concerned.

This ignores the fact that surgeons are trained to deal with surgical conditions and do not necessarily have expertise in the identification and treatment of soft tissue injuries. It is common for authoritative opinions to be given by surgeons that patients are suffering from soft tissue injuries and that they should recover in a matter of weeks without residual dysfunction. Unfortunately these patients often continue to suffer pain for much longer periods, mostly because definitive diagnoses have not been made.

Some years ago Nachemson made the rather puzzling statement that "no convincing evidence exists that any type of conservative treatment for the patient with low back pain is superior to nature's own course"⁽⁷⁾. It is interesting that a respected orthopaedic surgeon should say this when referral to an orthopaedic surgeon is commonly considered to be the best course of action for a patient with chronic musculoskeletal pain.

Referrals to surgeons are appropriate for surgical purposes and should only be made after adequate assessment of musculoskeletal disabilities. Adequate assessment means that the patient's symptoms have

been reproduced and a working diagnosis made. If a working diagnosis cannot be made the patient should be informed and other appropriate referrals considered.

While it may be argued that it is a patient's right to be seen by the specialist of their choice, a great deal of time and money is wasted by patients being referred inappropriately. Most surgeons would agree that they only need to be consulted when all conservative measures have been carried out or when a surgical condition is clearly present.

Problem VI

Unnecessary use of expensive investigations

In some circumstances patients need to have radiological investigations when they are injured, especially if there are medico-legal considerations. However, most musculoskeletal problems involve soft tissues and pathology in soft tissues is not shown by X-rays. It is unfortunate that many members of the medical profession and the public at large consider that whenever there is a musculoskeletal disorder an X-ray is necessary. People should be aware of the problems associated with excess irradiation and medical practitioners should be aware that they are the custodians of the health care system and must think carefully as to when investigations need to be ordered.

The prime consideration before any investigation is ordered is whether the information gained will alter the management. Clinical assessment yields most information about musculoskeletal dysfunction and a comprehensive physical examination should always be performed before ancillary investigations are considered.

Members of the profession who order expensive investigations such as CT scans should be able to justify the need for these tests. Unfortunately, many such investigations are requested in the hope of turning up something, yet the purpose is not to "turn up something" but rather to confirm a clinical diagnosis.

Problem VII

What needs to be done to ensure that treatment of the injured is appropriate and cost effective?

The point that very few members of the medical profession are trained to assess dysfunction of the musculoskeletal system has already been made.

Dr John Loeser from the Pain Clinic at the University of Washington, Seattle spent a year researching aspects of low back pain in South Australia and comparing data with those in the State of Washington, USA. He found that the operation rate for low back pain in the US was twice that in Australia but the hospitalisation rate for low

back pain in Australia was three times that in the USA. Cynically, this could be interpreted as the medical profession not really knowing how to look after patients with low back pain.

It has been well established that discogenic pain requiring surgical intervention makes up no more than 1 or 2% of all back pain. In a study by Webber it was concluded that up to two years post operatively, those who had undergone surgery had much better function and fewer symptoms than those who suffered their sciatica without resorting to surgery⁽⁸⁾. At five years the groups were comparable and at ten years many patients who had been pensioned off with intractable sciatica were back at work doing strenuous activities which were not previously possible. This indicates that the body has a magnificent mechanism for dealing with injuries within it and that we need to be more aware of the natural healing process. The first step in the management of any musculoskeletal problem is to decide how to encourage natural healing. If this can be done effectively the injured person will be saved from unnecessary suffering and there will be large cost savings for all concerned.

POSSIBLE SOLUTIONS

Having identified several problems, it is appropriate to pursue possible solutions. Serious thought needs to be given to ways of improving standards of care for those who suffer musculoskeletal injuries.

Suggestion 1

Centres of Excellence

Special clinics should be set up in large public hospitals to function as "centres of excellence". Such centres would involve physicians competent in the discipline of musculoskeletal medicine working together with well trained and motivated allied health professionals. The emphasis would be on close teamwork between all involved in the management of any patient.

In this country the majority of people presenting to hospitals with musculoskeletal pain are seen at either orthopaedic or rheumatological outpatient clinics where the emphases are markedly different from that envisaged.

In a clinic devoted to musculoskeletal medicine the initial emphasis would be on comprehensive assessment of patients; management regimes would be based on conservative physical modalities, supplemented by the judicious use of injection techniques and other forms of invasive treatment when necessary.

Experience from other countries indicates that there are many clinics of this type which help very large

numbers of patients. In such institutions the diversity of conditions seen encourages the development of expertise and there is potential for research in this neglected area of medicine. In Adelaide, which has one of the few outpatient departments in musculoskeletal medicine, the total number of new patients per year is in the vicinity of one thousand.

Suggestion II Early Diagnosis

With adequate training medical practitioners would be able to make accurate diagnoses early in the course of patients problems. This in turn would enable rational treatment regimes to be planned and prognoses formulated. Patients could be given realistic goals and time references for degrees and rates of recovery. In addition, it may be possible to identify factors which may predispose to long term incapacity. If these were identified early it would be easier to deal with them and if a condition was unable to be treated alternative solutions could be explored.

Suggestion III Postgraduate Training

Years ago a Diploma in Physical Medicine course was available for members of the medical profession who wished to gain added expertise in the examination and treatment of the musculoskeletal system. Unfortunately, such courses no longer exist and it is suggested strongly that postgraduate diploma courses in musculoskeletal medicine be established in at least one university in each state.

The University of Otago in New Zealand began such a course two years ago and at the end of 1990 their first intake will have completed the curriculum. The establishment of postgraduate courses means the establishment of Departments of Musculoskeletal Medicine, either as independent units or within disciplines such as orthopaedic surgery or rheumatology. If such departments were established research projects and normative studies would be undertaken to clarify issues such as the nature of musculoskeletal conditions and the efficacy of various treatments.

Suggestion IV Appropriate Investigations

Radiological investigations ordered without due thought as to what they may reveal have a very low return and reflect poorly on the competence of those who ordered them. Radiological investigations should only be done only when they are absolutely necessary. The main indications for plain X-rays are not the presence of pain and disability but rather the likelihood of three conditions:

1. Spondylolithesis
2. Fracture
3. Metastases

Infections are more readily confirmed by blood tests and if appropriate, a bone scan.

The treating clinician should resist any suggestions by patients that multiple investigations would be helpful. It is unfortunate that many people, including some employed by rehabilitation services, consider that such investigations as X-rays, CT scans and NMI will reveal all and ensure speedy resolution of any problems. We need to be reminded that if clinical assessment produces no working diagnosis then investigations are unlikely to be of much help.

Suggestion V Closer Harmony with the legal profession

Liaison needs to be undertaken with the legal profession to achieve more rapid resolution of litigation proceedings. Too often legal practitioners wait what appears to be an excessive amount of time before acting upon a case. When the medical witness eventually gets to court many of the same questions are asked in all cases. It would seem reasonable to assume that certain basic guidelines could be adopted to ensure a much faster resolution of legal problems.

Obviously there are no clear cut mechanisms for speedy resolution of all litigation problems, because of the intricacies of human nature, but the current system certainly works against the cause of justice when the time span moves into years.

Suggestion VI Rehabilitation Services

When the services of rehabilitationists are required, certain background factors and guidelines need to be considered.

It is well known that the major cost of Workers' Compensation relates to paying the wages of the injured workers. In addition to that it is only a small number of patients who become chronically disabled but their cost represents a very high proportion of the compensation budget⁽⁹⁾.

The PRIDE centre in Texas (PRIDE stands for Productive Rehabilitation Institute of Dallas for Ergonomics) maintains that through their extensive rehabilitation programme they are able to get up to two thirds of their very difficult worker's compensation patients back to work. This programme involves muscle strengthening, aerobic exercises, vocational assessment, quantification of progress and short term psychological intervention over a period of several months.

Mayer, who is the director of PRIDE, states that those workers going through the programme are less likely to seek physical therapy services when they encounter a minor injury⁽¹⁰⁾. What this means is that these people are more attuned to the effects of injury and to the workplace so they can avoid situations where injuries might occur.

It is obvious that musculoskeletal injuries will occur in any workforce. There are mounting costs in relation to the rehabilitation of injured workers and more definitive means of identifying problems are required. Injured workers must be returned to work more quickly, by means which are cost effective. It sometimes occurs that the nature of the condition is known but there is no treatment that will resolve the problem. Certainly a lateral thinking approach must be adopted when considering problems arising in the musculoskeletal system. To exclude such modalities as acupuncture and manipulation might be to turn a blind eye to possible means of cure. What is needed is the development of a broad approach whereby all avenues of treatment can be explored, tested and their efficacy proven. All of this tends to be expensive but the ground work must be done, if in the future, patients are going to be offered competent, efficient, cost effective management of musculoskeletal pain.

A recent study by Nachemson of problems associated with low back pain in the Swedish workforce indicated that in 1970, 1% of people with "bad backs" required an average of fourteen days off work. By 1980 this figure had risen to 8% of people with "bad backs" being off work for an average of thirty four days. The compensation bill to the country represents 5% of the gross national product and according to Australian figures the corresponding percentage would be approximately 3%.

Expensive Health Care is due to

- Lack of Education
- Lack of Co-operation
- Lack of Coordination
- Lack of Universal Standards
- Lack of Useful Research

Fig IV raises several important issues which need urgent attention.

References

1. Greenough C G., Fraser R D. *The Effects of Compensation on Recovery from Low Back Injury.* Spine 1988; 14: 947 - 955.
2. Frymoyer J W. *Back Pain and Sciatica.* New Eng J Med 1988; 318: 291-300.
3. Nachemson A. *Work For All.* Clin Orthop 1983; 179: 77 - 85.
4. Wynn Parry C B. *Pain in Avulsion Lesions of the Brachial Plexus.* Spine 1980; 9: 41 - 53.
5. Mendelson G. *Psychiatric and Psychological Aspects of Pain.* IASP. *Refresher Courses on Pain Management.* 1990.
6. Waddell G. *A New Clinical Model for the Treatment of Low Back Pain.* Spine 1987; 12: 632 - 642.
7. Nachemson A. *The Lumbar Spine. An Orthopaedic Challenge.* Spine 1971; 1: 10 - 19.
8. Weber H. *Lumbar Disc Herniation. A Controlled Study with Ten Years Observation.* Spine 1983; 8: 131 - 140.
9. Pither C E. *Treatment of Persistent Pain.* BMJ 1989; 299: 1239.
10. Mayer T G. et al. *A Prospective Two Year Study of Functional Restoration in Industrial Low Back Injury.* JAMA 1987; 258: 1763 - 1767.

SUMMARY

A better delivery of health care for injuries arising from the musculoskeletal system can be affected by the appropriate authorities giving attention to the following.

- a) The void in the area of education in musculoskeletal medicine, at both undergraduate and postgraduate levels, needs to be addressed as a matter of urgency.
- b) The establishment of soft tissue injury outpatient clinics in every public hospital is a high priority in this decade. Such clinics would best function on a multidisciplinary integrated basis.
- c) Early and correct diagnosis of the aetiology of musculoskeletal pain would best be achieved through "centres of excellence" until there is evidence that such services are being provided elsewhere.
- d) Much in the way of treatment of musculoskeletal pain is anecdotal at best and positively unscientific at worst. Appropriately directed research would provide reproducible bases upon which rational diagnosis and treatment could be undertaken.
- e) Throughout the world different professional bodies are offering various approaches to the problems of musculoskeletal pain and dysfunction. Fragmentation in any area of scientific endeavour is unproductive. All groups must unite to make international recognition of musculoskeletal medicine as a specialty achievable in the short term.

PRODUCT REVIEW

The **RESPOND II** is an electrical muscle stimulator with the versatility to assist in the rehabilitation of both acute and chronic musculoskeletal injuries.

The most outstanding feature of the unit is its ability to produce physiological like muscular contractions as well as modulated TENS like currents.

The unit is portable and therefore it can be used actively with any exercise programme as part of a treatment regime.

During a recent European Tour the Australian Socceroos Physio commented that: "The Respond II has proven the most beneficial electrical stimulator that I have ever used because it allows the clinician to stimulate the injured areas without the nasty feelings that other forms of electrical stimulators tend to produce". He added that "the patients can tolerate the electrical stimulation produced by the Respond II for longer periods of time, therefore, allowing active treatment even at very early stages".

It is well accepted in Sports Medicine that early treatment helps reduce swelling and increase healing. Part of this early active regime includes gentle exercise to restore normal function of the musculoskeletal tissues.

Other clinical benefits that can be obtained with the Respond II are: maintenance or gain of range of movement, specific muscle strengthening, muscle re-education, orthotic substitution and the prevention of atrophy.

Muscle stimulation also facilitates voluntarily motor function; the inhibition of spasticity, correction of contractures. It decreases oedema, muscle spasm and pain.

Muscle stimulation with the Respond II can be determined and maintained within patient's level of tolerance and psychological acceptance. The machine allows the clinician to establish stimulation parameters which are therapeutically adequate within physiological range. The parameters can also be re-evaluated as the rehabilitation programme continues.

There are no known contra-indications to muscle stimulation apart from the obvious ones such as pacemakers, open wounds, etc.

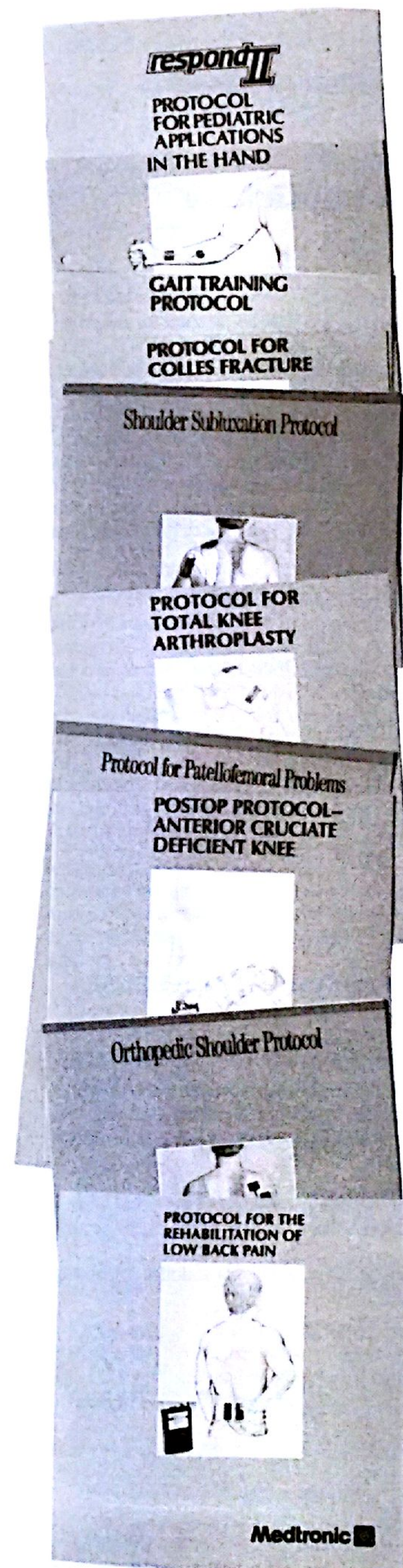
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More than 240,000 patients have been treated with chymopapain over a period of 25 years. Three double-blind and one open-label clinical study have shown chymopapain to be effective. Several published articles, as well as twenty years of patient follow-up data, demonstrate chemonucleolysis to be as safe and as effective as surgery.

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Australian College of Sports Physicians

The Australian College of Sports Physicians held their annual conference at the Hyatt Hotel in Sydney from 7/10/90 to 9/10/90.

A number of papers presented at this conference would be of interest to those involved in musculoskeletal medicine. The notes which follow give an outline of the topics discussed.

GROIN INJURIES

Dr Neil Halpin

Five percent of all injuries in Swedish soccer players are to the groin. Groin pain has a fairly high incidence, but its diagnosis and management are confused.

Presenting features include:
slow onset more common; rarely a single traumatic event
widespread pain referral
aggravation by cough, sneeze, exercise
frequently the pain is severe

A study by Ekberg et al in 1988 of twenty one patients asked a general surgeon, a urologist and an orthopaedic surgeon to diagnose the cause of groin pain with the aid of X-ray, bone scan and hemiography. Nineteen of the twenty one ended up with more than one diagnosis, including prostatitis, osetis pubis, inguinal hernia, adductor strain and occult hernia.

Common Diagnoses

1. Osteitis pubis

This was first described in 1924 as a complication of prostatectomy, and later considered to be possibly related to overuse. Bone scans and X-rays are used but produce non-sensitive results. Diagnostic small volume local anaesthetic can be the only diagnostic guide. Characteristic features include bilateral pain, and the condition can slowly recover over six to nine months.

2. Subclinical inguinal hernia or conjoint tendon injury

Anatomical dissections have shown that the anatomy in this area is exceptionally variable. The use of hemiography is very controversial and is largely based on a study of 185 patients, without controls, who had vague inguinal pain. The patients' ages were 13 - 85, with an average age much higher than the sports people who get this pain. The question that was never answered was "Is the hernia the cause of the pain?"

3. Adductor Insertion Enthesopathy

Rider's sprain has been described for years in horse riders, and has been alluded to as tennis elbow like. It can be diagnosed perhaps on history, examination findings of pain on resisted adduction and passive abduction, more so by 1ml of local anaesthetic into the tendon, where pain can be reproduced on injection. Acute cases can be treated with physiotherapy, exercises, and steroids. The chronic cases generally get better in about two years, and are non-responsive to steroids. Local tenotomy appears the best therapy.

GAIT ANALYSIS AND OVERUSE INJURIES

Dr C. Bradshaw

Athletes with the iliotibial band friction syndrome (IBFS) and Patellar tendonitis (PT) were assessed with, among other things, dynamic video assessment of their running styles.

In IBFS, excessive lateral tilting of the pelvis occurs. In PT, excessive anterior rotation of the pelvis occurs.

Treatment of these conditions includes improving running styles.

TENDON INJURIES

Dr B Giuffre

Ultrasound appears to be better than MRI in detecting patellar and Achilles tendonitis.

ANTERIOR CRUCIATE LIGAMENT SURGERY

Dr M Cross

The anterior cruciate is a complicated structure and consists of a number of bundles; the anteromedial bundle measures 3.2cm, the postero-lateral 1.7cm on average.

Sixty percent of tears occur as a result of non contact twisting, and sixty percent feel or hear a snap or a crunch. The major ongoing symptom is instability and the excessive movements can cause later meniscal damage.

The major sign in the acute phase is the straight leg raise draw test. The patient's thigh is placed on a pillow. As the heel is lifted to raise the leg the tibia is seen to be drawn forward on the femur before full knee extension is achieved.

The first operations were extra capsular, using a strip of iliotibial band to wrap around the fibular collateral ligaments. Now the arthroscopic patella or hamstring reconstruction is mainly used. Post operative complications are uncommon and usually resolve. The most common is extension restriction and this can be eased by arthroscopic debridement of residual notch scarring.

ARTHROSCOPIC MANAGEMENT OF OSTEOCHONDRAL TALAR DOME FRACTURES

Dr Kim Slater

Berndt and Harty classified these ankle fractures into four stages in 1959 and the IIA stage was added by Anderson and Crichton in 1989.

Stage I	Compression of subchondral bone
Stage II	Partial separation of osteochondral fragment
Stage IIA	II with subchondral cyst
Stage III	Complete separation of osteochondral fragment
Stage IV	Displaced fracture.

In a series of 29 patients, 34 lesions were found at arthroscopy. The history of onset was inversion 16, twist 4, eversion 4, nil 4. The signs included localised swelling, tenderness, stiffness, and only rarely is ankle instability found. The average duration of symptoms was 7-6 months (2 - 65 months). These features are often misdiagnosed.

Management algorithm is as follows.

History examination suggestive

Plain X-ray	positive
negative	if IIA, III IV
bone scan	Positive
Negative	CT scan
conservative	Arthroscopic Surgery
therapy	(semi coronal views)

At arthroscopy loose chondral flaps and underlying sclerotic bone are removed. A CPM is used straight away, and the patient weight bears early; using crutches for 3-4 weeks.

Investigations in twenty nine cases provided useful information - Plain X-rays 13/29 positive, 1/313 Bone scan positive, 12/15 CT scan positive (and the 3 that were negative were Stage I) and 17/17 MRI positive

Conclusions

1. Osteochondral post traumatic fractures are common
2. Bone scan, MRI, CT help with staging
3. Early surgery with arthroscopy is best management.

MENISCAL SURGERY - A CHANGING PERSPECTIVE 1958 - 1990

Leo A Pincewsski

The frequency of injury to the meniscus, the belief that the loss of meniscus has little effect on joint function and the ease of meniscectomy, have made this the most frequent orthopaedic operation of this century.

This paper showed that meniscectomy is not a benign procedure and that menisci are able to be salvaged with meniscal suture.

Attributed functions to the menisci are:

1. Prevention of impingement
2. Joint lubrication
3. Contribution to stability of the joint
4. Energy absorbing function
5. Weight bearing function.

It has been shown that menisci carry between 40% to 60% of the supraprostatic weight of the body through the knee joint in the standing position.

The late results of surgical meniscectomy show an alarming incidence of osteoarthritis. Particularly poor results after total meniscectomy have been observed in the anterior cruciate deficient knee and in children and young adults.

Partial meniscectomy was discussed. Animal studies show that the degree of degenerate change that results in a knee is directly proportional to the amount of meniscus that is removed. However, clinical studies in humans show that there is little difference in the results between complete and partial meniscectomy, but that the lowest incidence of pain or radiological change is in a group of patients who have undergone meniscal repair.

An arthroscopic technique of meniscal suture was demonstrated. Seventy-one patients have undergone arthroscopic meniscal suture, fifty-two patients with simultaneous anterior cruciate ligament reconstruction and nineteen undergoing isolated meniscal suture. Only two patients have had to undergo subsequent surgery for removal of an unhealed tear. Other authors report success rates varying from 78% to 91%.

This paper showed that the mensci have a complex function. Their removal results in irrevocable effects within the knee joint. Meniscal suture in the short term has indicated a high success rate. However, the procedure will be vindicated only after long term studies answer the question of the durability of the repaired meniscus with demonstration of either its success or failure in preventing articular joint surface changes.

SPORTS SPECIFIC INJURIES

The sports of basketball, netball, volleyball, hockey, racquet sports, cycling, rugby and marathon running were outlined by several sports physicians highlighting

the sports specific problems. Generally the most common injuries involved the knee and ankle. Netball, basketball and volleyball had significantly higher incidences of hand and finger injuries as expected.

One unusual injury in volleyball outlined by Dr Stuart Watson was suprascapular nerve impingement at the suprascapular notch. This injury is seen in repetitive overhead activities and results in weakness and wasting of the infraspinatus muscle. The treatment is to release the nerve by open operation to allow recovery of the nerve.

Rugby injuries were discussed by Dr Miles Coolican and Dr Tim Noakes added his extensive experience from South Africa. Cervical spine fractures and quadriplegia occurred most commonly at the time of engagement of the scrum and the recent rule change eliminating charging has led to a dramatic decrease in spinal cord injuries. There is no evidence that strong neck muscles protect against injury nor is there any correlation between long thin necks and susceptibility to injury.

RADIOLOGY QUIZ

A 30 minute radiology quiz was presented by Dr Jock Anderson including some examples as rare as "Rocking Horse Excreta".

Examples included the three commonly missed fractures around the ankle joint: talar dome fracture; posterior process talus; anterior lip of calcaneus.

Another cause of persisting ankle pain is the talocalcaneal bar or coalition best seen as the lateral ankle view. Beaking of the dorsum of the neck of the talus is a useful sign seen in long standing cases.

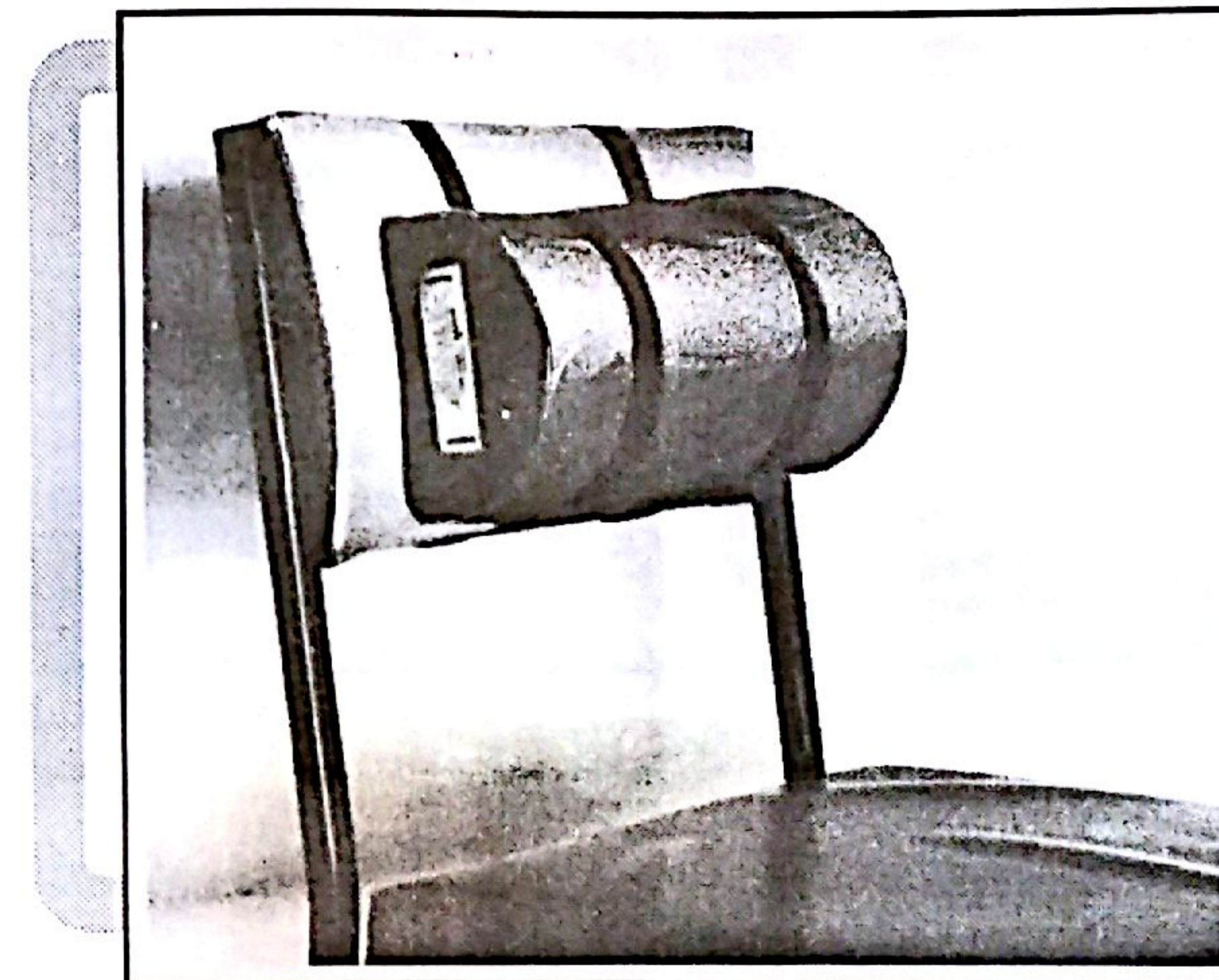
Anterior knee pain in the adolescent may be caused by a traction apophysitis at the lower pole of the patella. X-rays should have sufficient clarity to assess adjacent swelling of the soft tissues.



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"Insert the lumbar roll into the harness (see above). Place your buttocks as far back in the seat as possible. Lean forward and insert the roll horizontally across the low back just above the belt line. Now lean back against the roll so that the hollow of your back is firmly supported. Once you have found the best position to place the roll it may be fixed onto the chair by the fastenings."

Initially this position will feel strange, uncomfortable and in a few instances you may feel new pains in different places. These pains are normally short-lived and will disappear within a few days as you adjust to the new position. Everyone is slightly different in shape and the roll may have to be moved up or down by NO MORE than one inch to suit your particular back.

Self treatment of low back pain can be successfully applied by about 70% of the population.

Should you be interested in learning more about this approach to your problems, read **TREAT YOUR OWN BACK** by Robin McKenzie available from your local bookseller or from;

D.E.S.M.A. P.O. Box 85, Inverell, N.S.W., 2360.

A companion volume, **TREAT YOUR OWN NECK**, is also available. * A **CERVICAL ROLL** to support the neck and a **NIGHT ROLL** to support the low back while sleeping are also available.

Accreditation Assignment

Below are two illustrations from a forthcoming book entitled "Biomechanics of the Pelvis at Work and Play". It has been written by a former President of the Association in response to the paucity of information in the scientific literature on this important subject.



Fig 1.

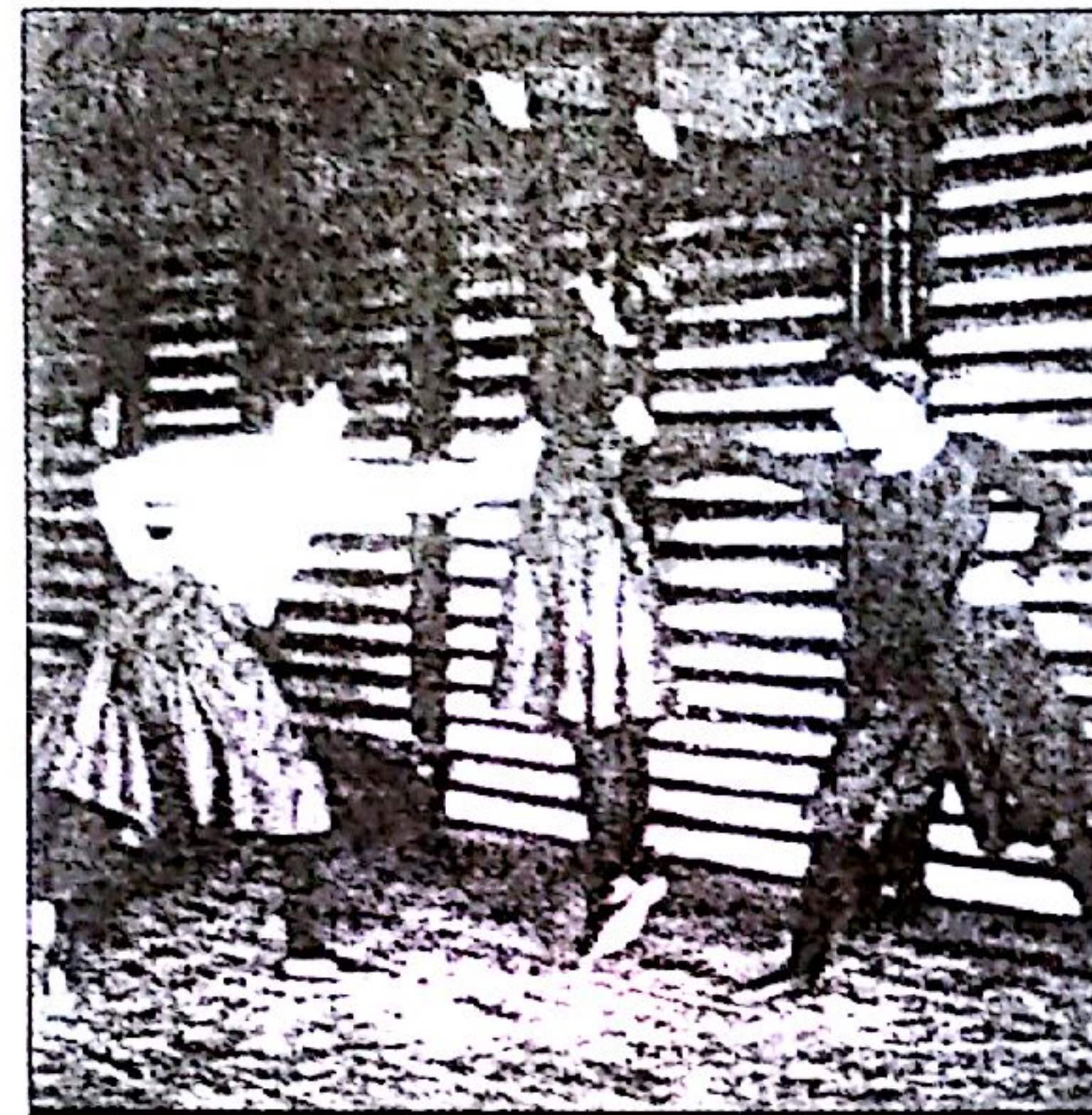


Fig 2.

Members are invited to study the various aspects of this situation and to comment on the biomechanical effects of the techniques depicted.

Would the vigorous pelvic thrusting depicted in figure 1 be likely to have satisfactory effects?
What is the significance of the lumbar hyperextension exhibited by the subject?
What other pelvic thrusting technique might have a more beneficial effect?
Which accessory movements of pelvic joints are likely to be produced by the manoeuvres undertaken in figure 2?
How could they be assessed?
What is the significance of the thoraco-lumbar counter-pressure?

Alternatively, members may prefer to supply their own illustrations of pelvic thrusting techniques and to answer the questions above in relation to the manoeuvres depicted in them. Those who chose this course are advised to check postal regulations before dispatching their submissions.

Thirty accreditation points will be awarded for satisfactory responses set out in one thousand words or less and forwarded to the Hon. Secretary before the end of November, 1990.

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There is space on this list for many other companies with interests in the field of musculoskeletal medicine. The Bulletin welcomes advertisements for any products or services considered worthy of members' attention. Advertising managers are invited to contact the editor.

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VOLTAREN: DICLOFENAC SODIUM

INDICATIONS: INFLAMMATORY AND DEGENERATIVE FORMS OF RHEUMATISM: RHEUMATOID ARTHRITIS AND OSTEOARTHRITIS. RELIEF OF ACUTE/CHRONIC PAIN STATES IN WHICH THERE IS AN INFLAMMATORY COMPONENT. SYMPTOMATIC TREATMENT OF PRIMARY DYSMENORRHOEA.

CONTRA-INDICATIONS: HYPERSENSITIVITY TO DICLOFENAC SODIUM. PEPTIC ULCER. GASTRO-INTESTINAL BLEEDING. PATIENTS IN WHOM ATTACKS OF ASTHMA, URTICARIA OR ACUTE RHINITIS ARE PRECIPITATED BY ASPIRIN OR BY OTHER PROSTAGLANDIN SYNTHETASE INHIBITORS.

PRECAUTIONS: CAUTION IS REQUIRED IN ELDERLY PATIENTS AND IN THOSE WITH A HISTORY OF DYSPPEPSIA OR OTHER GASTRO-INTESTINAL DISORDER. WITH PRE-EXISTING DYSHAEMOPOIESIS OR DISORDER OF BLOOD COAGULATION OR WITH SEVERE HEPATIC OR RENAL DISEASE. BLOOD COUNTS SHOULD BE PERFORMED AT INTERVALS IN PATIENTS RECEIVING LONG-TERM THERAPY.

USE IN PREGNANCY: RISK CATEGORY C. SAFETY OF DICLOFENAC SODIUM IN PREGNANCY IS NOT ESTABLISHED. VOLTAREN SHOULD NOT BE USED IN PREGNANCY OR IN THOSE LIKELY TO BECOME PREGNANT UNLESS THE EXPECTED BENEFITS OUTWEIGH ANY POTENTIAL RISK.

USE IN LACTATION: UNCHANGED DRUG HAS NOT BEEN DETECTED IN BREAST MILK.

INTERACTIONS WITH OTHER DRUGS: CONCURRENT USE OF ACETYL SALICYLIC ACID LOWERS THE PLASMA CONCENTRATION OF VOLTAREN. CONCOMITANT ADMINISTRATION OF VOLTAREN WITH LITHIUM OR DIGOXIN MAY RAISE THEIR PLASMA CONCENTRATIONS.

ADVERSE REACTIONS: GASTROINTESTINAL SYMPTOMS (E.G. ERUPTION, NAUSEA, EPIGASTRIC PAIN OR DIARRHOEA) - USUALLY MILD AND TRANSIENT. PEPTIC ULCER OR GASTROINTESTINAL HAEMORRHAGE HAS BEEN REPORTED. OCCASIONAL REPORTS OF SKIN REACTIONS: DRUG RASH, ECZEMA, PERIPHERAL OEDEMA OR SLIGHTLY RAISED SERUM TRANSAMINASE LEVELS. ISOLATED REPORTS OF ANAPHYLACTOID REACTIONS: CENTRAL NERVOUS SYSTEM REACTIONS: HEADACHE, DIZZINESS, TIREDNESS, INSOMNIA OR IRRITABILITY. RARE REPORTS OF MYELOCLONIC ENCEPHALOPATHY, BLOOD DYSCRASIAS (APLASTIC ANAEMIA, AGRANULOCYTOSIS, LEUCOPENIA), HAEMOLYTIC ANAEMIA, THROMBOCYTOPENIA, REDUCTION IN HAEMOGLOBIN LEVELS, POSITIVE COOMBS TEST, JAUNDICE, HEPATITIS, RENAL FAILURE, NEPHROTIC SYNDROME AND ISOLATED CASES OF ERYTHEMA MULTIFORME.

DOSEAGE AND ADMINISTRATION: INITIAL DOSEAGE: 75 TO 150MG DAILY IN 2 OR 3 DIVIDED DOSES. LONG-TERM THERAPY - 75 OR 100MG DAILY IN DIVIDED DOSES. PRIMARY DYSMENORRHOEA: 50-200MG DAILY. INITIAL DOSE OF 50-100MG WHICH MAY BE RAISED OVER SEVERAL CYCLES. TREATMENT SHOULD START ON APPEARANCE OF FIRST SYMPTOMS AND DEPEND ON THEIR INTENSITY. CONTINUED FOR A FEW DAYS. THE TABLETS ARE ENTERIC COATED AND SHOULD BE SWALLOWED WHOLE.

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