

BRITISH ORTHOPAEDIC FOOT SURGERY SOCIETY

A meeting of the British Orthopaedic Foot Surgery Society was held in conjunction with the meeting of the British Orthopaedic Association at Harrogate on September 19, 1985. Mr J. R. Kirkup was in the chair.

SCIENTIFIC PAPERS

Congenital absence of the fibula – G. K. Sefton (Harrogate) said that fibular agenesis presented a difficult problem in management and that advice was biased toward early Syme's amputation.

Classification by the size or position of the fibular remnant or by the degree of maldevelopment of the foot was unhelpful in prognosis. Factors influencing the outcome included shortening of the limb, anterior bowing of the tibia, deformities of the foot and valgus deformity and instability at the knee. Leg-length inequality remained at a constant percentage and radiographs might first be measured at the age of one or two years. If the fibular remnant was left in situ during the first year, it could cause further deterioration in the shape and length of the limb.

The advantages of early excision of the fibular band, lateral release of the ankle and immobilisation in plaster for four to six months were prevention of damage to the distal tibial epiphysis and a better foot shape; removal of a bowstring also gained length and allowed anterior bowing to correct. Further procedures might be needed to stimulate growth or to maintain correction, and also for knee deformity or instability. If leg-length discrepancy exceeded 4 cm at one year, Syme's amputation should be considered.

Ruptured tibialis posterior and other commonly missed pathology in the foot – G. K. Rose (Oswestry) drew attention to a small but identifiable group of middle-aged patients with serious limitation of walking due to pain in the foot. The feet might have high or low arches but were characterised by maldistribution of load within the support area. They might also show secondary effects: "synovitis" of the tibialis posterior sheath and degenerative changes in the tendon, sometimes proceeding to rupture with dramatic deterioration, and tightness of the tendo calcaneus.

Predisposing causes, such as reduced support under the first metatarsal head, and mechanical implications were discussed. Alteration of the support area by rotation-displacement calcaneal osteotomy was recommended and had proved satisfactory in nine of 10 cases over an average period of six years. The need for tibialis posterior reconstruction or for additional restoration of first-ray support was discussed.

Non-specific tendo-vaginitis of tibialis posterior: a wrong diagnosis – J. M. Fitton (Leeds) reviewed 29 patients, 11 treated operatively, with a follow-up of 12 to 19 years. All were middle-aged women and most had tightness of the tendo calcaneus with a variable degree of eversion of the heel which increased on weight-bearing.

Significant operative findings were fraying on the medial aspect of the tendon of tibialis posterior, enlargement from its attachment to the navicular tuberosity up to the medial malleolus, and occasionally a rent in the medial capsule of the talonavicular joint. Histological examination of specimens of the tendon revealed splitting of fibres and accumulations of mucoid material in the ground substance of the tendon.

Because of these findings it was suggested that the cause of the syndrome known as "non-specific tendo-vaginitis of tibialis posterior" was degeneration of the tendon secondary to the

strain imposed by a tight tendo calcaneus. The enlarged segment of tendon could not pass through the fibro-osseous tunnel behind the medial malleolus, so rendering the muscle incompetent. Loss of action of the tibialis posterior was followed by eversion of the heel, stretching and eventually tearing of the medial capsule of the talonavicular joint.

A comparative investigation of the clinical value of different methods of measuring foot pressures – J. Hughes and L. Klenerman (Northwick Park) stated that the distribution of pressure under the foot can give useful information about the structure and function of the foot. Three methods which are currently commercially available were described and others mentioned.

The Harris mat provides ink prints where high pressure areas are darker; peak pressure only without time relations is measured; point resolution is good but pressure resolution is not; calibration with a weighted rod is possible. The Dynapod-Matrix Force Plate records forces in newtons measured by each of 128 load-cells; the equipment is expensive and needs a competent operator but produces a variety of print-outs; point resolution is poor, small areas of high pressure may be missed, but force resolution is excellent. The pedobarograph gives a coloured contour map of the pressure; in the computerised form this corresponds to pressures in kg/cm²; printouts of graphs and tables may be produced. The process is rapid and the equipment is easy to use; point resolution is better than 1 mm but pressure resolution is poor in the standard form.

The method chosen will depend on the requirements of the user. Clinicians may prefer the output of the pedobarograph or the Harris mat, which is cheap and portable. Engineers will prefer the exact force measurements of the Dynapod.

Hallux rigidus and its surgical management: a dynamic pedobarographic evaluation – Professor T. Duckworth (Sheffield) compared three operations for hallux rigidus and reported on pre- and postoperative pedobarographic studies.

Before operation, 88% of 25 feet showed normal pressure patterns and the expected high loading under the hallux was avoided by alterations of gait to avoid pressure on the medial rays.

After arthrodesis (22 feet), with the toe in good position (not extended), pedobarography showed high pressure under the great toe in 32% and also under another metatarsal head in 45%, but both these effects reduced with time. This operation seemed clinically to be the most satisfactory. After Keller excision arthroplasty (16 feet) only two feet (12.5%) showed normal loading and in 50% the great toe was functionless. Also in 50% there was excessive loading of other metatarsals. After Swanson replacement arthroplasty (16 feet) the toes were usually stiff and toe function on pedobarography was slight in 69%, with excessive lesser metatarsal loads in 56%. However, this latter tended to pass with time, although other complications then arose, including foreign-body granulation.

Transfer lesions following middle metatarsal osteotomies – R. G. Pringle (Shrewsbury) presented a small series of patients in whom oblique osteotomy of the middle metatarsals led to disabling symptoms from transfer lesions to the first or fifth metatarsal heads.

The most severe problems were encountered in those in whom the osteotomies were associated with fusion of the first metatarsophalangeal joint.

While previous authors had noted transfer of symptoms to other lesser metatarsal heads, none had noted their shift to the first metatarsal head. It was suggested that oblique osteotomy

should be used with caution in the younger or the active patient.

Stability of the ankle and subtalar joints following division of the lateral collateral ligament of the ankle and following reconstructive procedures – *E. J. McGinnis* and *J. Burke* (Rochester, New York) presented a study in which the independent tibiotalar and talocalcaneal inversion angles were measured with selective ligament sectioning.

The effects of three commonly used ligament reconstructions – the Evans, the Watson-Jones and the modified Elmslie procedures were studied and the restrictions of tibiotalar and talocalcaneal inversion were measured. Recommendations were made on the pre-operative evaluation of patients for lateral ligament reconstruction, with particular emphasis on subtalar instability.

Hallux valgus: a rationale for treatment – *E. G. Anderson* (Glasgow) commented that hallux valgus remained an unsolved mystery and he enumerated general principles for operative treatment: the patient must definitely want something done; operation was easier earlier than later; no one operation was suitable for all cases; simplest was best and the operation must produce a durable result acceptable to the patient. Pre-operative assessment involved the hallux valgus angle, with under 15° considered normal and 15–20° acceptable if symptomless; the metatarsophalangeal joint was considered "sound" if passive movement showed no grating and ligament tension caused no pain; the presence of second metatarsal callosities influenced the operation planned.

Four procedures were used. For angular deformity of a sound joint at any age, a modified Wilson osteotomy with the addition of an AO screw; for deformity of an arthritic joint in a patient aged less than 55 years (older if the patient was active), an arthrodesis; for deformity with arthritis over 55 in the less active, a Swanson replacement arthroplasty, with a lateral closing wedge metatarsal osteotomy if needed; for deformity and arthritis in the elderly, the Keller procedure.

Follow-up of 221 feet showed reduction of the hallux valgus angle to under 25° in 70% (average decrease by 15°) and an average intermetatarsal angle reduction from 17° to 12°, with subjective satisfaction in 90%. Complications included infection and metatarsalgia in 5%. The screw needed removal in 11%.

A second meeting of the British Orthopaedic Foot Surgery Society was held at the Royal National Orthopaedic Hospital, Stanmore on November 29, 1985 with Mr J. Angel in the chair.

SCIENTIFIC PAPERS

Distal metatarsal osteotomy for painful plantar keratoses: a day case treatment – *R. J. H. Emery*, *D. H. Williams* and *K. P. Robertson* (Middlesex and London Foot Hospitals, London) presented in 18 patients a simple operation for callosities due to high-pressure loading under one metatarsal head, not controlled by chiropody.

Under local anaesthetic and without a tourniquet, a 1.5 cm dorsal incision was made over the metatarsal neck. A dorso-plantar drill hole was made, directed 10° proximally and made the apex of a V-shaped vertical osteotomy. The distal fragment was displaced dorsally by 50% of the height of the neck. Weight-bearing in bandages was allowed as tolerated. The majority of patients returned to work within two weeks. Radiographs showed union early in 14 patients and by three months in three more.

Pre- and postoperative pedobarograph studies showed a significant reduction in peak loads under the site of the callosity. At six and 18 months, 10 patients were free of the

callosity and in 4 more it was improved in appearance. Of the 10, four had transfer lesions under an adjacent metatarsal head, which took a higher load than before the operation.

Plantar ulcers: aetiology, treatment and prevention – *D. J. Pring* (Welwyn) discussed the predisposing causes of neuropathic ulceration of the soles, stressing that even if they are anaesthetic, flexible feet without deformity or paralysis may escape ulceration.

Body weight exceeds the arterial perfusion pressure. Normally and unconsciously weight is shifted from one foot to the other due to reflexes mediated through pain fibres. Thus the unilateral anaesthetic foot is liable to ulcerate due to lack of this reflex, to claw-toe deformities and to anhidrosis.

Haematomata due to shear forces, blisters due to friction and necrosis beneath calluses may develop into "simple" ulcers. Of 55 such ulcers, treated in various weight-bearing plaster of Paris casts for six weeks as outpatients, 84% to 87% were healed or almost so.

Complicated ulcers involve tendon, bone or joint and are treated by local drainage and excision of bone through a *dorsal* incision. Wounds are left open but are not packed. Of 107 operations, 77% were healed at discharge from hospital.

Recurrence of ulceration at the same or a different site in 47 cases followed up was seen in 20 (43%) and continuing care is needed.

The biomechanics of rockers – *N. J. Geary* (Northwick Park Hospital) reported on researches into the design of shoe rockers for use in the prevention of foot ulceration in diabetics after healing in a total contact plaster of Paris cast. Extra-depth shoes with total contact insoles alone do not relieve forefoot pressure when the heel is lifted from the ground unless a rocker is added.

Using the Langer Electrodynograph to measure pressures, it was found that foot pressures were reduced by wearing shoes (compared with barefoot) and were most reduced by a 30° posteriorly placed rocker. Flat-pitched rockers (low-heel height) were advantageous but cannot be used by patients with hip- or knee-flexion deformities. Skew rockers (related to the line of progression rather than to the transverse axis of the shoe) can be useful to redistribute pressure across the metatarsal heads. Chamfered heels were of no advantage.

Fixation pins in the treatment of talipes equinovarus – *R. A. Denham* and *M. Hall* (Portsmouth) reported on 27 years' experience of 1500 feet at their talipes clinic.

Of 362 feet with *mild* deformity, no more than stretching and strapping gave good results in all but 31 (9%). Conservative treatment of severe deformity had proved unsatisfactory and a flat-topped talus was often seen. After 1965 early operation was advised and the operation evolved to the current procedure by 1983. This involved elongation of the tendo calcaneus; Steindler's release; division of tibialis posterior, the posterior capsule, the posterior tibio-fibular ligament and the ligaments of the sinus tarsi; elongation of the flexor hallucis longus and flexor digitorum; division of the talonavicular ligaments on all aspects and displacement of tibialis anterior to the base of the third metatarsal.

Correction was held with two Kirschner wires, one through the heel and talus into the tibia and one to hold the midfoot; these were retained for three weeks. Wounds were partly sutured, the remainder being left open to granulate. Good results were obtained in 15 feet, with five more still under treatment.

Stress studies of the fractured ankle – *D. I. Rowley* (Manchester) had stressed 20 bi- and tri-malleolar fractures under general

anaesthesia before internal fixation. Anteroposterior radiographs were taken with the ankle stressed in adduction, abduction, medial and lateral rotation. From the films the degree of talar shift and fibular rotation in the various positions was ascertained. After internal fixation of the fibula, the ankle was stressed again in the direction deduced to have caused maximum displacement pre-operatively.

It was concluded that conventional generic classifications of ankle fractures, such as the Lauge-Hansen system, do not consistently predict the direction of maximal instability. Indeed, all the fractures displaced most in lateral rotation. After internal fixation of the fibula the ankle was invariably stable, irrespective of the height of the fracture or the state of continuity of the medial structures.

A modification of Keller's operation – *M. Harding and S. C. Chen* (Enfield) discussed previous modifications of the Keller arthroplasty and described a new one.

After excision of the phalangeal base and the bunion, a piece of "Surgicel" gauze 10 by 20 cm was packed into the pseudarthrosis to maintain a gap. The space should not be packed too tightly. Although follow-up was short (3 to 18 months), eight (73%) of 11 operations had proved satisfactory. Objectively, all great toes showed no residual valgus and all except one were equal in length to the opposite hallux.

Non-inflammatory synovitis of the second metatarsophalangeal joint and its surgical treatment – *Professor M. H. Jahss* (New York) reviewed 15 cases of non-inflammatory synovitis of the second metatarsophalangeal joint seen over two years. All were related to lateral pressure exerted by the hallux secondary to hallux valgus, hallux valgus interphalangeus or both. In the early stages, with minimal deformity, the pain in the stretched plantar capsule was diagnosed in 38% as a plantar neuroma; 15% of the patients had unsuccessful operations for this.

Conservative treatment for the synovitis was unsuccessful. The Akin procedure was performed in all cases in which the bunion was asymptomatic and there was no significant metatarsus primus varus.

Operation on the second toe in the early stages consisted of a simple dorsal tenotomy and capsulotomy over the metatarsophalangeal joint. In the majority of cases, the second toe had already become hammered and required resection of the head and neck of the proximal phalanx, occasionally supplemented by dorsal tenotomy and capsulotomy at metatarsophalangeal level.

Short-term follow-up has been uniformly satisfactory, while untreated cases have developed increasingly severe hallux valgus, metatarsus primus varus, dislocation of the second toe and a painful callus under the second metatarsal head.

A new method of treatment for the cock-up toe – *C. Freeman* (Augusta, Georgia) reviewed results of an operation for overriding fifth toe in 11 cases, of which 10 had given good results.

Through a curved incision the extensor tendon was split and divided Z-fashion. The proximal end of the proximal phalanx was resected. Two holes were drilled in the distal metatarsal and the proximal phalanx. The extensor tendon was threaded over the interphalangeal joint, through the proximal phalanx, across the pseudarthrosis into the metatarsal and sutured to its proximal end.

Imaging of the foot – *Dr Bates* (Augusta, Georgia) showed a series of investigations by angiography of cases of trauma, embolism, Buerger's disease, tumour and arteriovenous fistula.

He emphasised the importance of the peroneal artery in trauma and in atheromatous disease. He commented on the use of NMR for conditions of the calcaneal tendon.

Phenol ablation of the lateral nail bed margin for ingrowing great toenail – *L. Read* (Manchester) and *D. M. Wooller* (Swindon) stated that ingrowing toenail causes serious pain and disability but conservative and operative treatments have a high failure rate. Phenol ablation of the lateral nail bed margin allows free drainage of the infected area, is pain-free in convalescence and leaves a good cosmetic result.

A prospective study of 108 ablations at six months and of 78 ablations at one year revealed a recurrence of 9% and 12% respectively, an improvement over conventional treatments. Moreover, recurrence was due to faulty technique and was not an indication to proceed to more radical surgery. Cosmesis was excellent in 95%. Phenol ablation was recommended as a once-for-all first line of treatment.

Surgical footwear: an assessment of the place of ready-made extra-depth shoes – *L. Klenerman and Ms J. Hughes* (Northwick Park) had studied the wearing habits of 138 patients supplied with various shoes for various foot deformities. The commonest diagnosis was rheumatoid arthritis (44 patients). Twenty patients considered their surgical footwear no better than ordinary shoes and only 95 that the shoes were comfortable at all times, with little difference between the various types of shoe. Expensive bespoke shoes were worn more regularly (82%) than were ready-made surgical shoes (Nustyle 67% and Drushoe 56% worn regularly), but the latter cost only a quarter as much. The 16% of patients who never wore their special shoes had all been fitted with the two ready-made types.

There is need for better assessment of the needs of the patient both by the prescribing doctor and the orthotist. Ready-made extra-depth shoes do not seem to provide the comfort expected by the patient but are available relatively quickly (three weeks). Future developments, such as computer-assisted or modular design, may reduce costs and manufacturing delays.

Replacement of the first metatarsophalangeal joint with a silicone elastomer ball-shaped spacer – *T. McAuliffe and B. Helal* (The London Hospital) reported on the use of a double-stemmed ball spacer for arthroplasty of the great toe joint in middle-aged patients (average age 59 years). One centimetre of bone is resected from the metatarsal head, a medial capsular repair and a lateral capsular release and adductor tenotomy are performed and the prosthetic stem is placed plantarward and laterally in the metatarsal shaft.

Ninety-six patients (142 feet) were reviewed; 32 patients had hallux rigidus, 45 hallux valgus and 19 hallux valgus with metatarsalgia. In 97% the operation was indicated for pain.

Subjective satisfaction was good; only 6% were dissatisfied with pain relief and appearance, 91% were pleased with the movement obtained and 51% could walk better. Shoe-wearing was more comfortable in 44%, but only 18% could wear narrower shoes and 14% needed wider ones. Generally satisfaction was better in hallux rigidus than in hallux valgus.

Objective assessment showed average movement of 23° extension and 20° plantarflexion; the average hallux valgus angle was 45° pre-operatively and 26° after. There was no alteration in the intermetatarsal angle, but the sesamoid alignment was improved in 40% of hallux valgus cases. Complications occurred in 31 feet (23%) but there were no cases of silicone synovitis.

The chiropody-orthopaedic interface – *J. Foulston* (London) identified areas where co-operation between chiropodist and orthopaedic surgeon might be fruitful, suggesting that there should be a flexible boundary and not a firm barrier.

The education of a state registered chiropodist takes three years of full-time study and a post-qualification part-time BSc

degree is possible. Chiropodists may see patients without referral from medical practitioners, will have care for lower-limb conditions associated with impaired arterial supply or sensation and will often be the first to be presented with peripheral manifestations of systemic disorders.

Recently introduced treatments are for ingrown nails and

for biomechanical malfunction in the lower limb. The chiropodist prescribes, makes, fits and follows up foot orthoses, which gives immediate feedback of the results obtained. The chiropodist has skills in foot care that complement those of the orthopaedic surgeon and there is thus scope for clinical co-operation.

CANADA

CANADIAN ORTHOPAEDIC ASSOCIATION

The forty-first annual meeting of the Canadian Orthopaedic Association was held in Hamilton, Ontario from June 2 to 6 1985. Dr Gordon W. D. Armstrong gave the Presidential Address.

PRESIDENTIAL ADDRESS

"It was my privilege to be installed in the office of the Presidency of the Canadian Orthopaedic Association in Winnipeg which is close to the geographic centre of the country. I was inspired by a sense of the magnitude of this vast land and felt the need to look at the various problems and concerns, particularly as they relate to the average orthopaedic surgeon practising in so many diverse areas from coast to coast.

In trying to diagnose the problems at a national level, I was reminded that Sir William Osler once said 'Listen to the patient. He is trying to tell you what is wrong with him.' I listened to the concerns of the presidents of the provincial associations who were kind enough to enumerate their problems. I am going to attempt to address these issues as well as others which embrace national and international aspects of orthopaedics.

Manpower. The first concern is that of manpower. Wide disparities exist, as one would expect. For instance, in Quebec there has been a significant erosion of manpower due to government restrictions. A differential tariff is in force to induce doctors to work in outlying areas rather than in cities. As many as 40 to 50 vacancies exist in Quebec for orthopaedic surgeons. This is a larger number than in any other province. The French-speaking group would like to take a more active part in the activities of the Canadian Orthopaedic Association and we must make certain they are well represented on all national committees.

In British Columbia, on the other hand, there is no shortage of orthopaedic surgeons; at 1:25 000, the lowest ratio in Canada. The government has controlled practice by allocating billing numbers for the Medical Service Plan but this has been found to be in legal violation of constitutional rights. As a rule, the recommendation of the local manpower committee is accepted by the government. There is an attempt by the government to designate where surgeons should practise and this is a potentially volatile situation. There are areas in Canada which appear to be underpopulated with orthopaedic surgeons. In Nova Scotia for instance, the ratio is 1:60 000 compared to Ontario with 1:34 000 but it is my understanding that trauma is still being done by general surgeons as well as by orthopaedic surgeons in this area. The Canadian Orthopaedic Association, it seems to me, should be prepared to play a larger role by lending support to provincial organisations in their dealings with the government by producing factual statistics of conditions existing in other provinces and even lending personal support on the request of the provincial president.

Manpower studies are a major concern, not only across the country, but also internationally. The question arises as to whether we are training too many doctors and therefore too

many orthopaedic surgeons. At an orthopaedic Manpower Symposium held by the American Orthopaedic Association in Hershey, a delegate from West Germany mentioned that there were 5000 unemployed family practitioners in that country, which would seem to be cause for alarm.

However, closer examination of this problem suggests that Germany has no restrictions on admission to medical school and many of the doctors who are on unemployment insurance are simply taking a year off to wait to get into the program of their choice. In Canada we pride ourselves on our high standards for admission into medical schools.

The study of precise requirements, however, is complex and we are coming rapidly to a point where government and the medical profession need credible figures. The Royal College of Surgeons in Canada and the Canadian Medical Association, and I hope, the Canadian Orthopaedic Association will combine to produce a joint study on manpower. Any analysis of the needs should begin with medical schools.

As Dean Hollenberg of the University of Western Ontario has pointed out, the ratio of doctor to patient is rising but this may not be such a bad thing as there is an increased demand for services with our increased ageing population. We have to also compensate for the larger numbers of female doctors who put in only 75% of male lifetime working hours. Up to 50% of the medical school classes are now comprised of females and it is therefore likely there will be more female orthopaedic surgeons in the future. There is also a trend among doctors to work less and enjoy life more.

The solution to overproduction of doctors is not easy since reducing the number of medical students creates problems for the large number of young people applying for medicine. If medical schools are closed, this means a significant loss to the community itself as a medical school upgrades local health care and provides a major industry in a city. Reduction of residents may destroy highly competent clinical service teams and entire resident programs could be disbanded.

We continue to lose large numbers of our residents graduating in Canada in flight to the United States and I am of the opinion that this number could be diminished if we provided an up-to-date list of positions available in this country. The COA office could then serve as a central registry of available positions and these could be published in the COA Bulletin on a regular basis. I can understand the frustration of a young graduate who is looking for a position but does not have access to information on available openings in Canada. It is my feeling that migration to the United States will diminish as there is a change in the type of provision of health care south of the border.

Another concern is that all qualified graduates of our programs do not become active COA members and it would seem to me that if we wish to truly represent the orthopaedic surgeons of Canada, the COA should make an effort to attract all graduates to our Association. If we are to become more involved with government policy and negotiations, we should speak with a unified voice.

We are looking, therefore, at the establishment of an asso-