Prosthetics and Orthotics International, 1981, 5, 33–36

Surgical footwear in rheumatoid arthritis—a patient acceptability study*

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Abstract
One hundred patients with rheumatoid arthritis were questioned about the acceptability of the surgical shoes that they had been prescribed for their foot problems. The approach was made from the records of a surgical supplies manufacturer. While 90 per cent experienced good alleviation of symptoms, 50 per cent had complaints regarding fit, comfort and styling. The implications of changes in the supply of shoes and the staffing of orthotic concerns are discussed, and suggestions are made for the direction of future research.

Introduction

As part of its charter, the United Kingdom Health Service has provided since its inception various forms of orthoses to the general public on the recommendation of a surgical or medical practitioner through the agency of a surgical appliance manufacturer. Special footwear forms one facet of this practice both in the provision of tailor-made shoes and their repair, and in the adaptation of the patient's own footwear to suit their particular lower limb deformity or disability.

The present orthotic organisation (referral by general practitioner or hospital department and then on via an appliance officer to an independently contracting firm) is a complex one. The demand for surgical shoes is also great, considering the number of conditions that are amenable to correction by the appropriate footwear and the statutory allocation of two or three pairs to each patient. The cost is considerable and is increasing because of the cost of materials used and the unavailability of the skilled labour required to make the article. The total bill to the U.K. Exchequer for surgical shoes in 1978 was £8·5 million (D.H.S.S. 1979).

Because of these factors a survey commissioned by the U.K. Department of Health studying the problems of surgical footwear in the Health Service was recently published. This has served to highlight the overall usage of surgical shoes, the methods and problems of design, manufacture and supply, and the level of satisfaction the patient experiences in the treatment of his condition (Bainbridge, 1979).

This present survey was undertaken independently to assess the clinical impression that there was a moderately high level of disapproval with various aspects of bespoke footwear. The authors felt that they were in a particularly fortunate position in the fact that they could approach the problem from outside the Health Service and at the same time be critical of the methods of construction by the parent company which reflect the manufacturing techniques of the industry as a whole. Identification of the areas of dissatisfaction could lead to significant changes in all facets of shoe design and supply, and could indirectly produce worthwhile savings in the total footwear bill.

Patients and methods

The Bainbridge report deals with the whole spectrum of footwear. However, one particularly difficult group of patients who are supplied frequently with shoes are those suffering from rheumatoid arthritis. Usually occurring in middle age, the disease affects women three times as commonly as men, and is likely to affect 2 per cent of the population during their lifetime. The condition starts in the

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*Based on a paper presented at the IXth European Congress on Rheumatology, Wiesbaden, West Germany, September 1979.

foot in 16 per cent of patients, and, running a long protracted course of exacerbation and remissions, the foot is involved at some point in 85 per cent. The common deformities are listed in Table 1, and as these change, the shoe requirements change also.

Table 1. Rheumatoid foot deformities

	Total	Percentage
Splayed forefoot	62	87
Clawed toes	58	82
Hallux valgus	41	57
Flat foot	28	40

A preliminary study confirmed the impression that rheumatoid patients in particular complained most about their footwear, and it was, therefore, decided to set up an enquiry into the various aspects of fit, comfort, style and wear characteristics. Patients that were included were drawn at random from the manufacturer's records. Although there were no facilities for independently checking this, only cases where a firmly committed diagnosis of rheumatoid arthritis had been made by the hospital departments of Rheumatology or Orthopaedics were included in the final assessment.

One hundred patients were sent reply-paid postal questionnaires. The age range was from 38 to 75 years (with an average of 58·3). There was a female to male preponderance of eight to one, and the survey dwelt on problems of the feet (metatarsalgia, bunions, etc.), rather than those of the ankle.

Results

Seventy-one patients returned their forms; 64 being female and 7 male. There was an immediately obvious difference between the number of people who found that their shoes did not relieve their symptoms, and those who were dissatisfied for other reasons. Thus 63 per cent of responders (Table 2) found that metatarsalgia was considerably improved to the extent that their pain disappeared and their walking ability was increased and over 90 per cent achieved significant amelioration of foot symptomatology. This may be associated with the fact that all shoes were used in conjunction with insoles. The most commonly used types are listed in Table 3 and the symptomatic relief corresponding to each is also annotated.

Table 2. Relief of symptoms
(Metatarsalgia and walking ability)

	Total (71)	Percentage
Symptoms relieved	45	63
Symptoms reduced	22	31
Symptoms unrelieved	4	6

Table 3. Insole use

	Number prescribed	Satisfactory subjective relief of metatarsalgia
Sponge rubber	52	49
Plastazote	13	13
Leather	6	2
Total	71	64

On the other hand when patients were asked to comment on the shoes themselves, rather than on symptom relief, 50 per cent had complaints. It is also noticeable that women complained more often than men, and that even amongst those who found complete resolution of pain, shoes were poorly accepted for other reasons (Table 4).

Table 4. Footwear acceptability
(Excluding relief of symptoms)

	Male	Female	Total
Satisfactory	6	30	36
Unsatisfactory	1	34	35
			71

Table 5. Reasons for dissatisfaction with footwear

	Total	Percentage	Bainbridge percentage
"Difficult to break in"	26	36	14
Fit and comfort	25	35	30
Style	21	29	19
Weight	16	23	23

Table 5 outlines the main reasons for disapproval. Thirty-six per cent of patients remarked on the difficulty they experienced in breaking-in the shoes. This reflects the initial stiffness of the leathers commonly associated with conventional surgical shoes and the painful deformities of the feet that are supposed to fit into them. The overall figure in the Bainbridge survey showed only 14 per cent suffering from this problem, but this rose to 33 per cent when the arthritic foot was considered in isolation. However, it was noted that a large proportion found that their shoes became progressively more comfortable either as a result of persistent

wear or through the ministration of their orthotist. To some extent the weight of the shoe is related to the same phenomenon, and again it was the women in particular who were most concerned by this particular aspect.

Fit and comfort on the other hand does not detract from the number with relief of symptoms. Many found increased ease in walking, but still experienced chafing over bunions and clawed toes, and poor fit in the heel which had been made wider to allow entry of the splayed forefoot.

The complaints about styling were exclusively from women (29 per cent of the total). The commonest cause for dissatisfaction was the inability to match shoes with elegant fashion, restricting the subject largely to the wearing of trousers. There were also those who were at pains to point out that while the sturdy construction of the shoes was reasonable in wintertime, it became impossible to use them in the warmth of summer.

Table 6. Surgical shoe use

	Satisfied with shoes	Dissatisfied with shoes
Worn all day	23	14
Worn part of the day	12	13
Worn occasionally	1	6
Never worn	0	2

The relief of pain associated with weight-bearing is probably reflected in the length of time that the sufferer is prepared to wear the shoe each day (Table 6). Even allowing for disillusionment for other reasons, a large proportion of complainers (77 per cent) and virtually all of the others wore their footwear for all or a large part of the day.

Table 7. Supply problems

	Total	Percentage	Bainbridge percentage
Not enough pairs	20	28	35
Difficulty with re-ordering	16	22	15
Too long to make	12	17	13

Problems of supply have already been mentioned, and are outlined in Table 7. Each of the three main criteria here are interrelated. When shoes need to be repaired or replaced there is often a long chain of command with attendant waiting periods built into the system. Frequently shoes are replaced on an existing prescription without further measurement to take into account changes in foot shape. Also shoes take time in construction because most stages require individual attention, and it is not uncommon for patients to wait weeks or even months for their shoes to arrive.

Discussion

The problems of the rheumatoid foot are multifactorial in terms of symptomatology, deformity and concurrent treatment. Often patients have problems with other joints as well as their feet, although this has not been considered in this survey. Relief of symptoms has usually been the over-riding criterion for success for the surgeon, rheumatologist and orthotist alike, and it is to an extent gratifying that both in this and other published surveys (Jay and Dunne, 1976) the feet of rheumatoid patients can be made functionally painless by shoes and appropriate insoles. It is not the purpose of this paper to consider the merits of the various inserts. but their importance has been stressed.

It is in the areas of complaint that the lesson of this survey must be found. United Kingdom Health Service surgical shoes are manufactured along traditional lines and styles and changing fashions are little considered. New synthetic materials that have been grasped by commercial concerns have been slow to be adapted to orthotic use. Certainly the complaints of stiffness and difficulty in breaking-in of shoes can easily be overcome by the use of soft leathers, and weight can be reduced by using non-leather soling material.

Style on the other hand is a much more difficult problem, particularly with the rheumatoid patient who is usually female. Fashion can give her a tremendous psychological boost at a time when middle age and a potentially chronic deforming illness often have to be faced in combination. It has long been known that the wearing of shoes is influenced firstly by fashion or sexual attraction, secondly by status and only thirdly for foot comfort and protection (Rossi, 1978), but the very nature of the deformity means that the foot is unsuitable for crushing into a stiletto-heeled, winkle-picker (but then what extremity is?). However, it should be pleasing to the ingenuity of the orthotist and surgical shoe manufacturer to devise a product

that approximates in appearance to those that may be found in the High Street store. It may be necessary to investigate further the possibility of adapting production line techniques that are used in the shoe industry. Already the colours available to the U.K. Health Service patient are more than adequate, and in fact the majority of shoes are made in brown or black. It is not desirable to follow all the vagaries of fashion in view of the tremendous cost that this would entail. However, the most expensive shoe in terms of cost-effectiveness is the one which the patient rejects and ultimately remains unused in the wardrobe.

Recent Department of Health directives have recommended increasing the provision of shoes to three current pairs. This will relieve directly the concern patients feel that they will be inconvenienced when a pair wears out or has to be left with the appliance officer for repair.

Greater use could be made of direct contact between the patient and his orthotist, whether by easier prescribing for stabilized feet, or by running combined out-patient sessions with clinicians which would enable some short-cutting of the chain of command that prevails in the U.K. Health Service. However, the problems associated with the length of manufacture may be more resistant to cure. It is known that the number of experienced shoe-makers is declining because of retirement, and the lack of apprentices in training. This may only be relieved by increased research into new production methods using non-standard materials, and this in itself may help the lot of the patient with the painfully deformed foot.

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