

ABSTRACTS FROM BOFSS MEETING Canterbury – 2/3 November 2001

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British Orthopaedic Foot Surgery Society Canterbury – 2/3 November 2001
President – Mr Ian Stephen

EARLY EXPERIENCE OF SCARF FIRST METATARSAL OSTEOTOMY
K.S. David-West; and J.S. Moir
Orthopaedic Department, Western Infirmary, Glasgow.

Aim

Subjective and objective review of our early experience with scarf osteotomy for
correction of Hallux valgus

Introduction

Scarf joint is a technique used by carpenters to increase the size of entrance by
longitudinally joining beams of timbers.

Scarf osteotomy of the first metatarsal is a ‘Z’-osteotomy with inherent stability. The

convalescence is short and complications of avascular necrosis and non-union are rarely reported. The combination of soft tissue procedure with the osteotomy consistently gives good correction of hallux valgus.

Methods and Results

The records, radiographs were reviewed and the subjective assessment by telephone interview. Forty-one patients had a scarf procedure but only 31 patients (37 scarf procedures) could be contacted by telephone.

All patients were females with a mean age of 44.6(16–76) years. Mean follow-up was 14 months(12 to 18 months).

The results were reviewed using the guideline recommended by the Research Committee of American Orthopaedic Foot and Ankle Society. Mean preoperative hallux valgus angle (HVA) was 30.4°(20–48°) and the postoperative HVA was 14.6°(9–22°). The mean pre-operative intermetatarsal angle (IMA) was 4.1°(10–22°) and postoperatively was 8.4°(5–12°). There was significant correction of the tibia sesamoid position ($p=0.001$). There was no avascular necrosis or non-union. Eighty-eight percent of patients were satisfied; two patients had infection and two stiff MTP joints.

Conclusion

Scarf osteotomy gives very good correction of hallux valgus and tibia sesamoid position. Patient satisfaction was good with a low complication rate, the fixation after the osteotomy was very stable and no post-operative splint was required.

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SCARF OSTEOTOMY – DOES INCREASING DISPLACEMENT DECREASE STRENGTH ?

M.C. Solan; S.P. Bendall; L. Jasper; R. Jinnah; and S. Belkoff
Princess Royal Hospital, Haywards Heath, W Sussex UK

Introduction

The strength of the Scarf osteotomy has been compared to that of other metatarsal osteotomies, but the effect of increasing the amount of displacement is unknown. The purpose of this study was to determine whether increasing offset adversely affects the strength of the Scarf osteotomy.

Methods

Seven pairs of fresh frozen cadaveric feet were tested. Specimens in Group 1 underwent Scarf osteotomy with displacement of one third the mid shaft diameter. Specimens in Group 2 were offset two thirds the midshaft diameter. All osteotomies were fixed using

two Barouk screws.

Each specimen was tested in cantilever bending using a servohydraulic testing machine.

Results

There was no statistically significant difference in strength or stiffness between the two groups. Mean strength was $75.2 \text{ N} \pm 16.8$ for Group 1 and $64.8 \text{ N} \pm 28.7$ for Group 2 ($p > 0.05$).

Mean stiffness was $12.9 \text{ N/mm} \pm 5.1$ for Group I and $10.2 \text{ N/mm} \pm 5.9$ for Group 2 ($p > 0.05$).

Discussion

All specimens failed at the proximal extent of the osteotomy. Failure did not occur by screw pullout in either Group. The proximal part of the cut is therefore the weakest part of the construct irrespective of the degree of osteotomy displacement.

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METATARSOPHALANGEAL RELEASE AND PROXIMAL INTERPHALANGEAL ARTHROPLASTY FOR HAMMERTOE CORRECTION

V. Dhukaram; S. Hossain; J. Sampath; and J. Barrie

Blackburn Royal Infirmary, Blackburn, Lancs BB2 3LR

Myerson and Shereff described an anatomical basis for the correction of hammertoe deformity. Based on this model we added a metatarsophalangeal soft tissue release to a proximal interphalangeal arthroplasty as our routine method of correction of hammertoes with fixed PIP joint flexion and flexible MTP joint hyperextension.

Patients operated between March 1995 and January 2000 were retrospectively reviewed using the American Orthopaedic Foot and Ankle Society Scores (AOFAS) by independent assessors. There were 84 patients with 99 feet and 179 hammertoes with a median follow-up of 28 months. The median AOFAS score was 83. Eighty-three percent of patients were satisfied while 19% were dissatisfied with the procedure. Pain at the metatarsophalangeal joint was the commonest cause of dissatisfaction with 14% having moderate or severe pain. Nine percent had callus formation and 4% of toes were over-corrected.

There was no statistical difference in results related to the age and sex of the patient, number of toes operated on, associated hallux valgus surgery and follow-up of less than or greater than two years.

This study is based on an anatomical model and shows results comparable with other series with no recurrence of hammertoe deformity.

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British Orthopaedic Foot Surgery Society Canterbury – 2/3 November 2001

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FOREFOOT ARTHROPLASTY: AN ASSESSMENT OF PATIENT SATISFACTION AND EXPECTATIONS OF SURGERY

D. J. Clement; O. Thomas; E. Thomas; S. Bridgman; and D. McBride

Academic Department of Trauma and Orthopaedics, School of Postgraduate Medicine, Keele University

Purpose

Aim

To evaluate patient satisfaction and expectations of surgery following forefoot arthroplasty.

Methods

Between October 1993 and June 1999, forefoot arthroplasty (Kate/Kessel/Kay procedure) was performed or directly supervised by the senior author (D. McBride) in a cohort of 55 patients. All had inflammatory arthritis and had failed non-operative management. The clinical result was assessed using a self-administered patient satisfaction questionnaire. The questionnaire asked patients to rate their level of satisfaction in terms of pain relief, wound healing, stiffness and appearance. The patients expectations from the surgery in terms of their level of disability and the achievement of the operation in addition to their pain experience following their operation was assessed.

Results

Median time to follow-up was 41 months (range seven to seventy-seven). Forty-three of the 55 patients returned the completed questionnaire. The median age at operation of the respondents was 59 years (range 42 to 69) compared with 49 years (range 44 to 63) for the non-respondents. Of the 43 respondents, 30 were female and 13 male.

In terms of their expectations of the surgery, 20 (47%) stated that the operation had achieved what they had expected while 10 (23%) considered the operation to have achieved more than they had expected. The level of disability following their operation was as expected in 21 (49%), more than expected in 11 (26%) and less than expected in four (9%). 23 (55%) noted no change to their walking capacity while it had increased in 11 (26%) and decreased in eight (19%). There were two wound haematomas, five superficial wound infections and three cases of delayed wound healing which extended the post-operative hospital stay. Seventy-nine percent of patients however reported complete satisfaction with their wound healing. In those patients that had reported having had pain (n=31) at some time following their operation, two (7%) had experienced it for less than seven days, four (13%) for between one and four weeks, one (3%) for between one and three months and 23 (77%) for more than three months.

Conclusions

Overall patients were generally satisfied with their operation in terms of pain relief, wound healing and appearance. Additionally, in the majority of patients, the achievements of the procedure and the associated disability were as expected. Previous authors have outlined the various surgical factors, which are said to lead to a good outcome. Whilst it is important to bear these factors in mind we have found that some of our patients appeared to have a good result when these criteria were not met. While other patients meeting these criteria were not necessarily satisfied. This suggests areas for further research.

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LATERAL CAPSULAR ADVANCEMENT FOR CORRECTION OF CHRONIC ANKLE INSTABILITY

J.N. Borg; and D.L. Grace
Chase Farm Hospital, Enfield, Middx.

Introduction

Lateral ligament reconstruction of the ankle for chronic symptomatic mechanical instability is a relatively common procedure for Foot and Ankle surgeons to undertake. The following method has been undertaken by the Senior Author for the past ten years.

Materials and Methods

We studied 26 patients (26 feet). The average age was 32 years with 16 males and 10 females. Duration of follow up was from 11 months to 11 years.

Preoperative Investigations

Functional instability and alternative diagnoses such as tendonopathy and previously unrecognised fractures were excluded, sometimes by extensive investigations. All patients undergoing surgery had a period of conservative treatment which had failed. Stress radiographs confirmed instability in two planes and was either undertaken preoperatively or just prior to surgery under anaesthesia.

Surgical Technique

Through a small oblique lateral incision, the lateral capsule, ligaments and periosteum were advanced over the tip of the fibula in a proximal and posterior direction and re-anchored tightly to the bone, usually with Mitek (titanium) bone anchors.

Postoperative Management

The patients were casted for six weeks whilst weight bearing, followed by six weeks of physiotherapy.

Results

The success rate was over 85%. The complications were scar tenderness, recurrent instability and ankle spurring. There were no complications caused by the metallic anchors.

Conclusion

This procedure has a comparable success rate with similar anatomical ligament reconstructive procedures and can be recommended.

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DRIVER REACTION TIME AFTER RIGHT ANKLE FRACTURE

T.P.C. Kane; S. Edwards; and S.L. Hodkinson
Department of Orthopaedics, Queen Alexandra Hospital, Cosham, Hants, PO6 3LY
Background

Studies have investigated driver reaction time (DRT) following hip replacement, knee replacement and arthroscopy. This study tests the null hypothesis that there is no difference in DRT between patients after right ankle fracture and healthy controls.

Methods

Patients with right ankle fractures were recruited and DRT was measured using a simulator (time taken to achieve a brake pressure of 100 Newtons after a visual stimulus).

Inclusion criteria: drivers aged 17–70 years with right ankle fractures. Patients were tested when first out of plaster (T0), two, four and six weeks subsequently. DRT was compared to controls matched for age, sex and driving experience (paired T test). The percentage reaching a "safe" DRT (0.7 seconds) was determined.

Results

There were 25 patients: 18 conservatively and seven operatively treated fractures. The age range of patients was 19 to 69yrs (mean 41.4yrs), and of controls: 19 to 68yrs (mean 41.8yrs). Conservative group DRT was significantly slower than controls at T0 ($p < 0.001$) but not thereafter. Operative group DRT was significantly slower than controls at T0 ($p < 0.003$) and two weeks ($p < 0.005$) but not thereafter.

Conclusion

Following right ankle fracture and removal of cast, DRT is initially prolonged. This study suggests a return to normality within two weeks after conservatively treated fractures and four weeks after operatively treated fractures.

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TREATMENT OF TALAR OSTEOCHONDRAL LESIONS USING LOCAL OSTEOCHONDRAL GRAFT.

G.J. Sammarco; and N.K. Makwana

Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry, Shropshire

Twelve patients with an osteochondral lesion of the talus were treated with local osteochondral autogenous grafting. The graft was harvested locally from the medial or lateral talar articular facet. The procedure was combined with an osteotomy of the anterior tibial plafond modifying the technique of Flick and Gould. The average age of the patients was 41 years (range 19 to 68) with an average duration of symptoms of 90 months (range 3 – 240 months). There were six males and six females with the right talus involved in eight and the left in four patients.

Results showed an improvement in the AOFAS score from an average of 69 pre-operatively to 90.2 post-operatively, at an average follow up of 15 months (range 6 to 31 months). The results tended to improve with time and was higher for patients under 40 years of age and in those without pre-existing joint arthritis. All patients were very satisfied with the procedure. Arthroscopy performed in two patients at six and 12 months following surgery showed good graft incorporation. No complications were seen from the donor site or from the osteotomy site on the distal tibia. Our results show that stage III and IV talar lesions can be treated successfully using local autogenous osteochondral graft from the medial or lateral talar articular facet.

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ARTHROSCOPIC TREATMENT OF OSTEOCHONDRAL LESIONS OF THE TALUS

D.E. Robinson; W. Harries; and I.G. Winson

Avon Orthopaedic Centre, Southmead Hospital, Bristol, UK

Aim

To assess the results of arthroscopic treatment of osteochondral lesions of the talus and identify factors associated with a poor outcome.

Materials and Methods

Sixty patients (44 male, 16 female) with an average age at operation of 34 years (14 to 72 years) were reviewed after an average of 42 months (6 to 99 months). Patients were graded according to the criteria of Berndt and Harty¹. Pre-operative radiographs and MRIs were graded according to Anderson et al² and Hepple et al³ respectively. Forty-one lesions were medial, 31 of which were traumatic and 19 were lateral, all of which were traumatic. Thirty-four patients were treated with excision and curettage, 22 by excision and drilling, 2 by internal fixation and 2 by bone grafting.

Results

Thirty-one patients achieved a good outcome, 16 fair and 13 poor. Of the 13 poor results, 12 were medial lesions. Medial lesions presented later than lateral lesions (three years compared with 18 months) and almost 50% demonstrated cystic change on radiographs and MRI whereas only one lateral lesion demonstrated such changes. Outcome was not associated with patient age and no difference was found between traumatic and atraumatic medial lesions.

Conclusion

Most osteochondral lesions are well served by conventional treatment. However cystic lesions, usually of the medial aspect of the talus, do represent a therapeutic challenge.

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FINE WIRE FRAME ARTHRODESIS FOR SALVAGE OF SEVERE ANKLE PATHOLOGY

H. al-Hussainy; M. Rickman; and M. Saleh

Academic Unit of Orthopaedic and Traumatic Surgery, Sheffield University, UK

Introduction

Ankle arthrodesis is an accepted method of treatment for severe ankle pathology but no single method is universally successful. Compression is usually applied across the ankle joint and maintained with either internal or external fixation; both are associated with complications like infection, non-union, and pain.

Material and Method

We present our results and describe the surgical technique in managing 21 difficult cases using fine wire external frames in the salvage of severe ankle pathology. Nine cases were non-unions following internal fixation of distal tibial intra-articular fractures, seven were patients in whom two or three previous attempts at arthrodesis had been unsuccessful, and five patients had severe degenerative osteo-arthritis of the ankle joint.

Results

A sound arthrodesis was achieved in 19 out of 21 cases giving a union rate of 90.4%. The median period of fixation was 21 weeks, followed by a mean period of cast immobilisation of eight weeks. All except three developed pin site inflammation. Using Mazur's functional ankle score there were twelve good results, five fair, two poor and two failures.

Conclusion

A fusion rate of 90.4% was achieved using this method. We recommend it for the salvage of failed arthrodesis or severe fracture non-union, particularly in the presence of infection.

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MIDFOOT DEGENERATIVE ARTHRITIS: COREGISTRATION AND FUSION OUTCOME STUDY

B.F Meggitt; and A.J Dunn

Addenbrooke's Hospital, Cambridge

This paper presents the first report of a prospective study to assess the outcome of using coregistration localisation and selective arthrodesis in chronic midfoot degenerative

arthritis.

In a previous report from Cambridge (J Bone Jt Surg [Br] 1998; 80B:777), a new coregistration imaging technique in the foot was described, using superimposed X-rays and technetium scintigram and showing significantly higher anatomical localisation of active joint disease than either alone.

Nineteen consecutive patients over a three-year period (1996–9) with severe midfoot joint pain and disability of over six months' duration underwent coregistration imaging followed by selective arthrodesis. The procedures involved 17 patients with one-level single or multiple fusions of the metatarsocuneiform, metatarsocuboid or naviculocuneiform joints, and two patients with two-level multiple fusions.

Pain and functional assessments were recorded pre-operatively and at one and at two to four years postoperatively using the American Orthopaedic Foot and Ankle Society Midfoot Scoring System. Bone union was determined clinically and with X-rays.

Results showed fusions in all 19 patients between 10 and 15 weeks. Three K-wires and one screw required removal for later prominence and there was one delayed wound healing. Pain and functional scores showed significant differences between the pre- and post-operative and one year measurements, and less between the one year and two to four year scores.

This preliminary study concludes that there is a high correlation between the coregistration localisation of the midfoot degenerative arthropathies and the successful results of selective fusion of these joints for the one to four year follow-up period.

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LIGAMENTS OF THE SECOND TARSMETATARSAL JOINT: A BIOMECHANICAL STUDY.

M. C. Solan; C. T. Moorman, III; R. G. Miyamoto; L. E. Jasper; and S. M. Belkoff
St Georges Hospital, London

Ligamentous injury of the tarsometatarsal joint complex is uncommon but disabling. Injuries to individual ligaments can be visualised with MRI. The relative mechanical contribution of the three ligaments of the second TMTJ is unknown.

Methods

The second and third metatarsals and the first cuneiform were dissected from twenty pairs of cadaveric feet.

In group I, seven pairs were submaximally loaded to determine stiffness with the dorsal, plantar, and Lisfranc ligaments intact. One of each pair underwent sectioning of the dorsal ligament and was then loaded to failure. In the contralateral specimen both plantar

and Lisfranc ligaments were divided before retesting.

In group II all 13 pairs underwent dorsal ligament excision and stiffness determination. One of each pair was randomly assigned to undergo sectioning of the plantar ligament, the other sectioning of the Lisfranc ligament, before retesting.

Results and Conclusions

The Lisfranc ligament is stronger and stiffer than the plantar ligament. The dorsal ligament is weaker than the Lisfranc/plantar complex. This suggests that ligamentous injuries of the second tarsometatarsal joint may be considered stable if the Lisfranc ligament is intact – even if the other two ligaments are disrupted. If the Lis-franc ligament is injured then the complex is less stiff and may be unstable.

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FUNCTIONAL OUTCOME FOLLOWING OPERATIVE FIXATION OF INTRA-ARTICULAR CALACNEAL FRACTURES

H.K. Tanaka; and P.W. Laing

Wrexham Maelor Hospital, Wrexham, UK

Introduction

Considerable controversy exists with regard to the surgical management of displaced intra-articular calcaneal fractures. Protagonists for internal fixation would suggest there is sufficient evidence to expect better functional outcomes with surgery. However, this is not conclusive.

Aim

To identify factors which improved outcome following surgery.

Method

Between 1994–2000, 28 patients with 30 displaced intra-articular fractures of the calcaneum were treated with open reduction and internal fixation at our hospital (mean age 45 years). We reviewed 20 patients within the Shropshire region using four recognised hindfoot scoring systems. Patients were classified according to Sanders' classification with pre-operative CT scans. The mechanism of injury and post-operative management were recorded. Clinical and radiographic assessments were also made.

Results

Average follow-up was 3.6 years. The overall surgical results were comparable with similar studies based upon the Maryland Foot Score (30% excellent, 35% good, 30% fair, 5% poor). Seventy-five percent of our patients returned to work within six months at an

average of five months. Three patients developed a superficial wound infection. Age, energy of injury, time to surgery, time spent in plaster and time to commencing physiotherapy had no significant bearing on functional outcome. However, early weightbearing at six weeks positively influenced outcome with all four scoring systems ($p=0.01, 0.01, 0.02, 0.05$) with a deterioration of outcome with delayed weightbearing. This was shown to be due to loss of subtalar joint mobility ($r=-0.74, p=0.001$).

Conclusions

We propose that good results can be obtained from internal fixation of intra-articular calcaneal fractures with a high probability of early return to work. We recommend that patients be encouraged to weightbear at 6 weeks to optimise mobility at the subtalar joint.

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British Orthopaedic Foot Surgery Society Canterbury – 2/3 November 2001
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IS THERE A ROLE FOR SURGICAL DECOMPRESSION IN STAGE I TIBIALIS POSTERIOR TENDON DYSFUNCTION?

P. Sharma; S.K. Singh; and S.G. Rao
Queen Mary's Hospital, Sidcup, Kent.

Tibialis posterior tendon (TPT) dysfunction is a disorder of unknown aetiology. Trauma, inflammatory processes, anatomical abnormalities and iatrogenic factors have all been implicated as causative mechanisms. The condition presents with pain and swelling around the medial malleolus. The pain is characteristically worse on exercise and relieved by elevation. The disorder has been classified by Johnson and Strom (1989); stage I is characterized by pain around the medial malleolus and mild weakness of single heel raising. Without treatment the condition may progress to a fixed valgus deformity along with pes planus.

Aim

To assess the outcome of surgical decompression of stage I TPT dysfunction.

Method

Ten cases were identified, operated on by a single surgeon over a three-year period. The patients were assessed in a dedicated clinic by administration of a questionnaire and by clinical examination.

Results

Nine patients with an average age of 30 years (13–51) agreed to participate in the study. Six of the nine patients recalled a sporting injury to the ankle prior to onset of symptoms. Eight of these of patients underwent a course of physiotherapy prior to surgery. After decompression all patients reported reduction of pain as measured using a visual analogue scale, with five patients reporting complete resolution of pain. Patients

experienced relief of pain on average four weeks (1.5–6) after surgery. All patients were able to return to work and normal leisure activities after appropriate rehabilitation.

Conclusions

Decompression of the tibialis posterior tendon in stage I dysfunction leads to pain relief and enables an early return to normal activities. Therefore surgical decompression of the tibialis posterior tendon may be considered in cases of stage I dysfunction which are refractory to conservative measures, particularly in young and active patients.

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CURVED PLANTAR INCISION FOR THE RELEASE OF PLANTAR FASCIA IN CHILDREN

A.I. Zubairy; D. Walker; and S. Nayagam

Royal Liverpool Children's Hospital. Alder Hey. Liverpool

Introduction

This study has evaluated the results of plantar fascia release through a plantar incision.

Materials and Methods

A 4cm curved incision on the plantar surface of the heel, was used to release the plantar fascia in children. The incision allowed complete visualisation of the entire origin of the plantar fascia. The procedure was performed as part of treatment for pes cavus or resistant clubfoot.

There were 27 feet in 17 patients. The ages ranged from three to sixteen years. The minimum follow up was six months after surgery. The wound was assessed for pain, numbness, and problem scarring as well as heel pad symptoms. A modified functional score was used. (American Orthopaedic Foot and Ankle Society Ankle/ Hindfoot Scale)

Results

All wounds healed within two weeks. The scar was clearly visible in seven patients, and visible only on close inspection in 10 patients. None had heel tenderness, hypersensitivity or numbness and there were no signs of pad atrophy. Fifteen patients had no pain, while two had minimal pain score of two on the visual analogue scale. The functional score was more than 90. All the patients were satisfied with the cosmetic appearance of the scar.

Conclusion

The plantar incision is safe, effective and provides excellent visualisation of the plantar fascia for complete release with minimal morbidity.

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LEG, FOOT AND ANKLE PAIN IN CHARCOT-MARIE TOOTH DISEASE

A. Taylor; D. Porter; and P.L Cooke

In conjunction with the Charcot-Marie-Tooth International (UK) Nuffield Orthopaedic Centre, Oxford.

Aim

To determine the prevalence and distribution of pain in patients with Charcot-Marie-Tooth disease and the effects of surgery on this pain.

Methods

Members of the Charcot -Marie -Tooth International support group were sent a pain questionnaire. Data about the site, nature, frequency, severity of pain, pain triggers, methods of pain relief and the response to surgery were collected.

Results

There were 399 respondents (233 women and 166 men). The most frequently reported sites of pain were the legs (79%) and feet (77%). Ankle pain was reported by 57%. Walking and exercise were the most frequent pain triggers. Rest was the most common method of modifying pain (60 % of respondents). 32 % found analgesics effective and 39% used heat to relieve their pain. The most common sites for surgery were the foot (36%) and ankle (26%). In 43% of patients undergoing foot surgery and 54% of patients undergoing ankle surgery, pain had been increased or introduced following surgery.

Conclusions

Patients with Charcot-Marie-Tooth disease experience significant inherent, and probably neuropathic, pain in addition to pain from mechanical causes. Surgery is unlikely to improve or eliminate pain in these patients. It may introduce pain in some. Surgery should be confined to the treatment of structural problems, as it is often ineffective at relieving pain.