

EXPERT OPINION ON PUBLISHED ARTICLES

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Limb salvage reconstruction of the ankle with fusion and simultaneous tibial lengthening using the Ilizarov/Taylor spatial frame

Tellisi N, Fragomen A, Ilizarov S, Rozbruch SR
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Discussion

This article is a well-written and very useful article in the field of limb reconstruction as well as foot and ankle surgery. It is from the New York Division of the Hospital for Special Surgery. The unit, headed up by SR Rozbruch is very prolific in generating articles and cases and is an important centre in the world of modern Ilizarov surgery. One of the co-authors is Svetlana Ilizarov, daughter of Gavriil Ilizarov of frame fame.

The article describes a technique where an ankle arthrodesis is performed for salvage indications, using a circular fixator to fix the ankle arthrodesis, followed by a proximal lengthening to restore limb length and function.

The authors present a sizeable series of just over 50 cases with average pre-operative bone loss around the ankle of around 4 cm. They performed their fusions with the aid of a frame and

then performed a proximal lengthening either simultaneously, or later on. They report an initial fusion rate of 84% which is remarkable, taking into account the nature of the cases. The average post-operative limb length discrepancy was just over 1 cm. Treatment time in the frame was long at 8.4 months, but patients were allowed to weight-bear during this period.

The authors describe every stage of the technique in detail. This description would be very useful for a surgeon contemplating executing this type of technique or referring a patient for this technique. It is very similar to my own protocol for these cases and makes for good reading.

I found this a very useful article, describing an important technique in the armamentarium of a limb reconstruction or foot and ankle surgeon.

Reviewer: Prof EB Hoffman
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A prospective study of pyogenic sepsis of the hip in childhood

TR Nunn, WY Cheung, PD Rollinson
J Bone Joint Surg (Br) 2007;89-B:100-6

The authors prospectively assessed the outcome of 38 children (40 hips) with septic arthritis of the hip, treated at a regional hospital (Ngwelezane, Empangeni). Eighty-nine per cent were referrals from nine rural hospitals and 75% of patients had initially sought medical help within five days of onset of symptoms.

All hips were treated with open arthrotomy. Cloxacillin was used routinely (30% of hips had no culture and 55% *Staph. aureus*). Cefotaxime was added in patients <2 years, and cefuroxime in patients with multifocal (septicaemic) disease.

Of the 38 hips available for arthrotomy only 13 (34%) had a good outcome; 25 (66%) had a poor outcome (avascular necrosis, stiffness/chondrolysis). All the poor results (except three: see below) had a delay of five days or longer from onset of symptoms to arthrotomy. Significantly 32 hips (84%) were initially misdiagnosed or treated with antibiotics only (five). Three of these five patients had a good outcome in spite of a delay to arthrotomy.

There was no statistical difference in the time delay to arthrotomy between patients who were deprived or not, or those who consulted a traditional healer or not. The maternal educational attainment and the distance to a primary health-care facility also were not significantly associated with a delay to arthrotomy. **The delay was due to medical misdiagnosis.**

This is an important article from a non-academic institution which contributes regularly to our annual orthopaedic congresses. Sequelae of septic arthritis of the hip are catastrophic and are due to delay of diagnosis and treatment beyond five days of onset of symptoms. It is a poor reflection of our undergraduate orthopaedic training that 84% of septic arthritis of the hip is misdiagnosed at a primary level.

Reviewer: DJ van der Spuy
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Hand manifestations of diabetes mellitus

Peter G Fitzgibbons, MD and Arnold-Peter C Weiss, MD
J Hand Surg 2008; **33A**: 771-775

Introduction

Orthopaedic surgeons are commonly confronted with the long-term musculoskeletal complications of diabetes. The pathophysiology of diabetic complications is generally based on micro- and macrovascular disease. Many of the orthopaedic-related complications are, however, explained by AGEs (Advanced Glycation End-products). AGEs are chemically altered protein structures that are formed by irreversible glycation of especially structural proteins.^{1,2} Novel animal studies also show altered osteogenic gene expression (RUNX2) resulting in abnormal bone formation.³

'Diabetic foot' is a non-specific term referring to any neuropathic or vascular insufficient foot. Ulceration may or may not be present as a result of the long-term effects of diabetes. Hand manifestations of diabetes could not be readily explained or correlated by similar pathological sequelae as seen in the lower limb.

In this review article by Fitzgibbons and Weiss published in the *Journal of Hand Surgery* (33A of 2008), the authors focused on the most common conditions seen in the hand of diabetics, namely stenosing tenosynovitis, Dupuytren's contracture, carpal tunnel syndrome and limited joint mobility. Additionally, the topics of hand infections and hand weakness are covered. Skin manifestations of diabetes are also discussed in the article.

Limited joint mobility

The incidence of limited joint mobility (LJM) in diabetics is around 30%. LJM presents as limited extension of the metacarpophalangeal, proximal-interphalangeal and distal-interphalangeal joints. It usually starts on the ulnar side of the hand. The 'preacher-sign' is a handy screening test for this condition and involves the hands opposing each other's palmar surface, keeping the elbows flexed and the wrist extended. A positive 'preacher-sign' would be the inability to approximate the palmar surfaces of the digits flat against each other. The 'table top sign' is based on the same principle. It should be mentioned that these signs are non-specific and could be positive in other conditions such as Dupuytren's contracture or previous trauma.

Correlation with retinopathy has been shown, and this condition is usually not seen in patients who have suffered from type-2 diabetes for a short period (<10 years).

Dupuytren's disease

Dupuytren's disease (DD) shows great similarities to the diabetic hand with limited joint mobility. DD is more prevalent in diabetics than in the general population. It is suggested in this article that the pathophysiology in diabetics differs from the pathophysiology in patients with DD without diabetes. Diabetics often experience a milder form of disease with the ring and middle fingers more frequently affected. DD in diabetics seems to be unrelated to glucose control.

Carpal tunnel syndrome

The incidence of carpal tunnel syndrome in diabetics has been reported as being between 11 and 21%. The pathophysiology of carpal tunnel syndrome in diabetics is based on two theories. The first is related to the glycosylation of connective tissue causing increased cross-linking. This cross-linking is thought to result in a stiff and thickened transverse carpal ligament. The second theory is based on microvascular neuropathy of the median nerve, making it more susceptible to compression. Diabetic patients generally have a poorer outcome from carpal tunnel release, suggesting poor nerve-regeneration ability.

Stenosing tenosynovitis (trigger finger)

The incidence in diabetics is approximately 20% versus 2% in the general population. According to the study by Blyth,⁴ trigger finger in diabetics is

often bilateral or multi-digital. It is more common in females than in males and tends to spare the index and ring fingers. It has a poor response to corticosteroid injections and more commonly requires surgical intervention.

Hand infection

Diabetics are generally at higher risk for any infections than the general population due to depressed cell-mediated immunity and poor phagocytic function. According to this article, the bacteriology is different in diabetics. In a case series, multiple organisms were found in 55%, Gram-negative organisms in 73% and *Staphylococcus aureus* in only 36% of hand infections.⁵

Hand weakness

Hand weakness and functional disability (as a result of complications such as DD and LJM) are very closely associated in diabetics. The article also points out that reduced grip strength and pinch strength are found to be independent of LJM, DD and trigger finger. It has been postulated that neuropathic sequelae result in hand weakness.

Remarks

1. This is an excellent review article focusing on the more common diabetes-related hand complications.
2. Another review article on hand infections shows a 30% Gram-negative incidence in diabetes (versus 73% in this review).⁵ Although this incidence is markedly less, the author of this article suggests the use of an aminoglycoside antibiotic in diabetics as a standard practice to ensure wider cover for Gram-negative infections.
3. Regarding carpal-tunnel release surgery in diabetics, the following should be considered. Diabetics generally have a poorer outcome with carpal tunnel release surgery than non-diabetics. Patients with advanced neuropathy of the median nerve are less likely to benefit from surgery. Approximately 36% of diabetics show complete relief of symptoms after carpal tunnel release, while 40% show significant improvement, and 24% show no or minimal improvement.⁶
4. The success of corticosteroid injections for patients who suffer from diabetes as a treatment modality for carpal tunnel syndrome has not been reported.
5. Lundbaek originally described the 'stiff-hand syndrome' in 1957. This syndrome was originally described in long-term type-1 diabetics with restricted joint movements, vascular calcifications, waxy subcutaneous tissue and signs of Dupuytren's disease in a patient complaining of pain and paraesthesiae.⁷ The synonym, cheiroarthropathy, is no longer popular. Older literature² refers to limited joint mobility as a milder form of the stiff hand syndrome without the pain and vascular calcifications, whereas this review article explains that Rosenbloom *et al* coined the term 'limited joint mobility' in 1981 in reference to the exact same syndrome.⁸

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