

CASE REPORT

**PRESSURE SORES ON THE FEET FOLLOWING BILATERAL
JONES' PROCEDURE ON A SPINA BIFIDA PATIENT**

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This is a case report of a 12 year old girl with a past history of spina bifida at L5/S1, presented with bilateral mobile pes cavus deformities and clawing of the toes. Bilateral Jones' procedure and Steindler's release were carried out to improve ankle dorsiflexion. Fifteen months later she developed identical pressure ulcers on the planter aspects of both feet, opposite the heads of 5th metatarsal bones, which resulted in bone infection.

Dorsiflexion of the paralysed drop foot can best be improved by performing Robert Jones procedure where the extensor hallucis longus power is normal, the big toe may be hyperextended at the metatarsophalangeal joint and flexed at the interphalangeal joint¹⁻³. The procedure consists of the transfer of the extensor hallucis longus to the neck of the first metatarsal and the arthrodesis of the interphalangeal joint³.

Most of our experience has been with post poliomyelitis deformities where there is an isolated motor paralysis and the patient can easily adapt to the new position of the feet and therefore alter them to prevent excessive pressure on any part, especially the lateral arch which is made to bear more weight as a result of the surgery. The problem in spina bifida is complicated by the fact that some muscles may contract strongly without being under conscious control¹⁴. This could lead to localised areas of abnormally high pressure on the plantar skin and the development of callosities or pressure sores as in this case reported⁵.

THE CASE

A 12 year old girl presented with cavus deformity and hyperextension of metatarsophalangeal joints of both feet

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(Fig 1). She had a history of spina bifida at L5 and S1 for which she has had surgery at the age of five years. She has no control over her bladder and catheterises herself routinely.

She walked with bilateral pes cavus and clawing of the toes. Muscle power examination of both feet showed ankle dorsiflexion grade 3, planter flexion 5, foot eversion 4, inversion 5, extensor hallucis longus 5. Sensation was intact, knee reflexes were present, and ankles reflexes were absent bilaterally. Jones' procedure and Steindler's release were carried out, on the right foot followed by the left foot five months later.

One year later she presented with a pressure sore 2 cm in diameter on the plantar aspect of the right foot opposite the fifth metatarsal head. She was treated conservatively by rest, elevation and daily dressing. Two and a half

months later she developed a similar ulcer on the left foot on exactly the same location as the one on the right (Fig 2). She was admitted repeatedly for dressing, rest and elevation with temporary improvement. The heads of the fifth metatarsal bones in both feet became infected and x-ray showed they were completely destroyed (Fig 3).

During her last admission thorough debridement of the infected metatarsophalangeal joints was done under general anaesthesia, atrophy of the plantar fat pad was noticed around the area of pressure sores.

After the wounds have healed, foot pressure analysis was performed and found to have abnormal pressure at the area of the sore. Cut-out sandals were provided to the patient to redistribute the walking pressure. At two years follow up there was no recurrence of the ulcers.

DISCUSSION

Very little has been reported in the literature about Jones' procedure in the last two decades. When studying the earlier literature on spina bifida it is obvious that the connection between the lesion in the spine and the deformity of the feet was often recognised⁴. Sharrard in 1962 was the first to put forward a possible explanation for the relationship between the various neurologic patterns and the wide variety of deformities of the legs and feet⁶.

Cavus deformity with clawing of the toes occurs in 4% of children with spina bifida⁴. Smith and Duckworth found that although the deformity is not common at birth, several feet later developed this deformity, probably because of loss of one or more sacral roots following surgery or as a result of traction⁷.

The normal foot bears load fairly evenly between the forefoot and heel and between the lateral and medial sides, 50% on the heel and 50% on the forefoot which is distributed equally between the medial and lateral sides⁶. Betts, et al observed from foot pressure analysis, that a localised high pressure area could occur in feet which were in other respects of good shape with adequate correction of the original deformity⁸. Foot pressure analysis in our patient showed that about two thirds of the forefoot share of weight was born on the lateral borders, the centre of gravity of her body was slightly to the left which could explain why the left foot was more severely ulcerated and resistant to treatment. Jhass has observed that some muscles may contract strongly without being under conscious control¹⁴. We think this can explain why our patient developed her pressure sores although she had adequate correction and sensation and why they recurred after weight bearing.

CONCLUSION

From our case we learnt that in spina bifida patients, foot reorientation surgery should not be taken lightly and the risk of development of pressure sores should not be underestimated even if sensation is intact. If surgery is unavoidable we recommend post operative foot pressure analysis to detect any area of abnormally high pressure. If such area is discovered we recommend the use of cut-out sandals or any similar device which redistributes the weight on the feet and reduces oedema⁹. If pressure sores and bone infection develop we recommend thorough surgical debridement which should include removal of all pieces of dead bone and sinus tracts. The patient should be kept none weight bearing until the wound is healed and cut-out sandals provided.

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FIGURE LEGENDS

Figure 1: Pre operative Roentgenogram of both feet showing healthy 5th metacarpal bones.

Figure 2: A photograph of both feet showing mirror image ulcers opposite the heads of the 5th metatarsal bone following bilateral jones' procedure

Figure 3: Roentgenogram of the feet two years after surgery demonstrating destruction of the metatarsophalangeal joints and heads of 5th metatarsal bones bilaterally 2(2) 96(22)