



POSITIVE

OFFICIAL NEWSLETTER OF THE PAEDIATRIC ORTHOPAEDIC SOCIETY OF INDIA

THE END OF AN ERA - A TRIBUTE W.J.W.SHARRARD (1921 - 2001)

An era has ended with the passing away of Professor W.J.W. Sharrard. To those of us who knew him personally, and all of us who have read his outstanding book, his demise is really a loss. Professor Sharrard, in the preface to the second edition of his book, stated "*advances that have taken place in the last seven years have shown that orthopaedic surgery continues to be a progressive discipline*". We may now state confidently that *Paediatric Orthopaedics* is also a truly progressive discipline. Professor Sharrard's personal contributions have in no small measure been responsible for the progress of paediatric orthopaedics. All his phenomenal contributions in the field need not be recounted here. The three editions of *Paediatric Orthopaedics and Fractures* alone stand testimony to his outstanding work. For thirty years this book has been used as a standard reference book on Paediatric Orthopaedics. One would hope that the publishers would ensure the continuity of the book. If future editions of the book do get published, it is highly unlikely that it would continue as a single author book. So, in reality, an era has truly ended.

The Paediatric Orthopaedic Society of India pays tribute to Professor Sharrard and gratefully acknowledges his encouragement in the formative stages of the Society.

The Editors

Aug.
2001

**POSITIVE TRANSFERS
INFORMATION VERY
EFFECTIVELY**

ABSTRACTS

Contents

1. Spinal surgery
2. Cerebral palsy
3. Ankle injuries
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6. Bow legs
7. Bone tumours

1. A modified wake-up test for use in very young children undergoing spinal surgery. Polly DW, Klemme WR, Fontana JL, Sterbis MD. Walter Reed Army Medical Center, Washington USA. *Journal of Pediatric Orthopaedics*, 2000; 20: 64-5.

This article describes a modification of the wake-up test which was used while operating on five children (mean age 19 months): Nerve stimulator leads were attached to the soles of the feet and initially tested before commencing surgery to confirm a normal plantarflexion response of the foot and ankle on stimulating the sole. After spinal deformity correction, the plane of anaesthesia was lightened. An 80mA tetanic stimulus at 50Hz was applied for 1-2 seconds to both soles. After the initial plantarflexion response, the child would withdraw and then flex and extend the knees and ankles, thus confirming intact motor pathways.

EDITORIAL COMMENT

The paper describes a new test to ensure that the most serious complication of spinal surgery i.e. iatrogenic myelopathy does not occur. The test does seem to have promise in very young children who are not candidates for the standard wake-up test.

2. The risk of spinal deformity after selective dorsal rhizotomy. Turi M, Kalen V. Shands Hospital, Florida USA. *Journal of Pediatric Orthopaedics*, 2000; 20: 104-7.

The authors attempted to define the risk of a spinal deformity developing following laminectomy performed, as part of selective dorsal rhizotomy, in children with cerebral palsy. 43 patients who had undergone the procedure were reviewed between 2 - 9 years later. 28 significant spinal deformities developed in 19 patients (15 scoliosis, 7 lumbar hyperlordosis, 5 kyphosis and 1 spondylolisthesis). Some of these patients required surgical stabilisation of their spines later. For the entire group, the risk of developing a spinal deformity was 36%.

EDITORIAL COMMENT

The paper addresses an important potential complication of an operation performed to reduce spasticity in children with cerebral palsy. The frequency of spinal deformities noted in this study cannot be attributed solely to technical errors as Peacock, who popularised selective dorsal rhizotomy also encountered them. The risk of this serious complication needs to be borne in mind when the surgeon treating a child with cerebral palsy has to select a method of treatment to reduce spasticity.

3. Limited dorsiflexion predisposes to injuries of the ankle in children. Tabrizi P, McIntyre WMJ, Ouesnel

MB, Howard AW. Children's Hospital of Eastern Ontario, Ottawa, Canada. *Journal of Bone & Joint Surgery [Br]* 2000; 82-B:1103-6.

The passive range of dorsiflexion of the uninjured ankle was measured in 82 children who presented with ankle injuries and compared with the ranges of dorsiflexion of both ankles of 85 normal controls. There was significantly reduced dorsiflexion of the ankle in children with ankle injuries as compared to controls when tested both with the knee extended and with the knee flexed to 90 degrees. The study suggests that there is a strong association between decreased ankle dorsiflexion and injury.

EDITORIAL COMMENT

The authors re-confirm the initial observations of Quirk and Wiesler et al who noted that limitation of ankle dorsiflexion may predispose to ankle injuries. The present authors suggest that a flexible triceps surae may absorb energy and protect the bones and ligaments from injury. They go on to recommend that children with tight calf muscles should do stretching exercises to improve their flexibility and thus minimise the risk of injury. This interesting observation needs further scrutiny - it needs to be verified whether children with treated clubfeet are more prone to ankle injuries since only few of them would have normal ankle dorsiflexion.

4. Specific or superfluous? Doubtful clinical value of granulocyte scintigraphy in osteomyelitis in children. Kaiser S, Jacobsson H, Hirsch G. Karolinska Hospital, Stockholm, Sweden. *Journal of Pediatric Orthopaedics - B* 2001;10:109-12.

The authors performed granulocyte scintigraphy in 8 children with clinical and / or radiological findings suggestive of osteomyelitis. Granulocyte scan was positive in 1, false-negative in 2 and demonstrated non-specific photopenic lesions in 5 patients. The authors concluded that there is no role for including this investigation as part of the routine work-up for suspected osteomyelitis in children.

5. Osteomyelitis of the pelvis and proximal femur: Diagnostic difficulties. Hammond PJ, Macnicol MF. Royal Hospital for Sick Children, Edinburgh, UK. *Journal of Pediatric Orthopaedics - B* 2001; 10:113-9.

16 cases of acute haematogenous osteomyelitis of the pelvis or the proximal femur were reviewed. The authors emphasise that osteomyelitis in this region can produce a variety of symptoms and signs. They analysed the difficulties in establishing a diagnosis. They noted that fever was present in 14 cases; pain was always poorly localised; limp was present in 15 cases and localised tenderness was present only in 4. The ESR was elevated in 15 patients and the C-reactive protein level was elevated in 10. The initial radiograph of the pelvis was normal in 11 patients who had symptoms for less than 12 days. A technetium bone scan was performed in 9 patients and it was positive in all of them. MRI scans done in 12 patients were all suggestive of osteomyelitis. Ultrasound scans of the hip were of

use when there was an effusion secondary to a lesion within the hip but were not helpful in periarticular lesions. Surgical intervention was avoided by early diagnosis and antibiotic therapy in all but one case.

EDITORIAL COMMENT

The preceding two papers clarify the role of investigations in acute haematogenous osteomyelitis. The first paper by Kaiser *et al* shows that a sophisticated investigation like granulocyte scintigraphy is not of much help in facilitating the diagnosis of acute osteomyelitis. On the other hand, the second paper by Hammond & Macnicol identifies the investigations that are of use in establishing a diagnosis of osteomyelitis in deep seated bones of the pelvis. Osteomyelitis of the pelvis should be suspected in children with fever, poorly localised pain around the hip or pelvis, a limp, elevated ESR and C-reactive protein values. In these patients a bone scan and MRI appear to be the most useful investigations. Relying on plain radiography alone may delay diagnosis as positive plain radiographic findings appeared only after 12 days.

6. Clinical evaluation of bowed legs in children.

Davids JR, Blackhurst DW, Allen BL. Shriner's Hospital for Children, Greenville, USA, Journal of Pediatric Orthopaedics 2000 - B; 9:278-84.

The authors describe a clinical test - *the cover up test* to distinguish physiological bow legs from tibia vara. The test is performed with the child supine with the hips and knees fully extended with the patellae pointing to the ceiling. The examiner's hand is then aligned perpendicular to the long axis of the thigh and placed over the middle third of the tibia such that the proximal 25% of the leg is exposed. The alignment of this exposed proximal segment of the leg in relation to the thigh segment is then assessed visually. The test is considered to be *positive* if the proximal segment of the leg is in equivocal valgus, neutral or varus alignment in relation to the thigh. It is considered to be *negative* if the proximal segment of the leg is clearly in valgus alignment.

The test was applied to 18 children with tibia vara and 50 children with physiological bowing. All these children were followed-up either till spontaneous resolution of the deformity or till surgical intervention.

All children with tibia vara had a *positive* cover up test (the sensitivity of the test was 100%). All children with a *negative* cover up test had physiological genu varum and they did not progress to tibia vara (the negative predictive value of the test was also 100%).

Based on the results of this study, the authors suggest that all children with a positive cover up test should be followed-up with sequential radiographs to see if they develop features of tibia vara. On the other hand, children with a negative cover up test need to be followed-up clinically for resolution of the bowing.

EDITORIAL COMMENT

The authors have described an extremely simple and elegant test to differentiate tibia vara, a condition that is difficult to treat, from self-limiting and innocuous physiological genu varum. The simplicity of the test and its high sensitivity and negative predictive value make it an ideal screening test for tibia vara. The authors need to be commended for providing us this valuable diagnostic tool.

7. Initial symptoms and clinical features of osteosarcoma and Ewing's sarcoma.

Widhe B, Widhe T. Huddinge University Hospital, Huddinge, Sweden. Journal of Bone & Joint Surgery [Am] 2000;82-A:667-74.

Case records of 102 patients with osteosarcoma and 47 patients with Ewing's sarcoma were reviewed. The initial symptoms of both the tumours was pain which was intermittent, often related to strain and infrequently felt at night. Though a history of trauma was common, the clinical course was different from that expected following trauma. The clinical course was often not steadily progressive but was intermittent especially for Ewing's sarcoma. This often misled the doctor into misdiagnosing the condition. Tendinitis was the initial diagnosis made in 31% of patients with osteosarcoma and in 21% of patients with Ewing's sarcoma. At the first medical visit, a bone tumour was suspected only in 31% of osteosarcomas and 19% of Ewing's sarcomas. The delay in diagnosis was significantly greater for Ewing's sarcoma than for osteosarcoma. In most of the patients where a mass was palpated, a diagnosis of bone tumour was suspected. A palpable mass was present at the time of the first visit in over one-third of the patients. This finding emphasises that a thorough physical examination is essential.

EDITORIAL COMMENT

The authors have presented very useful data related to the early symptoms and signs of the two commonest malignant bone tumours encountered in paediatric orthopaedic practice. With vastly improved survival rates using current regimens of management of these tumours, it becomes imperative that an early diagnosis is established. An awareness of the early signs and symptoms and the potential pitfalls of diagnosis should help us to diagnose these tumours without undue delay.

ARTICLES PUBLISHED BY MEMBERS OF POSI

Perthes' disease in the adolescent. *Joseph B, Mulpuri K, Varghese G. Kasturba Medical College, Manipal. J Bone Joint Surgery [Br] 2001;83-B:715-20.*

Rehabilitation of cerebral palsy in a developing country - the need for comprehensive assessment.

Bhatia M, Joseph B. Kasturba Medical College, Manipal. Pediatric Rehabilitation 2001;4:83-6.

Talo-calcaneal relationship in clubfoot *Joseph B, Bhatia M, Nair S. Kasturba Medical College, Manipal. Journal of Pediatric Orthopaedics 2001;21:60-4.*

The value of measurement of hip joint movement in childhood hip disorders. *Rao KN, Joseph B. Kasturba Medical College, Manipal. Journal of Pediatric Orthopaedics 2001;21:495-501.*

Delayed separation of the the capital femoral epiphysis after an ipsilateral transcervical fracture of the neck of the femur. *Joseph B, Mulpuri K. Kasturba Medical College, Manipal. Journal of Orthopaedic Trauma 2001;14:446-8.*

The authors would be pleased to send copies of their articles to any member who requests them.

CONTROVERSIES IN PAEDIATRIC ORTHOPAEDICS

DEBATE

Is routine prophylactic pinning of the contralateral hip in SCFE justified?

In-situ pinning of the hip has become the mainstay of treatment of unilateral slipped capital femoral epiphysis, as it provides good long-term function, with a low risk of complications. Most surgeons appear to be accepting this as the standard form of treatment for the condition. However, the choice of treatment of the uninvolved hip remains a major controversy today. Some authors¹⁵ advocate routine pinning of the unaffected hip in the belief that in a significant proportion of patients, sooner or later, the capital epiphysis of the initially uninvolved hip will also slip. Others feel that prophylactic pinning is unnecessary.

In order to decide which approach is more acceptable we need to answer three questions:

1. How frequently does the contralateral capital femoral epiphysis slip?
2. What are the long-term consequences of untreated slipped capital femoral epiphysis of a mild degree?
3. Is prophylactic pinning itself a safe procedure?
4. Are there any other potential benefits of pinning both hips?

How frequently does the contralateral epiphysis slip?

a. Silent, asymptomatic slips of the contralateral epiphysis

One of the problems of establishing the frequency of slip of the contralateral hip is that the slip may be a silent one. Unless the slip of the capital epiphysis of the second hip is severe enough to produce symptoms, it may go undetected. A considerable degree of remodelling of the proximal femur may then occur over a period of time. The growth plate would also have fused by this time and consequently, measurement of Southwick's angle would not be feasible. The diagnosis of a healed slipped epiphysis is then based on certain characteristic alterations in the shape of the proximal femur. The pistol-grip deformity⁵ is one such change in the shape of the femur suggestive of a healed slipped epiphysis. A second method of diagnosing a previous slip is to note the displacement of the centre of the femoral head. If the centre of the femoral head is more than 3 standard deviations below the expected position in relation to the calcar femorale, it is assumed that there has been a slip of the epiphysis^{6,7}.

Haaglund^{6,7} and Jerre et al⁸ suggest that the frequency of bilateral slips is far more than values of 8-28% reported earlier^{1,8}. Haaglund et al noted that 12% of cases of "unilateral" SCFE became bilateral during adolescence and when they were assessed after skeletal maturity, 61% of these "unilateral" cases showed features of bilateral slip. The profound disparity in earlier estimates of bilateral slips and the estimates of Haaglund^{6,7} and Jerre et al⁸ (< 30% vs > 60%) needs to be explained. In studies showing low incidences of bilateral slips the hips were assessed at the time of initial admission for treatment or during adolescence, while the studies reporting high incidences of bilateral involvement were based on assessment of the morphology of hips which were skeletally mature. Secondly, the earlier studies used the Southwick's angle to diagnose slips, while the more recent studies measured the displacement of the centre of the femoral head as the criterion for diagnosing a healed slipped epiphysis. Nevertheless, subclinical or silent slips are probably more common than appreciated earlier.

b. Symptomatic bilateral slips

Clinically symptomatic bilateral slips, on the other hand, are extremely common in the following situations (Table I)

Table I: Frequency of bilateral slips in different types of slipped capital femoral epiphysis

Type of SCFE	Estimated incidence of bilateral slips
Juvenile SCFE	81% ¹⁴
SCFE associated with endocrinopathies	100% ²
SCFE associated with renal failure	95% ¹⁰

What are the long-term consequences of minor degrees of slip of the capital femoral epiphysis?

Secondary degenerative arthritis is one of the long-term consequences of SCFE. The greater the degree of slip, the more the altered mechanics of the hip and, therefore, the higher the incidence of degenerative arthritis. The natural history of a mild slip is believed to be mild deterioration of hip function¹. However, Haaglund⁷ reported that osteoarthritis occurred in as many as 25% of hips with features of an undetected slip. Other authors⁵ have also noted a high incidence of changes in the proximal femur suggestive of a healed SCFE among patients initially thought to have "primary" osteoarthritis of the hip (Table II).

Table II: Frequency of features of healed slipped capital femoral epiphysis in patients with OA

<i>Proximal femoral abnormality</i>	<i>Frequency</i>	<i>Source</i>
Pistol grip deformity	30 out of 75	Stulberg (cited by Goodman ⁵)
Femoral head tilt	80 out of 200	Murray (cited by Goodman ⁵)
Femoral head tilt	59 out of 196	Solomon ¹⁷

However, it needs to be emphasised that remodelling of the proximal femur does occur in true primary osteoarthritis of the hip and some of the changes seen in primary osteoarthritis itself may closely resemble the changes attributed to a healed slip of the femoral epiphysis. Thus, it remains uncertain whether, in reality, all the cases with tilted femoral heads or all those with a pistol grip deformity are hips with healed slipped epiphyses.

Is prophylactic pinning a safe procedure?

The reported frequency of complications associated with in situ pinning of the displaced capital femoral epiphysis varies a great deal. Riley et al¹² reported complications in 40% of cases. These complications included chondrolysis, avascular necrosis of the femoral head, fractures and infection. Riley et al also noted that 26% of cases had complications directly related to the internal fixation. These authors cite Greenough's *predicted estimate* of a 64% chance of complications associated with routine bilateral pinning. Emery et al³ reported a more modest complication rate of 13.7% associated with prophylactic pinning. In sharp contrast to these studies, a very recent report (July 2001) by Seller et al¹⁵ suggests that the risks of prophylactic pinning is negligible. Over a ten-year period, these authors prophylactically pinned 94 uninvolved hips in cases of unilateral SCFE. They used 3 or 4 Kirschner wires for the fixation of both hips. They did not encounter even a single instance of any of the complications listed above. In four cases, the pins had lost purchase of the epiphysis as the child grew and longer wires were introduced after a mean interval of 16 months.

Are there any other potential benefits of pinning both hips?

One of the advantages for prophylactic pinning of the contralateral hip is the lack of the need for close follow up of cases, with frequent radiographic monitoring, to see if the second femoral epiphysis is beginning to slip. In addition, since both growth plates are transfixed, the chance of limb length inequality developing is minimised to the extent of shortening caused by the initial slip.

In conclusion, literature suggests that bilateral slipping of the epiphysis does occur sufficiently frequently to warrant a reappraisal of our approach to dealing with the apparently uninvolved hip. There is also some evidence to suggest that some of these hips may develop secondary osteoarthritis even in instances where the slip is a subclinical one with minimal displacement. Though there is undoubtedly a potential risk of complications occurring following pinning of the uninvolved hip, this risk is not high. It would seem reasonable to recommend that in all situations listed in Table I, where bilateral slips are frequent, the contralateral hip must be routinely pinned. In idiopathic adolescent SCFE, pinning of the contralateral hip should be considered if the patient cannot be followed up on a three to four monthly basis and monitored with anteroposterior AND frog-lateral radiographs of the pelvis which show BOTH hips clearly.

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Invited REVIEW

MANAGEMENT OF PARALYTIC DISLOCATION OF THE HIP

Paralytic dislocation of the hip can occur in children with poliomyelitis, spina bifida, cerebral palsy, multiple congenital contractures and less commonly in children with spinal muscular atrophy and muscular dystrophy.

The problems associated with each of these underlying neurological conditions vary and hence the approach to management of the hip dislocation will also vary.

In order to formulate a rational approach to the treatment of the paralytic dislocation, we need to answer these questions.

1. Why does the hip dislocate in each of these conditions?
2. Can a paralytic dislocation be prevented and if so, how?
2. What are the consequences of the hip dislocation?
3. Should all dislocated hips be reduced? If not, which are the ones that may be ignored?
4. If the hip is to be reduced, how should it be done?

Why does paralytic hip dislocation occur?

Muscle imbalance

Irrespective of the nature of the underlying neurological condition, the cause of paralytic hip dislocation is primarily muscle imbalance. Whenever the flexors and adductors of the hip are more powerful than the abductors and extensors, the hip is prone to gradually subluxate and finally dislocate. The cause for the imbalance of muscles acting on the hip may be paralysis or paresis of the hip abductors and extensors with intact flexors and adductors, as seen in a child with spina bifida at the low lumbar level or in a child with poliomyelitis. On the other hand, the imbalance may occur on account of overactivity of the flexors and adductors, as encountered in cerebral palsy where these muscles are spastic.

Adaptive changes in the soft tissues

Over a period of time adaptive changes take place in the soft tissues. Contracture of the iliopsoas and the hip adductors develop on account of the inability of the opposing muscles to stretch them. The contractures in turn increase the propensity for the hip to dislocate. As the hip is held in a fixed flexed, adducted posture the femoral head is thrust against the posterior capsule of the hip which gradually stretches.

Adaptive bony changes

Studies on decalcified cadaveric bones have shown that isolated pull of the iliopsoas can produce a coxa valga, while isolated pull of the gluteus medius produces a coxa vara. This explains how altered forces on the proximal femur in a patient with paralysis of the hip abductors and normally functioning iliopsoas can cause a severe coxa valga deformity to develop. Other adaptive bony changes are femoral anteversion and acetabular dysplasia. Femoral anteversion again occurs as a result of the abnormal muscle forces acting on the proximal femur. Acetabular dysplasia develops as the hip gradually subluxates. All three of these structural bony changes can further compromise the stability of the hip.

Pelvic obliquity

Pelvic obliquity, either due to lumbar scoliosis or due to a hip abduction or adduction contracture, can contribute to dislocation of the hip on the side of the pelvis that is higher.

Can a paralytic dislocation be prevented and if so, how?

Muscle imbalance manifests during intrauterine life in spina bifida and multiple congenital contractures. Consequently, the child with these conditions may be born with an established dislocation. However, in all other situations the dislocation occurs much later and when it does occur, it occurs gradually. This clearly implies that it should be possible to anticipate an impending paralytic subluxation and intervene appropriately when early subluxation is evident and prevent its progression to a complete dislocation. If muscle imbalance is corrected before adaptive changes in the soft tissue and bones occur, it should be possible to prevent dislocation. If passive abduction of the hips is less than 30 degrees and if a radiograph of the pelvis shows a break in the Shenton's line or 30% uncovering of the femoral head, release of the adductors and the iliopsoas must be performed as a measure to prevent hip dislocation.

What are the consequences of the hip dislocation?

The consequences of hip dislocation varies with the underlying neurological condition, however, in all situations if the child is ambulant, the dislocation makes the gait pattern far more energy inefficient and unsightly. Even though the dislocation may not necessarily prevent the child from walking, the increase in energy consumption alone may be an unacceptable consequence. An estimated 30% increase in energy expenditure that occurs with a unilateral hip dislocation.

Consequences in children with cerebral palsy:

It has been reported that upto 50% of dislocated hips in children with cerebral palsy become painful and pain results in a considerable increase in spasticity.

Consequences in children with spina bifida:

Unilateral dislocation in non-ambulant children may affect sitting balance and may also predispose to ischial pressure sores. Reports suggest that the walking ability of ambulant children with spina bifida and unilateral hip dislocation, improves appreciably once the hip is reduced. However, when the attempt at reduction fails, the function is often worse off than before. It has also been observed that bilateral hip dislocation in children with spina bifida does not necessarily influence the ability to walk. In some studies it was shown that the status of the hip had no bearing on the ability of the child to walk. These studies suggest that a level pelvis and adequate mobility of the hip are more essential for ambulation than reduction of the dislocation.

Consequences in children with multiple congenital contractures:

In children with MCC, in addition to adversely affecting the gait pattern, unilateral dislocation also tends to predispose to pelvic obliquity and scoliosis developing.

Consequences in children with polio:

The vast majority of children with polio should become community ambulators with or without the aid of orthoses and walking aids. Hip dislocation in these children compromises their walking ability.

Should all dislocated hips be reduced? If not, which are the ones that can be ignored?

Based on the consequences of hip dislocation discussed earlier, it is clear that some dislocated hips may be left alone. The decision to do so would depend on the underlying condition, whether the dislocation is unilateral or bilateral and whether the child is a potential walker (Table I).

Table I

<i>Hip involvement</i>	<i>Underlying condition</i>	<i>Ambulatory status</i>	<i>Treatment approach</i>
Unilateral dislocation	Cerebral palsy	Walker / non-walker	Reduce the hip
	Spina bifida	Walker	Reduce the hip
		Non-walker	IGNORE if sitting balance is OK. (But watch out for ischial pressure sore.) Reduce if sitting balance is affected
	Polio	Walker	Reduce the hip
	MCC	Walker	Reduce the hip
Bilateral dislocation	Cerebral palsy	Walker / non-walker	Reduce the hips
	Spina bifida	Walker / non-walker	IGNORE
	MCC	Walker	IGNORE

If the hip is to be reduced, how should it be done?

It needs to be emphasised that even in situations where the hip may be reducible by non-operative means, surgical intervention is needed to correct the underlying soft tissue and bony abnormality that caused the dislocation in the first place. It is also important to appreciate that failure to correct the muscle imbalance and the adaptive bony changes could result in failure to obtain a concentric reduction or even lead to a frank re-dislocation following reduction. Treatment should be instituted as soon as the dislocation is diagnosed, as any delay in treatment will compromise the outcome.

The management of paralytic dislocation in cerebral palsy is discussed to illustrate the common principles of management of all paralytic hip dislocations.

Table II : An algorithm of treatment of paralytic dislocation of the hip in children

For dislocation without any femoral anteversion, coxa valga or acetabular dysplasia	Perform adductor release and iliopsoas release alone
If reduction is not achieved following adductor & iliopsoas release	Perform an open reduction
If reduction is difficult during open reduction	Perform femoral shortening
If there is associated femoral anteversion	Perform a femoral sub-trochanteric de-rotation osteotomy at the time of reduction
If there is associated coxa valga	Perform a femoral sub-trochanteric varus osteotomy at the time of the reduction
If there is associated acetabular dysplasia	Perform an acetabular augmentation procedure
If the articular cartilage is damaged	Perform a proximal femoral resection

Note: For want of space the detailed list of references is being omitted. Any reader who wishes to have the list of references may contact the Editor.

NEWS AND NOTES

FELLOWSHIP IN PAEDIATRIC ORTHOPAEDICS

The Paediatric Orthopaedic Service of the Department of Orthopaedics at Kasturba Medical College has been recognised by the **National Board of Examinations** for a **two year** Post-doctoral Fellowship in Paediatric Orthopaedics. The Fellowship offers an exposure to a broad range of Paediatric Orthopaedic diseases. The National Board would award a certificate on completion of the Fellowship.

For further information contact :

Dr. Benjamin Joseph, Paediatric Orthopaedic Service, Department of Orthopaedics, Kasturba Hospital, Manipal 576 119
Notification by the National Board for the next session would appear in national newspapers early next year. Applications would have to be submitted to the National Board of Examinations.

POST ANNUAL CONFERENCE - 2002

The next annual conference of POSI would be held in New Delhi at the India Habitat Centre, between **March 22nd and 24th, 2002.**

For further details contact :

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