



ORTHO NEWSCAST



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Dear Doctor,

Greetings from Micro Labs. We are happy to bring you “**Ortho Newscast**” which contains latest and interesting news in the field of Orthopaedics.

This issue contains

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Best Regards,

Medical Team, Micro Labs Limited



Severe kyphotic deformity resulting from ankylosing spondylitis treated by staged osteotomy in lateral position- Retrospective study

Introduction

Ankylosing spondylitis(AS) is a chronic inflammatory disease which primarily involves the sacroiliac joints and spinal column ⁽¹⁾. The patients with AS with kyphosis need corrective osteotomy. There are different osteotomies for the correction of kyphosis which include Smith-Peterson osteotomy (SPO), Ponte osteotomy (PO), pedicle subtraction osteotomy (PSO) and vertebral column resection (VCR). These osteotomies are performed in the prone position. However, performing osteotomy in the prone position can be challenging in AS with severe kyphosis. One-stage two-level PSO is an effective treatment for these patient but it results in more intraoperative bleeding and high neurological complications. Therefore, staged osteotomy in the lateral position was initially proposed for the treatment of severe kyphotic deformity ⁽²⁾. This study evaluated the efficacy and safety of staged osteotomy in lateral position for patients with severe kyphosis resulted from AS.

Staged osteotomy in the lateral position is safe and effective method for achieving satisfactory correction in patients with severe kyphosis caused by alkylosing spondylitis(AS).

Methods

A retrospective study was conducted on 23 patients (20 males and 3 females) of 29–67 years of age with ankylosing spondylitis with severe kyphotic deformity who underwent staged osteotomy in the lateral position. The radiological and clinical parameters were evaluated preoperatively, postoperatively and at last follow-up and each parameter was measured 3 times and averaged. Global kyphosis(GK), thoracic kyphosis(TK), lumbar lordosis(LL), sagittal vertical axis(SVA), osteotomized vertebra intervertebral angle (OVI), chin-brow vertical angle (CBVA), Oswestry Disability Index (ODI) score and Scoliosis Research Society-22 Patient Questionnaire (SRS-22) were all compared pre-operatively and post- operatively. During the 1st stage, 22 patients underwent a single level Ponte osteotomy in the lateral position except 1 patient who required L1 pedicle subtraction osteotomy(PSO) due to extremely severe kyphosis followed by 2nd stage pedicle subtraction osteotomy was conducted 2 weeks after 1st stage surgery(Figure 1). Statistical analysis was performed using SPSS 18.0 software.



Figure 1 (A, B)- First-stage L3/4 Ponte osteotomy in lateral position (C, D)- Second-stage L1 PSO in prone position

Results

After surgery, all patients showed significant improvement in all kyphosis parameters and the sagittal balance of the spine was resolved to significant extent. The preoperative mean GK,

SVA, OVI, CBVA of patients was 115° , 21.2cm, 9.0° , 64.1° respectively, which significantly improved post-operation to 46.5° , 5.1cm, -20.1° , 5.7° respectively. The last follow-up mean of GK, OVI, CBVA was 47.5° , -19.6° , 6.3° respectively. In a patient who underwent L1 and L4 pedicle subtraction osteotomy(PSO) due to extremely severe kyphosis and hip ankyloses, the GK was corrected from 158°

to 62° . The mean ODI score of the patient pre-operatively was 34.7 which significantly decreased to 15.6 post-operatively and 15.2 at the last follow-up. SRS-22 significantly improved after surgery. All patients experienced significant improvement in quality of life after surgery. In the 1st stage of surgery one patient developed superficial infection which was cured by dressing frequently. In the 2nd stage surgery, 3 patients experienced cerebrospinal leakage post-operatively which was treated by draining with pressure dressing.

Discussion

Ponte osteotomy (PO), pedicle subtraction osteotomy (PSO) and vertebral column resection (VCR) are the commonly performed osteotomy for severe kyphosis. These osteotomies are performed in the prone position. However, performing osteotomy in the prone position can be challenging in AS with severe kyphosis. One-stage two-level PSO is an effective treatment for these patient since it can correct an angle of 100° but it results in more intraoperative bleeding and high neurological complications⁽²⁾. Staged surgery is considered to be a relatively safe method for treating severe kyphosis in AS patients, reducing the complexity and risk of surgeries. In this study GK, TK, LL, SVA, CBVA of patients was evaluated and it showed significant improvement in all parameters after surgery. In the study conducted by Quan et al. GK, LL and SVA were corrected from 113.4° , 41.9° and 25.2 cm preoperatively to 71.6° , -44.1° and 5.8 cm postoperatively⁽⁴⁾. Zhong et al. reported improvements in the kyphosis angle, CBVA and SVA from 92.0° , 37.6° and 24.1 cm preoperatively to 30.0° , -0.6° and 7.5 cm postoperatively⁽⁵⁾.

Conclusion

Staged osteotomy in the lateral position is safe and effective method for achieving satisfactory correction in patients with severe kyphosis caused by alkylosing spondylitis(AS). This approach not only corrects the sagittal imbalance of the spine while minimizing complications but also allows for easier intraoperative positioning. Overall, it offers a comprehensive solution for addressing the spinal deformity in alkylosing spondylitis patient.

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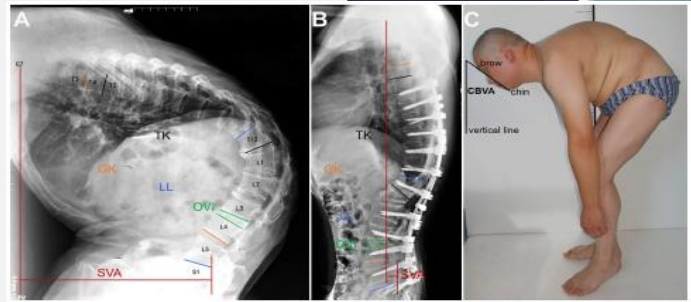


Figure 2 Pre- and postoperative radiographic parameter measurements diagrams

Single-stage reconstruction of symptomatic flexible flatfoot in children and adolescents using tibialis anterior rerouting combined with calcaneal lengthening osteotomy

Introduction

Flat foot is a condition where the medial longitudinal arch of the foot is lower than usual, either with or without hind foot eversion. It can either be rigid or flexible. The flexible type is most common which is usually seen in paediatrics. Flat foot is usually reported by parents due to abnormal shape of foot, and less commonly because of limited physical activity and shoe wear. The rigid type is more complex which usually requires surgical correction ⁽¹⁾. Several surgical techniques are available to correct flat foot deformity including soft tissue and bony procedures ⁽²⁾. Although numerous soft tissue and bony procedures have been performed, there is lack of evidence to measure the amount of structural correction ⁽³⁾. This study evaluated the outcome of Single-stage reconstruction of symptomatic flexible flatfoot in children and adolescents. The procedure involved tibialis anterior rerouting and calcaneal lengthening osteotomy.

Symptomatic flexible flatfoot in children and adolescents can be treated with combined tibialis anterior rerouting and calcaneal lengthening osteotomy

Methods

The prospective study was conducted on children and adolescents between 9 to 15 years with idiopathic symptomatic flexible flatfoot who failed to respond to conservative management for atleast 3 months. Patients were evaluated preoperatively to assess body buildup, fitness for surgery, neuromuscular disorders and to identify the type of flatfoot, whether flexible or rigid. The radiological parameters were evaluated preoperatively which include standing talo-first metatarsal angle and talonavicular coverage angle in the AP view and talo-first metatarsal angle and calcaneal pitch angle in the lateral view (FIGURE 1). In bilateral flatfoot patients, each side was operated separately with 4 to 6-month interval. Tibialis anterior rerouting combined with Calcaneal lengthening osteotomy was performed followed by ankle dorsiflexion was tested. To evaluate the cause of ankle contracture (whether it was gastrocnemius muscle or the Achilles tendon), the Silfverskiold test was done. Fractional lengthening of the gastrocnemius muscle was performed in patients with positive Silfverskiold test. Foot X-ray was done after operation. Regular follow up was done every 6 months. The American Orthopaedic Foot and Ankle Society (AOFAS) score was used to evaluate the functional results of patients. Statistical analysis was done using IBM SPSS software version 20.0



Figure 1 AP and lateral X-ray images at the weight-bearing position of a 12-year-old female child. A) Preoperative AP talo-first metatarsal angle (17°) and talonavicular coverage angle (15°). B) Preoperative lateral talo-first metatarsal angle (27°) and calcaneal pitch angle (10°). C) Postoperative AP talo-first metatarsal angle (5°) and talonavicular coverage angle (7°). D) Postoperative lateral talo-first metatarsal angle (5°) and calcaneal pitch angle (24°)



Results

The study was performed on 16 patients (28 feet) of which 8 were males and 8 were females of 9-15 years of age. The affected side was right side in 3 patients, left side in 1 patient and bilateral in 12 patients. The main complaints reported was pain in 13 feet, cosmetic issues in 3 feet, both pain and cosmetic issues in 12 feet. Fractional lengthening of the gastrocnemius muscle was performed in 25 feet. The mean talonavicular coverage angle, AP talo-first metatarsal angle, lateral talo-first metatarsal angle significantly decreased post-operatively. The calcaneal pitch angle increased significantly post-operatively (TABLE 1). The average AOFAS score increased significantly from 21.6 to 85.3. No major complications developed during follow-up visits. 3 feet was treated for superficial wound infections with regular dressing and antibiotics.

TABLE 1 Preoperative and Postoperative radiological parameters

Radiological parameters	Preoperative	Postoperative	P value
Talonavicular coverage angle (normal < 7°)			
Mean ± SD	13.6 ± 4.4°	3.9 ± 3°	< 0.001
AP talo-first metatarsal angle (normal 7° ± 4°)			
Mean ± SD	16.9 ± 4.4°	4.5 ± 3.6°	< 0.001
Lateral talo-first metatarsal angle (normal 0°–4°)			
Mean ± SD	19.2 ± 4.9°	4.6 ± 3.2°	< 0.001
Calcaneal pitch angle (normal 10°–25°)			
Mean ± SD	9.6 ± 1.9°	9.6 ± 1.9°	< 0.001

Discussion

In the present study, children and adolescents of 9-15 years of age were selected. A study by Yasin MS says flexible flatfoot is most commonly seen in younger children and in males⁽¹⁾. The present study showed decrease in the mean talonavicular coverage angle, AP talo-first metatarsal angle, lateral talo-first metatarsal angle and increase in The calcaneal pitch angle and AOFAS score. The study by Shin BJ et.al., found that there was improvement in the talonavicular coverage angle, AP talo-first metatarsal angle, lateral talo-first metatarsal angle and calcaneal pitch angle as patients grew older⁽⁴⁾. Catani O et.al., study also showed increase in the AOFAS score from 44.30 to 96.50 after calcaneal osteotomy⁽⁵⁾.

Conclusion

Symptomatic flexible flatfoot in children and adolescents can be treated with combined tibialis anterior rerouting and calcaneal lengthening osteotomy with good clinical and radiological outcomes.

Reference

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Improved outcomes in Rheumatoid Arthritis with early specialized care: Multicentre observational study

Introduction

Rheumatoid arthritis(RA) is a chronic autoimmune disease ⁽¹⁾, marked by destruction and deformation of multiple joints. Although rheumatoid arthritis cannot be completely cured, early treatment initiation and targeting early remission can prevent disease progression ⁽²⁾. If rheumatoid arthritis is suspected, the patient should consult rheumatologist immediately to access the specialized care ⁽³⁾. This study assessed the effect of early versus delayed diagnosis of Rheumatoid arthritis and Disease-modifying antirheumatic drug(DMARD) initiation on disease outcome.

Delayed assessment by rheumatologists was associated with treatment delays and worse long-term outcomes.

Methods

The observational study was conducted on participants ≥ 18 years of age, meeting ACR/EUCAR (2010) / ARA (1987) classification criteria for RA. The participants underwent physical examination, clinical interviews and their medical records were reviewed. By the time of inclusion into the study, the participants had long mean disease duration. Disease activity (DAS 28) and physical function(HAQ-DI) was measured upon study inclusion. The patients were inquired about onset of disease, duration of disease, interval from symptoms onset to diagnosis of RA, initiation of first DMARD and physician's consulted initially. Data on current medication use and rheumatoid factor(RF) was obtained from medical records of the patient. Disease activity score-28 joints with C-reactive protein (DAS28-CRP) was used to evaluate disease activity. The specialized consultation was considered as "early" when the rheumatologist was the first or second physician consulted after the onset of symptoms and "late" when rheumatologist was consulted only after 2 or more other physicians. Students' t test /Mann-whitney U test, Chi-squared test, spearman's rho and multiple linear regression were performed. For sensitivity analysis, a subset of participants who were assessed early/ late was derived using logistic regression to match their propensity scores.

Results

The present study included 1057 participants (females 89.4%, whites 56.5%), mean age was 56.9 years. Most participants (64.6%) initially consulted a General practitioner(GP), while in 80.7% of cases, the rheumatologist made the diagnosis of RA. Both seronegative and seropositive patients experienced time delay for RA diagnosis and treatment initiation, with both groups having a delay of 12 months. 52 % of patients started the first DMARD within 12 months of symptom onset, while 28.7% started within the first 6 months and only 13.1% received a DMARD within 3 months. Patients who had early access to the rheumatologist had

TABLE 1 Comparisons between patients with RA according to access to the rheumatologist in the diagnostic journey

Characteristics	Position of rheumatologist in the sequence of attending physician		Difference in means
	1 ST OR 2 nd (N=753)	3 rd or later (N=304)	
Years of schooling	8.40	7.19	1.22
Total disease duration	167.04	188.03	-20.99
Delay to diagnosis	26.90	44.55	-17.65
Delay to first DMARD	32.48	50.58	-18.10
HAQ-DI score	0.877	1.074	-0.196
DAS28-CRP score	3.20	3.45	-0.25



lower mean delays to RA diagnosis and DMARD initiation. The delay in treatment was strongly correlated with the delay in diagnosis. Patients assessed early by the rheumatologist had lower HAQ and DAS28-CRP scores compared to those assessed late (TABLE 1). Remission/low disease activity was less frequent among late-assessed patients. Early assessment by the rheumatologist was associated with shorter disease duration and higher educational levels. In the PS-matched subsample, late-assessed patients had higher disease activity, worse physical function, longer delays in treatment initiation and lower educational levels. In multivariate linear regression models, the rheumatologist's assessment timing remained significantly associated with disease activity and physical function, with worse scores observed among late-assessed participants.

Discussion

The current study demonstrated a greater delay in the start of the therapy (median: 12 months), which may indicate restricted access to healthcare services or insufficient knowledge of the condition. In contrast, James et.al., reported a median delay of 6.4 months to treatment⁽⁴⁾. In present study, seropositivity for RF did not increase the frequency of RA diagnosis by GP. Seropositive patients did not present earlier to the rheumatologist, however a positive RF may have raised suspicion of RA in primary care. The findings suggest difficulties in the differential diagnosis of arthritis by general physician's, possibly due to limited access to specialists. Limited access to specialized care is common among individuals with low socioeconomic status⁽⁵⁾. Socioeconomic disadvantage has been associated with longer delays to RA diagnosis⁽⁶⁾.

Conclusion

Delayed assessment by rheumatologists was associated with treatment delays and worse long-term outcomes. Primary care providers should refer suspected arthritis cases to rheumatologists when uncertain about diagnosis or management. Healthcare systems should prioritize quick access to specialists and educational interventions are recommended to raise awareness about RA among general population and primary care providers, emphasizing the importance of early diagnosis, treatment and role of rheumatologists in the process.

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“Rare Paediatric case: Proximal radius exostosis with radio-capitellar joint dislocation”

Introduction

Osteochondromas are the most frequent primary benign bone tumors, which can be single or multiple due to hereditary multiple exostosis (HME). Osteochondromas typically develop in the long bones but infrequently affect the spine ⁽¹⁾. They can appear alone as a solitary lesion. These lesions develop at tendon insertion points and on bone surface. The knee, proximal femur, proximal humerus and forearm are the areas where osteochondromas most frequently develop. Depending on their size and location, they may result in localised symptoms of pain and impingement or even stiffness and deformity ⁽²⁾. The study presents a rare pediatric case of a solitary proximal radius exostosis causing chronic radial head dislocation which was treated by excising the lesion and reconstructing the radio-capitellar joint.

Evaluate the rest of the forearm for deformities in case of radial head exostosis during pre-operative planning. Carefully assess the congruity of the radio capitellar joint, considering the chronicity of subluxation or dislocation

Case presentation

The patient presented to the emergency department in early childhood due to swelling in the proximal forearm. The Patient noticed a bony lump and experienced “clicks” during elbow flexion and extension. No prior pain was reported. He had a normal vaginal delivery and a past medical history of distal hypospadias. Clinical examination revealed a 2x3cm bony lump on the radial aspect of the right elbow. Imaging revealed proximal radius exostosis and mild volar subluxation of the radial head. After one year, he developed pain in the right elbow and returned to the outpatient clinic. Range of movement and neurovascular function was intact, but the bony lump was tender to palpitate. Radiographs showed a bony exostosis originating from the radial head with dislocation of the radio-capitellar joint (FIGURE 1). An osteochondroma was most likely seen on MRI, which also showed a 5mm cartilage cap (FIGURE 2). Marginal excision of the right elbow exostosis with annular ligament reconstruction was performed using intra-operative fluoroscopy. Osteotomes were used for excision. Post-operative radiographs at 1 week showed an aligned elbow (FIGURE 3). A removable back slab was applied, and elbow range of motion was allowed. At 3 months, full range of motion was achieved and a gradual return to sports and activities was permitted.



Figure 1 Lateral and AP radiographs showing the proximal radius osteochondroma with anterior dislocation of the radio-capitellar joint

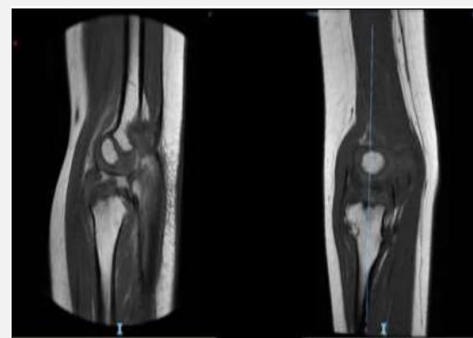


Figure 2 Sagittal and coronal T1 sequence MRI views, showing the morphology of the radial head.



Discussion

Osteochondromas can vary in presentation. They can be asymptomatic or discovered incidentally on radiographs. Symptoms may include pain, restricted range of motion, neurovascular issues or deformities. Peri-articular osteochondromas, like those in the radial head, carry the risk of ligamentous stretching and joint congruency loss⁽³⁾. The present case represents a rare occurrence of an isolated proximal radius exostosis with radio-capitellar joint dislocation⁽²⁾. Casstevens et.al. reported 2 cases of proximal radius exostosis causing symptoms due to impingement on the posterior interosseous nerve and distal biceps tendon. The exostosis in those cases was also located in the metaphyseal region⁽⁴⁾.

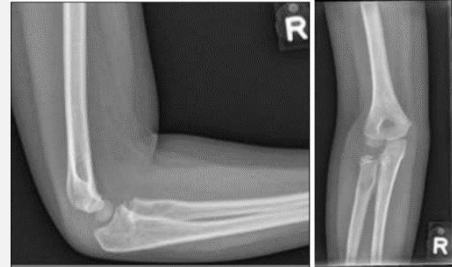


Figure 3 Post-operative lateral and AP radiographs showing an enlocated radial head

Conclusion

The conclusion of this case are as follows

- Evaluate the rest of the forearm for deformities in case of radial head exostosis during pre-operative planning.
- Carefully assess the congruity of the radio capitellar joint, considering the chronicity of subluxation or dislocation.
- Techniques used for ligamentous reconstruction in chronic monteeggia injuries may be applicable in similar cases.

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