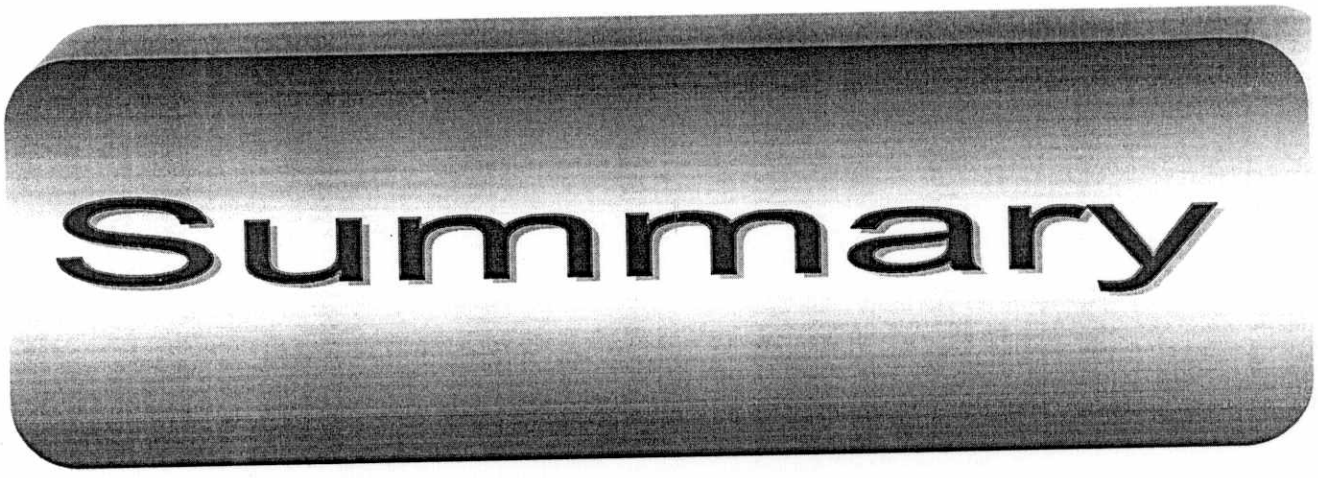
Summary

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This work is the result of a survey of the literature and collection of facts published over the past century in a trial to simplify one of the crippling syndromes challenging the orthopaedic surgeon which is ***" Pelvic obliquity "*** .

Pelvic obliquity defined as a three-dimensional structural deformity , which mainly caused by ; leg length inequality , contractures about the hips , as a part of a structural scoliosis or a combination of two or more of these causes .

Some anatomical points e.g. iliolumbar ligament, biomechanical aspects of normal balanced skeleton during walking , pathomechanics when hip abductors are contracted , and normal ranges for the pelvic angle in the three planes are focused on to understand the deformities , disabilities that may occur in pelvic obliquity patient .

There are two main groups of pelvic obliquity; the first is paralytic "fixed" obliquity and the second is the compensatory " non fixed " pelvic obliquity .

Paralytic " fixed " pelvic obliquity is defined as any fixed malalignment existing between the spinal and pelvic structures .

It is mainly due to; imbalance of the abductor and adductor muscles of the thigh , imbalance of the trunk muscles . Believed that hip abduction contractures were a major etiological factor in producing fixed pelvic obliquity . And ilio-tibial band plays a very important role in producing pelvic obliquity , this is because of its long and strong distribution in the pelvis and thigh .

Compensatory " non fixed " pelvic obliquity mainly due to limb length inequality . This type of pelvic obliquity is present only when the patient stands and disappear on recumbency provided that both legs are parallel to the midline of the body .

Diagnosis of pelvic obliquity requires diagnosis of the causes, degree of pelvic obliquity and complications. The causes of pelvic obliquity are diagnosed clinically and radiologically .

Clinical manifestation represented by difficulty in standing or walking , easy tiring , frequent falls or peculiar habits , or other presentation related to the causes or complication of pelvic obliquity .

There are also tests to diagnose hip component of pelvic obliquity which include tests of deformities and muscle power , examination of most trunk muscles which included in supra-pelvic causes of paralytic pelvic obliquity e.g. quadrates lumborum and lateral abdominal muscles and finally clinical diagnosis of limb length inequality which is apparent or true discrepancy .

Radiologically ; the paralyzed side is tilted , deformed and smaller on more paralyzed side , the acetabulum may be more oblique and the hip may be subluxated or dislocated .

Limb length inequality is measured radiologically by orthoroentgeno- grams and scanogram . Computed tomography " CT" scanograms have been proposed as an improvement over stander scanograms .

The degree of pelvic obliquity can be measured clinically; roughly or by weighted goniometer , or can be measured radiologically.

Untreated progressive pelvic obliquity lead to various sequalae and disabilities e.g. dislocation or sublaxation of the hip , lumbar scoliosis with convexity towards the abducted side , exaggerated lumbar lordosis , flexion contracture of both knees , sitting difficulty and decubitus ulceration , low back pain , degenerative changes in the spine , acetabular dysplasia and hip osteo-arthrosis .

Finally , the various methods of treatment of both paralytic and functional obliquities have been discussed , which include conservative and operative measures .

Treatment of paralytic " fixed " pelvic obliquity will vary according to location ; distal to the crest - hip deformity corrected first by surgical release and scoliosis is then treated as an independent problem ; proximal to the crest-correct the obliquity and scoliosis together and fusion to maintain correction must extend to the sacrum preventing recurrence of pelvic tilt ; above and below iliac crest – both deformity elements must be corrected and fusion must include the sacrum .

It is suspected that the essential element of fixed pelvic obliquity " the hip contractures " is quite resistant to conservative treatment and no explanation for failure of conservative treatment .

Soft tissue releases may be adequate for a time , but rapid growth in the presence of muscle imbalance will almost inevitably , bring about the reappearance of contractures . Therefore, soft tissue release should be coupled with stabilizing procedures to prevent recurrence of the deformity . Also soft tissue release operations are done for contractures about the hip and trunk muscles imbalance .

Spinal fusion to the sacrum and spino pelvic fixation in the correct position is very essential , required and poses one of the most challenging instrumentation problems .

The methods of pelvic fixation with Cotrel – Dubouset instrumentation include hooks , sacral stables , sacral screw , CD-Galveston , and ilio-sacral screws , the later is the preferred method regardless of the nature of the deformity and the aetiology of pelvic obliquity .

But a new method of spio-pelvic fixation is used to manage neuromuscular scoliosis , the STIF technique " spino pelvic trans-iliac fixation " cinches together the two sacro-iliac joint to convert the sacrum and pelvic bones into a single unit .

In true fixed obliquity that can not be corrected by surgery on the hips or the spine , bony operations are done , which mainly include; realignment of the lower extremities in relation to the body or posterior iliac osteotomy .

Treatment of compensatory " non fixed " pelvic obliquity is done by treatment of the causes which are limb length inequality and rarely intra-pelvic asymmetry .