



Al-Mustaqbal University
Collage of Engineering
Prosthetics and Orthotics Engineering
Third Stage

ORTHOTICS III

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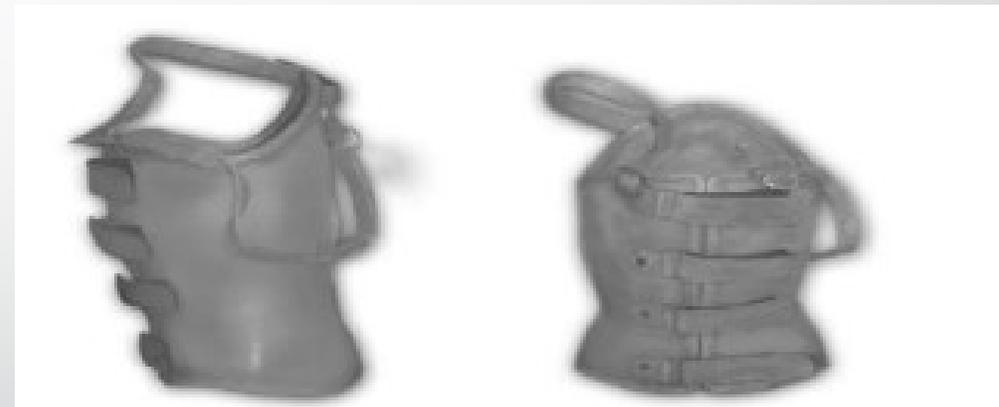
UPSO and Lumber-Sacral orthosis

Underarm Plastic Spinal Orthosis: (UPS0)

- Though Milwaukee Brace even today remain an effective method of conservative treatment of scoliosis in mild mobile curve in skeletally immature patients but it has the disadvantage of being uncomfortable and unacceptable by the majority of patients and needs time in fabrication, yet in cervicodorsal scoliosis it is the best type of spinal orthosis.
- In an effort to overcome the above-mentioned disadvantage with Milwaukee brace, a number of underarm plastic spinal orthosis are now available like Lexan Jacket from Pasadena, PVC orthosis, orthoplast Jacket and Boston brace, Bunnel, Mac Ewen, Hall, Park, Watts and Yates have described different types of under arm spinal orthosis.

Cont.

- These orthosis provide a rigid support and is efficient in treating lumbar and thoraco-lumbar curves and also helps in correcting thoracic curves with apex at about T7.
- It stops the progression of the scoliotic curves in growing children.
- It extends anteriorly from sternum to pubic symphysis, laterally from axilla to the trochanter and posteriorly from the upper thoracic region to the gluteal folds.
- The under-arm orthosis has the disadvantage that it is not suitable for cervico-thoracic curves and prolonged use may alter the thoracic cage and even may reduce pulmonary functions in a child whose pulmonary functions are already low.



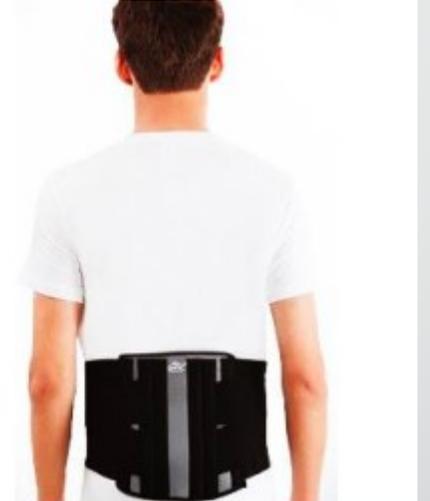
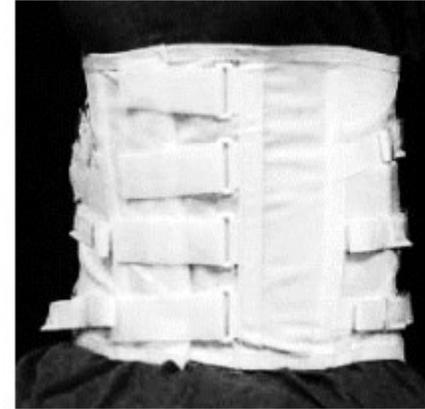
Measurement and Method of Fabrication

UPSO

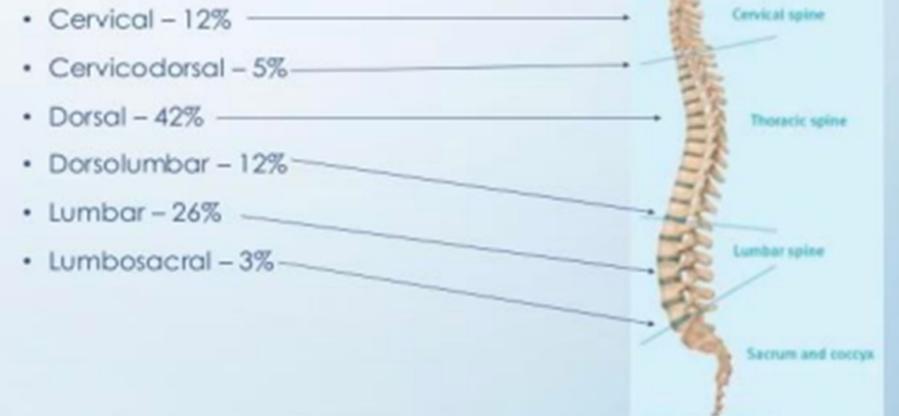
- First the plaster mould is prepared as done in Milwaukee brace and then a plastic sheet of appropriate strength is put in electric oven.
- After sheet is well warm then it is molded over the positive POP mold.
- After cooling, the plastic sheet mold is removed and trimming of the edges is being done followed by padding on the edges.
- The straps are attached to the anterior part of UPSO along with buckles.
- Anteriorly UPSO in open and tightened as per need.
- Some disadvantage of long-term use UPSO are also there like Milwaukee brace, it should not to be advised to such children who have respiratory problems, and it can retard the growth of breast in adolescent girls.

Lumbo-Sacral Corset

- It is very commonly prescribed for acute pain of lower back.
- It is available with different sizes in the market.
- The measurement is very simple where in circumference of waist is taken along with vertical height from back that is from dorsolumbar junction to upper border of sacrum.
- It is also prescribed as Lumbosacral belt/corset or as a Lumbar frame.

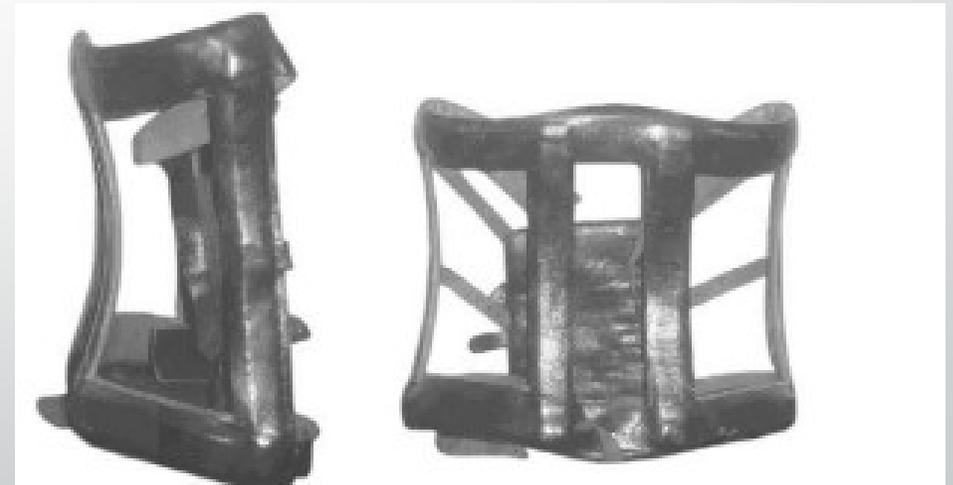
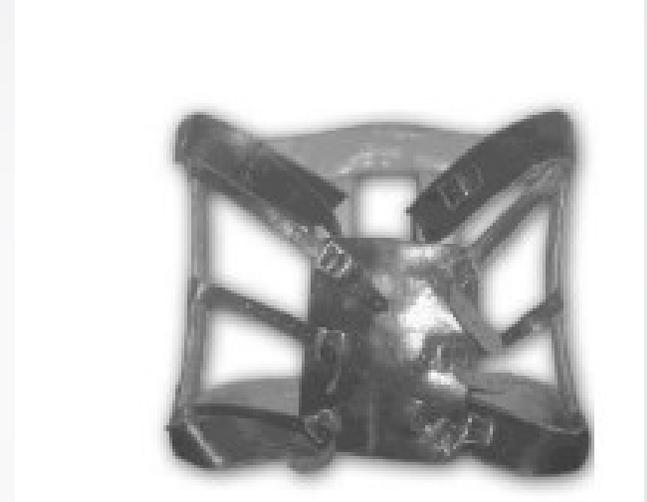


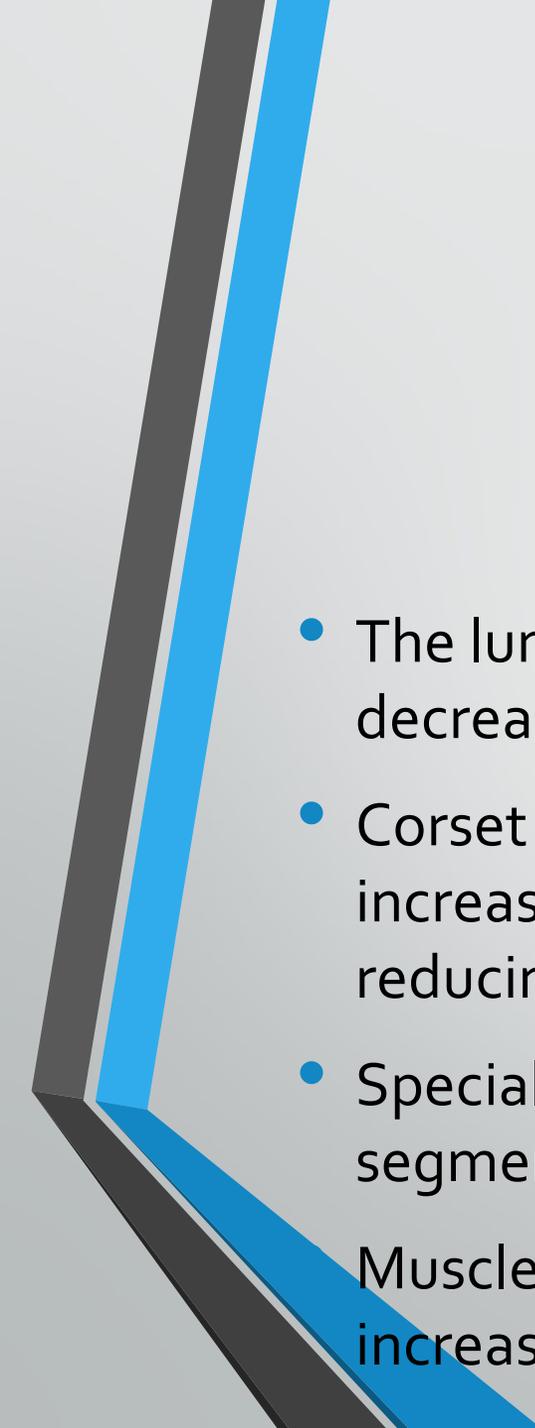
Regional distribution of Spine TB



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- Lumbar corset is made-up of drill cloth and aluminum sheet is put for back support.
- Elastic is also attached on the sides of corset and 3 to 4 Velcro straps are attached to the front side of the opening.
- In the lumbar frame, there are two frames of aluminum, upper one for waist region and lower one is for pelvic region.
- Both frames are joined with 4 aluminum uprights, that is two posterior uprights molded to lumbar lordosis and two uprights are on two sides of waist properly molded to the trunk contour.
- Anteriorly frame has few straps are attached for the proper grip.



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- The lumbar corset produces raised intra-abdominal pressure which in turn decreases intradiscal pressure thus acute pain is relieved.
 - Corset helps in decreasing spasm of muscles, off loading the lumbar spine by increasing the intra-abdominal pressure, by improving the posture and by reducing lumbar spine movement.
 - Special Considerations: Long-term use can cause an increase in motion in the segments above or below the area controlled by the orthosis.

Muscle atrophy can also potentially occur after long-term use, causing an increased risk of re-injury.

Indications

- acute lumbago with or without radiculopathy in the lower limbs,
- traumatic lesion of lower lumbar spine,
- degenerative lesions of lumbar spine,
- tuberculosis in lower lumbar spine,
- and spondylolisthesis and neoplastic lesions of lumbosacral spine.

Sacral Orthosis

- Provides anterior and lateral trunk containment, and assists in the restriction of some pelvic flexion and extension.
- It also aids in compression of the pelvis.
- This orthosis is usually made from cloth that wraps around the pelvis and hips.
- Some models also include laces on the side in which adjustments can be made, whereas others use straps for adjusting.



Indications

- Pelvic fractures
- symphysis pubis fractures
- strains
- It is useful to control motion and for pain control.

Does orthosis cause permanent correction?

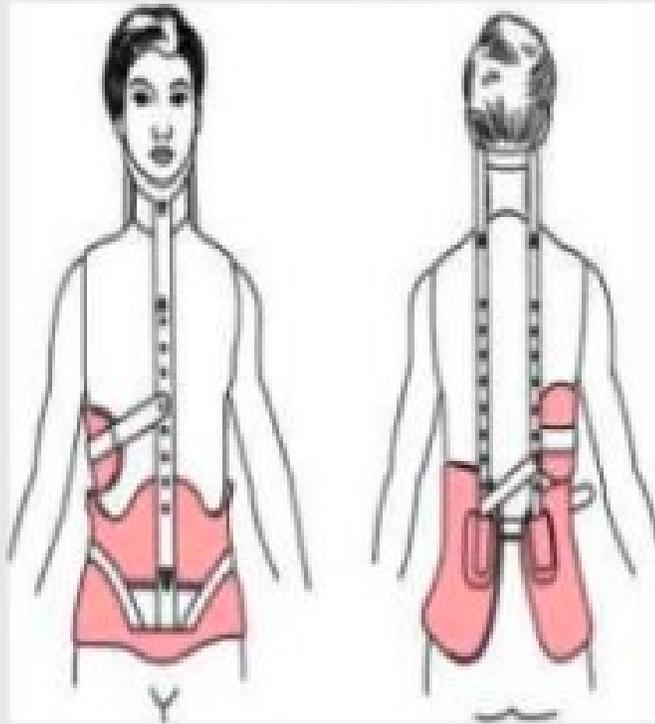
- No long-term results of underarm orthosis are available since they have not been used for a long period.
- Some retention of the curve about 30 degree was noted when the brace was discontinued.
- It was thought that Milwaukee brace gave permanent improvement but recent study from Milwaukee indicates that most of the permanent correction is lost.
- In future we have to find spinal orthosis for scoliosis which may give permanent improvement in scoliosis and cosmetically acceptable to the patient.

Drawbacks of Spinal Orthosis

- Discomfort
- Local pain
- Osteopenia
- Skin breakdown
- Nerve compression
- Ingrown facial hair in men
- Muscle atrophy with prolonged use

Cont.

- Decreased pulmonary capacity
- Difficulty in donning and doffing the orthosis
- Difficulty with transfers
- Psychologic and physical dependency
- Increased segmental motion at the ends of the orthosis
- Unsightly appearance
- Poor patient compliance



MILWAUKEE BRACE



Boston brace