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Collage of Engineering

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Third Stage

ORTHOTICS III

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ASH and Milwaukee Braces

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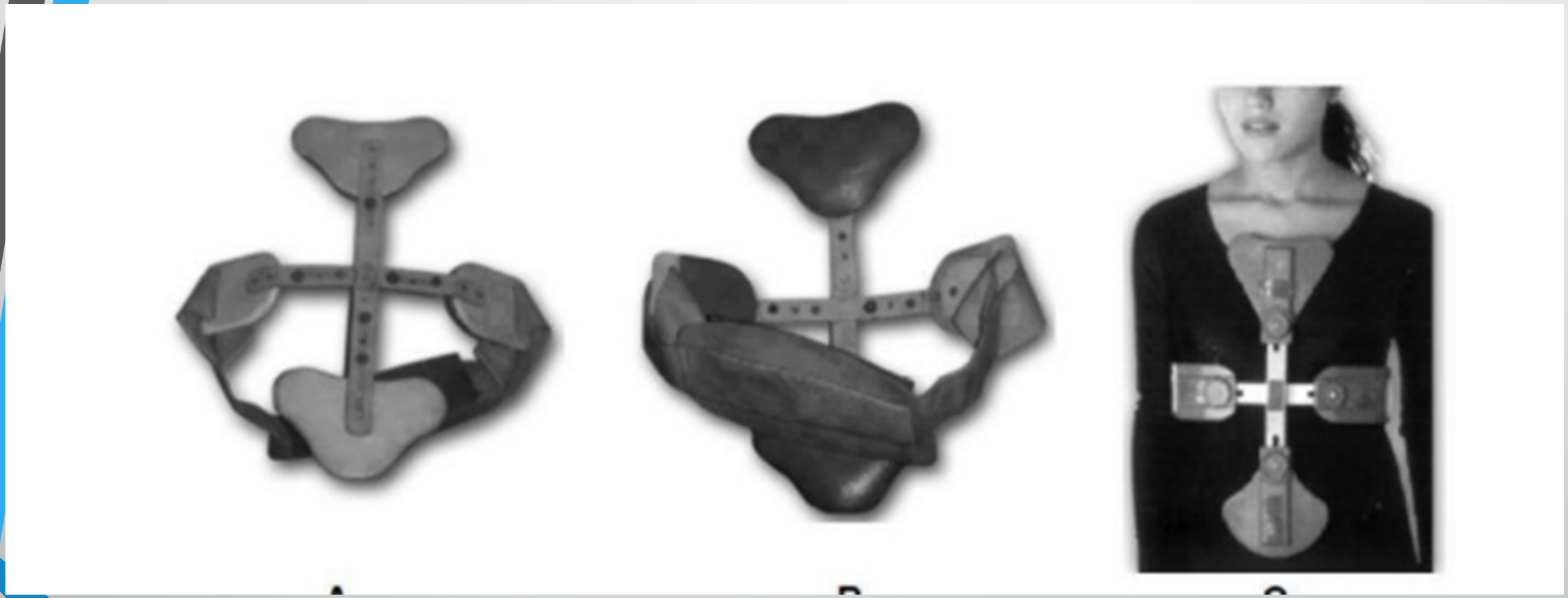
ASH Brace

- Nowadays anterior hyperextension spinal brace is used in place of Taylor brace since it restricts movement, provides better stability and prevents further kyphosis of dorsolumbar spine, hence it is also indicated in generalized kyphosis of the spine, apart from other indications of Taylor's brace.
- The ASH brace is light, elegant, comfortable, simple, easy to make adjustable in height and in circumference of the chest and can be fitted on the spot.
- It corrects the deformity of dorso-lumbar spine and keeps the spine in desired position by three-point pressure technique that is two pressure points are in front and one on the back (middle of spine).



Indications

- Compression fracture
- Adolescent kyphosis
- Senile osteoporosis
- Tuberculosis of spine
- Secondaries of the spine

Measurements and Fabrication

- Two measurements for ASH brace are taken:
  - Circumference of chest
  - Height between notches of sternum to the upper border of pubic symphysis.
- It consists of two long aluminum strips joined at 90 degree on center part of vertical strips.
- The horizontal strip has two triangular pieces (well padded) attached to the edges.
- The long Velcro straps are attached to triangular pieces which are tied on the back of the trunk.
- The ASH brace is fitted on the front of the trunk area.

Milwaukee Brace

- The Milwaukee brace was designed to obtain correction for the nonoperative treatment of scoliosis by Dr Walter P Blount and Dr Albert C Schmitt and exhibited the Milwaukee brace at the meeting of the American Academy of Orthopedic Surgeon in 1946.
- Since that time, numerous changes have been made in the design of the brace, and is being extensively used as the ambulatory, nonoperative treatment of spinal curvatures.
- The modern Milwaukee brace is nicely contoured and cosmetically acceptable. Improvement can be obtained in a patient with growth potential and with a mild to moderate lateral curvature of 20 to 40 degree.
- Cooperation of patient and parents, properly constructed brace and closely supervised treatment are very essential for good results.

The treatment program

- The treatment program typically followed, includes full-time wearing of the brace until the end of the adolescent growth spurt, then a gradual decrease in the time it is worn and finally, during the last year after completion of skeletal maturation, the brace is worn only at night.
- A few patients with mild curves wear the brace less than full time at the start of treatment. With these and all other brace patient, the time allowed out of the brace each day must be carefully controlled on the basis of the stability of curve correction during the specified period time out of the brace.
- The patient should wear Orthosis for about 23 hours a day.
- A coordinated physical therapy program is essential to develop trunk muscles for encouraging active correction.

Cont.

- Stability is evaluated by comparing measurements made on a standing X-ray photograph of the patient (spine) in the brace with those determined from a standing X-ray photograph made after the specified period out of the brace.
- Loss of correction during this period indicates instability which must be treated by increased daily wearing time.
- Wearing of the brace until complete maturation of the spine occurred, is nearly always necessary to maintain correction.
- Skeletal development should be assessed on the basis of wrist bone age, the appearance and capping of the iliac apophysis, the development of the vertebral ring epiphysis, and growth in height.

Measurements, and Method of Fabrication

- The child is kept in lying position on Risser's table and traction is applied through head halter (cervical region) and pelvic region in opposite direction and deformity is corrected to maximum tolerable stage of the child.
- POP Bandages are applied on the whole trunk and POP jacket is prepared.
- Than the child is taken off from traction and put on trolley and POP jacket is removed.
- Negative POP mould is prepared.
- Thick leather in mounted on the pelvic region of POP mould and pelvic girdle part of the brace is prepared.

Parts of Milwaukee Brace

- Pelvic girdle
- Neck ring with occiput pad.
- Three adjustable uprights-two on back and one front.
- Pad for giving pressure on rib hump.
- Pelvic girdle is open on back and two uprights are attached to pelvic girdle posteriorly and one upright is attached anteriorly. Proximally all the uprights are attached to neck ring.

Disadvantages

- Some disadvantages have been observed after prolong use of Milwaukee brace like pressure sore due to excessive pressure on iliac crest due to pelvic girdle.
- The dental problems due to improper fitting of the neck ring in the growing children have been noted along with mental stress due to inferiority complex in children