# Safety and efficacy of growing rod following kyphectomy in myelomeningocele patients

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# Disclosures

- Can Emre BAS, Gokhan DEMIRKIRAN, Caglar YILGOR, Mehmet AYVAZ
  - No disclosure
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  EPOS, *President*

  SRS, *Board of Director*

  GSF, *ExCom member*

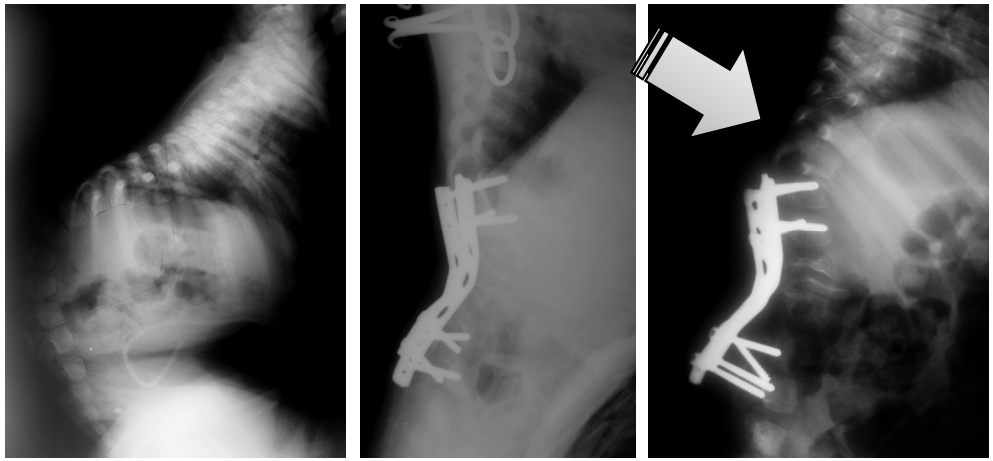
# Introduction

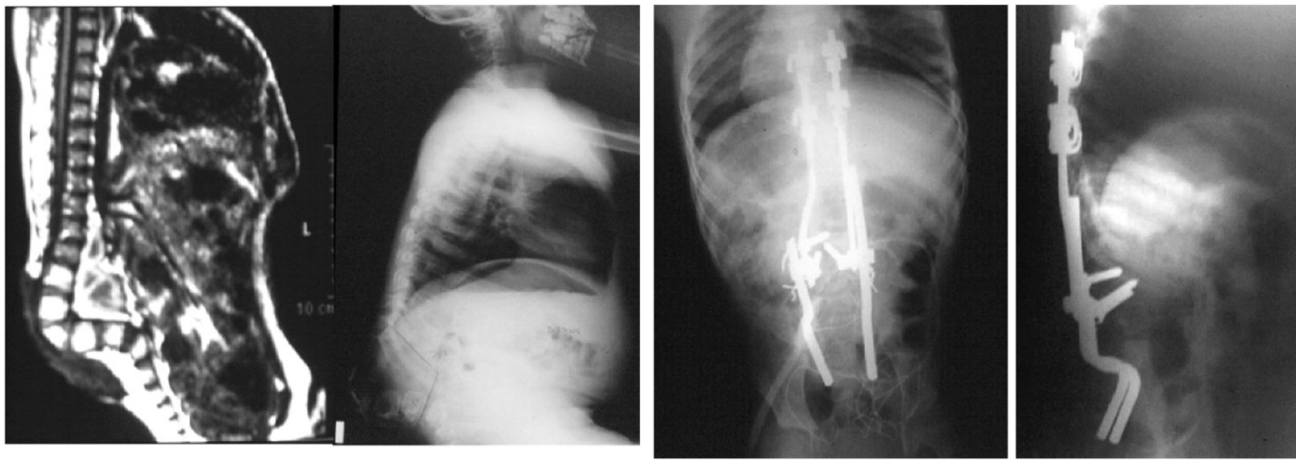
- High lumbar/low thoracic neurologic level
  - Paraplegia and kyphosis
- Severe kyphosis
  - Skin ulceration
    - Over the spine
    - Sitting surface decubiti
      - INFECTION!
  - Decreased abdominal volume
  - Restrictive lung disease
  - Sitting imbalance

- Functional dysfunction because of supporting himself with hands to sit upright

# Background

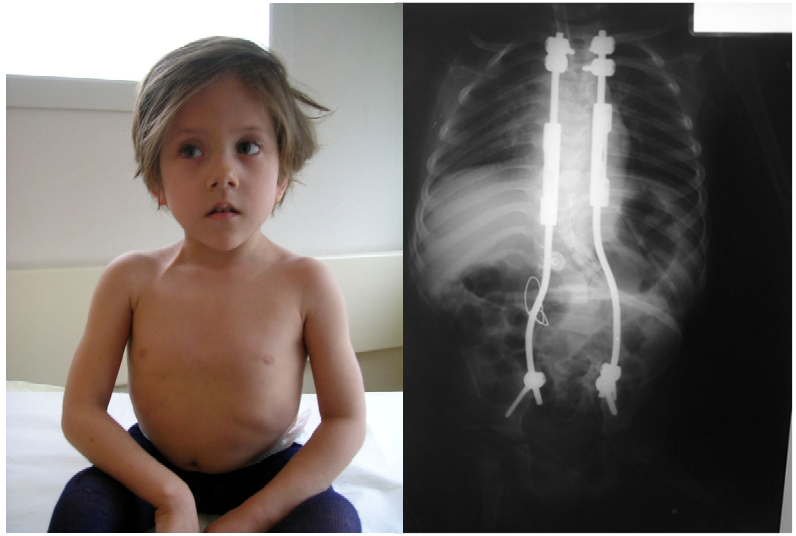
- Kyphectomy+short instrumentation
  - Prone to failure and deformity recurrence
- Kyphectomy+long instrumentation
  - Trunk shortening and thoracic insufficiency





# Introduction

- ‘Principle of included middle’
- Deformity control and growth preservation?
- Kyphectomy+GR



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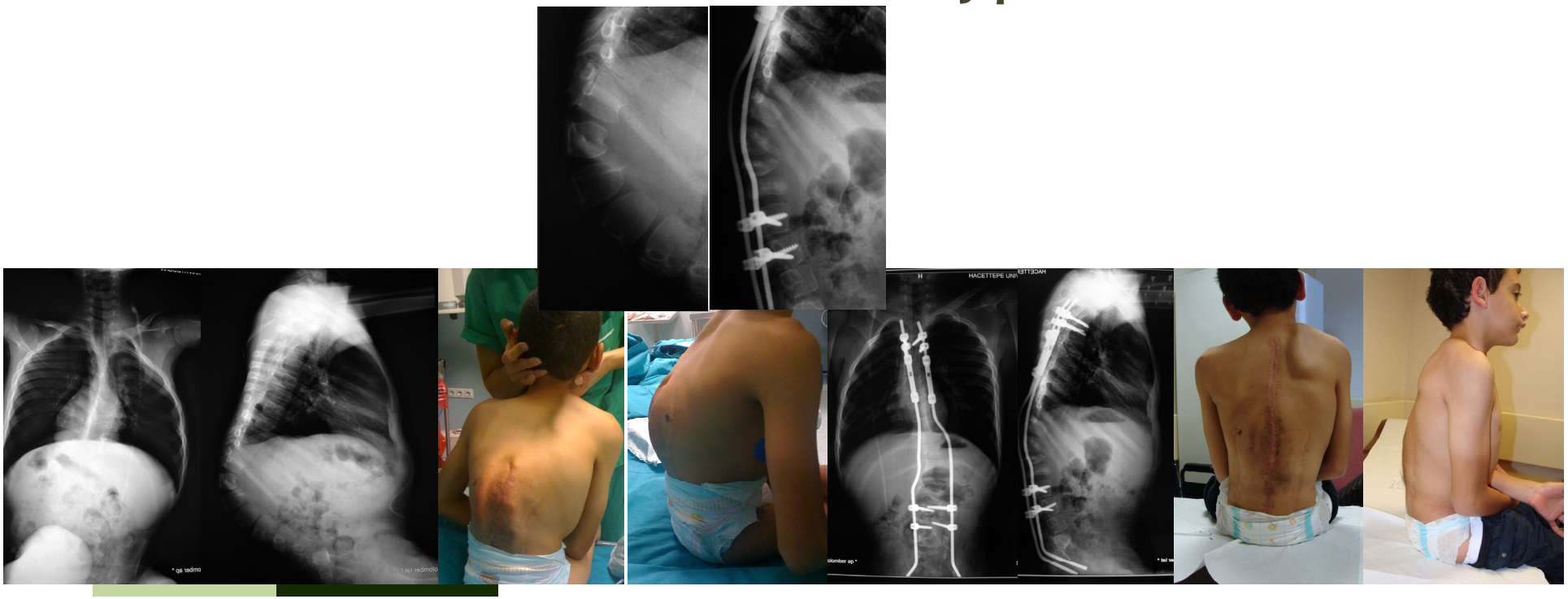
# Aim

- Efficacy and safety of GR following kyphectomy in MMC patients with pure thoracolumbar/lumbar kyphosis



# Material & Methods

- Procedure
  - Conventional kyphectomy or multiple egg-shells at apex
  - DGR, T2-3 to pelvis
  - Regular lengthening at every 6 months
- Eight patients
  - 4M, 4M
- Mean age at the time of surgery
  - 6 yo
- Mean age at latest follow-up
  - 12 yo

# Material & Methods

- X-rays
  - Pre-, post-index and final fu
    - Local kyphosis
    - Thoracic kyphosis
    - Sacral slope angle
    - T1-12 and T1-S1 heights
- Unplanned surgery, if any
  - Infection
  - Implant failure
  - Others

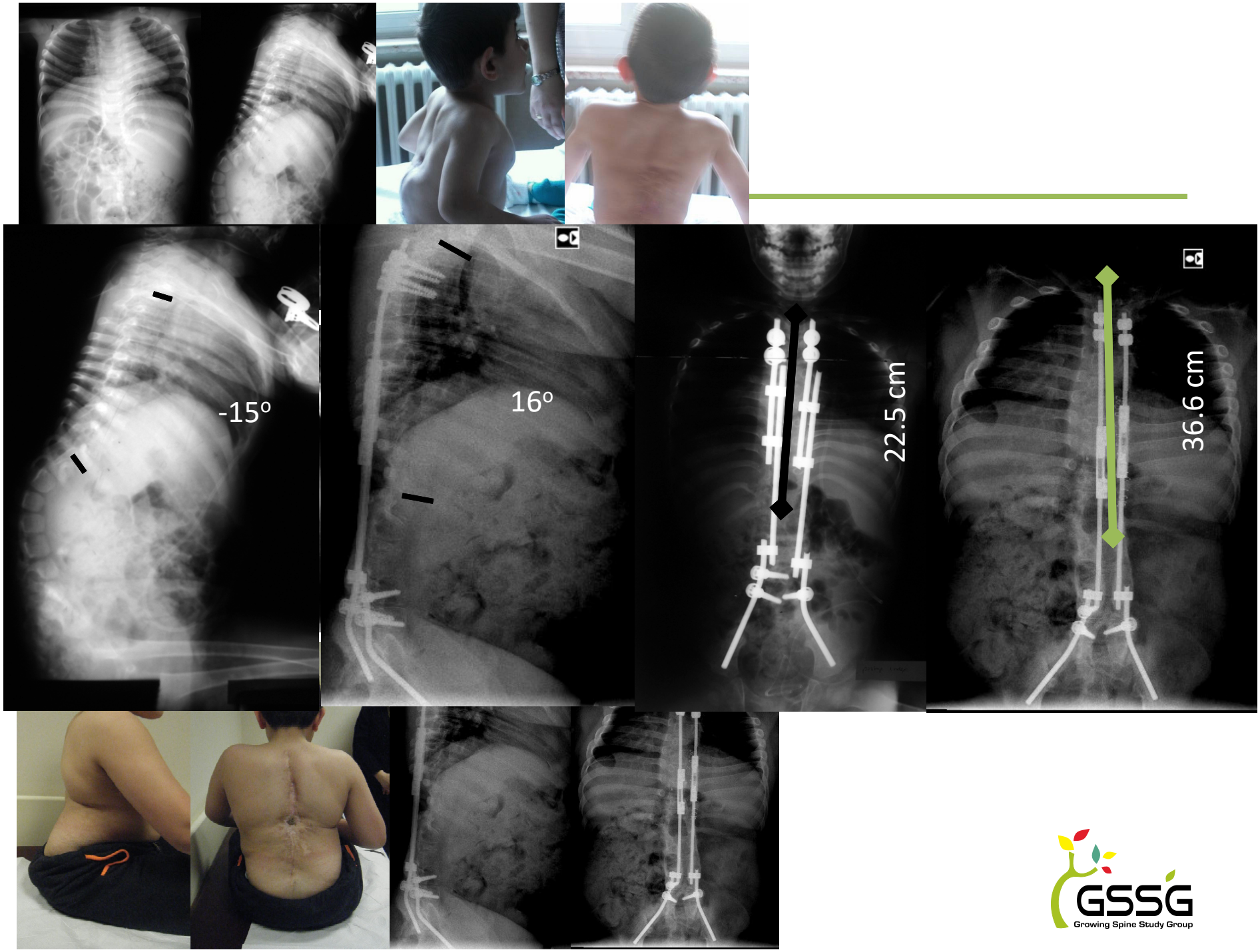
# Sagittal alignment

| | Pre-op | Post-op | Last FU |
|---|---|---|---|
| T2-12 kyph.(°) | 1 | 16.8 | 22.75 |
| Local kyph.(°) | 72.5 | 29 | 25.5 |
| Sacral slope(°) | 4.25 | 17.3 | 16.7 |

# Growth parameters

| | Pre-op | Post-op | Last FU |
|---|---|---|---|
| T1-12 height(cm) | 12.8 | | 21.4 |
| T1-S1 height(cm) | 21.2 | | 33.2 |

- Mean thoracic height per year
  - 1.6 cm
- Six out of 8 passed the 22 cm limit
  -Lengthenings continue in the remaining 2

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Growing Spine Study Group

# Complications

- No difficulty for skin healing at scarred area
- Infection
  - 4 patients
    - 2 episodes in 1 patient
    - All recovered by debridement and antibiotics
- CSF leak
  - 1 patient
- Deformity recurrence and re-osteotomy
  - 1 patient
- Implant problems required revision
  - All patients
    - During lengthening in 3 patiens
    - Unplanned surgery needs in 5 patients

# Conclusion

- Good deformity control
  - Restore thoracic kyphosis
- Maintain spinal growth
  - Especially at thoracic spine
    - Over 22 cm limits
- High complication rate
  - But all manageable
  - No need to alters the planned course of treatment

# Conclusions

- GR following kyphectomy with regular lengthening is safe, effective and growth friendly technique with manageable complications
- Principle of included middle!