

Treatment of Lumbar Stenosis in Adult Deformity

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Adult deformity Surgery

- Deformity in adults is a different disease
- AIS in adolescents is predominantly a thoracic problem
- Focus is on numbers, pain is rare
- Adult deformity is predominantly a lumbar disease
- Focus is on pain not numbers

Symptom complexes in Adult Deformity

- Most common presentation is pain
- Often Axial pain
- Pain patterns associated with deformity especially positive sagittal balance
- Significant percentage have radicular pain
- Due to accelerated degenerative change in AIS
- Primary degenerative deformity

All or nothing Surgery for Adult Deformity

- Classically it has been felt that limited surgery in deformity had too high a failure rate
- Many advocate either treating the entire structural problem or not doing surgery
- Is there a role for more limited surgery?

Literature?

- No prospective studies
- Some case series
- Mostly old studies
- No real conclusions can be drawn

Can we compare these 2 pts?



Why limited surgery?

- High morbidity and mortality of major deformity surgery in the elderly
- Presence of co-morbidities increases risk
- Osteoporosis may be a problem
- Older pts may have lower demands
- Less concern about 10-15 yr results in older pts

What patients might we consider for limited surgery?

- Older lower demand pts
- Balanced Spine
- Focal symptomatic level
- Mild to moderate deformity

Decompression alone

- Presence of scoliosis leads to less improvement in LBP after laminectomy Fraser DD Spine 1997 22(17)
- Decompression alone associated with increased deformity in 14/38 pts Charaffedine Rev Chir Orthop Reparatrice Appar Mot. 1994,80(5)
- Decompression did well scoliosis did not effect outcome Hasegai Clin Orthop Relat Res. 2001 Mar;(384):10-7
- All used laminectomy rather than more focal decompression
- Anecdotally limited decompressions may be effective

Pt example





Clinical Outcome for Limited Transforaminal Lumbar Interbody Fusion (TLIF) in Patients with Adult Scoliosis

Lavelle, Evanchick, Orr

- 40 pts with single level fusion using TLIF
- Min 1 yr f/u
- Improved curve Avg 7 degrees
- Pain score improved AVG 3.6 on 10 pt scale
- Only 1 pt needed further surgery for deformity progression
- Avg progression 0.7 degrees

Failure

- Obese pt
- Large curve
- Sudden “POP” 6 wks post op
- Widely opened L3/4 disc



Other limited options

- Intra-spinous spacers
- Designed to treat mild to moderate stenosis
- In pts with focal radicular symptoms
- In pts too frail to undergo more traditional surgery



Results

- Small number of pts(5)
- One or 2 level
- Limited f/u (only 1 pt >1yr out)
- No major complications
- 2 very satisfied
- 2 improved
- 1 leg symptoms resolved but still severe back pain

When is this not an option?

- Patients who are out of sagittal or coronal balance
- Pts where lesion cannot be localized to one or 2 levels



What to do in that circumstance?

- Decompress those levels that are tight directly or indirectly
- Balance the spine
- Instrument the entire curve

What to do at L5/S1

- Series of studies from Lenke et al
- If L5/S1 disc near normal on MRI then instrument to 5
- If degenerate fuse 5/1
- Strongly consider interbody fusion
- Strongly consider iliac fixation

How high to go

- Data very poor
- Never stop at an apex
- Generally safe to stop at L2 if you can get control of curve
- Many advocate T10





Outcomes of deformity surgery in adults

- Very little in literature
- Alpert 95 used SF-36 and showed pts did well with surgery
- Hozak 97 compared THA to scoliosis Sx and found scoliotics felt healthier pre-op but were worse off post-op

Outcomes

- Dickson 95 compared those treated surgically with those who refused surgery and controls.
Controls > Sx > no treat
- Complication rates with Sx up to 50%
- Grubb 94 AIS did better than Degen scoli
- SIG 00 no correlation between correction and outcome

Outcomes

- If fusing to sacrum combined A/P approach is required Kostuik showed Pseud rates decreased from 83% to 3% between 76 and 97 d/t improved inst and routine use of combined approach

Outcomes

- Revision surgery may not have higher complication rates than primary and may have similar or in fact better outcomes (Lapp 01)
- Lenke et al reported results of fusion to L5 vs fusion to sacrum 23% pseudarthrosis vs 21 % distal degeneration

Approach to Surgery for Stenosis in Adult Deformity

- In younger healthier pt generally opt to treat the entire deformity
- If out of balance then either treat entire deformity or do not operate
- If older and balanced look to see if focal problem
- Decompression only????
- Focal fusion
- Intraspinous spacers may be a salvage