

Does Posterior Pedicle Screw Supplementation Without Posterolateral Fusion Improve Anterior Lumbar Interbody Fusion When Using Anterior Cage And Screw Constructs? – A Radiological Study

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No Conflicts of Interest

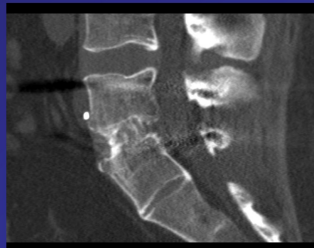
No Financial Gain

Melbourne, 2011

Introduction

- Spinal fusion remains the gold standard ***surgical*** treatment for degenerative LBP
- Type of fusion...???

the gold standard



International Orthopaedics (SICOT) 28: 294-297
DOI 10.1007/s002400140054
ORIGINAL PAPER
M. A. El Masry · W. S. Badawy · P. Rajendran · D Chan
Combined anterior interbody fusion and posterior pedicle screw fixation in patients with degenerative lumbar disc disease



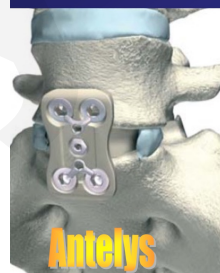
- 47 patients treated by ALIF with autogenous structural graft and posterior pedicle screw fixation without posterior fusion
- 97% fusion rate at 2 year follow up (XR)
- 72% satisfactory clinical outcome
- (fusion ≠ improved outcome !!)

Why Change Practice?

- Autogenous graft shape and strength variable
- Donor site morbidity?
- The new implants...

Stand Alone ALIF Cages

- Utilise anterior screws which anchor the cage to the vertebral bodies
- Increase stability...
- Obviate the need for a posterior procedure?



Change In Direction

- STALIF cage autogenous graft
- Mid 2006 noted high rate of locked pseudarthroses especially in 2 level cases
- Recommended posterior pedicle screw stabilisation without posterolateral fusion
- ALIF with allograft (bone bank established)
- All lytic spondylolisthesis had AP surgery – deemed to be more unstable

Aim / Objective

- To assess the effect of posterior pedicle screw supplementation without posterolateral fusion on the fusion rate of ALIF when using anterior cage and screw constructs

Material and Method

- 2003 to 2008 single surgeon cohort of 90 patients
- Routine CT >6 months to 2 years FU
- 76 / 90 (84%) CT follow up mean 21 months (sd12)
- 38 cage / autograft **44 Ant**
- 6 cage / allograft
- 13 cage / autograft and pedicle screws **32 AP**
- 19 cage / allograft and pedicle screws
- 60 DDD (29 x 1 level, 31 x 2+ levels)
- 16 Lytic SPL (11 x 1 level, 5 x 2 levels)

Results

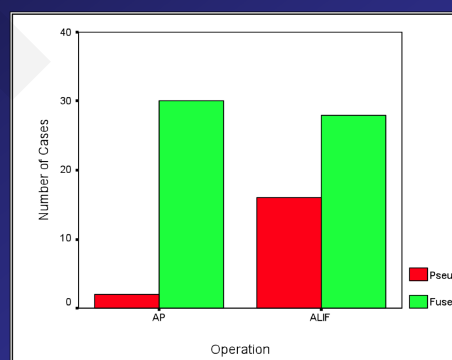
- Mean age 44yrs (sd10)
- 37 Males : 39 Females
- 9 had previous discectomies (9/76=12%)
- 18 had previous surgery (18/76=24%)
– 2 Instrumented

Results

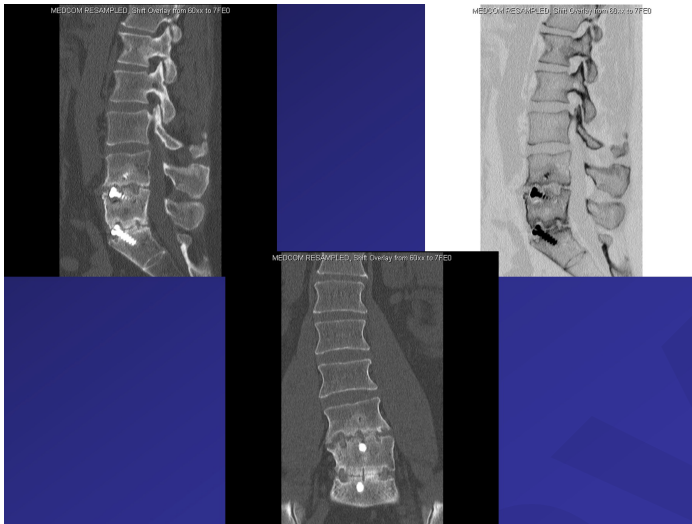
All	Cases	%	Pseudoarthrosis	%	Fusion rate (%)
Anterior alone	44		16/44	36	64
1 level	25	57	6/25	24	76
2+ levels	19	43	10/19	53	47
Front back	32		2/32	6	94
1 level	15	47	1/15	7	93
2+ levels	17	53	1/17	6	94

- 41 STALIF (16 pseud)
- 3 Synfix
- 18 STALIF + Posterior (2 pseud)
- 14 Antelys + Posterior

Fusion Rate vs Procedure



p=0.002



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Supplementary Stabilization With Anterior Lumbar Intervertebral Fusion—A Radiologic Review

Naffis K. Anjarwalla, MS, FRCS (Tr & Orth),* Russel K. Morcom, MBBS, FRANZS,† and Robert D. Fraser, MD, MBBS, FRACS*

	ALIF	Translaminar Screws	Unilateral Pedicle Screws	Bilateral Pedicle Screws
No. patients	25	15	17	24
No. levels	31	24	28	34
No. patients with fusion (%)	8 (32)	7 (47)	14 (82)	21 (88)
No. levels fused (%)	16 (51)	14 (58)	25 (89)	30 (88)

- Anterior fusion with PEEK cage and autogenous graft improved with posterior instrumentation (without posterior fusion)
- No anterior screw fixation

- Reasonable cohort with good follow up
- Radiological study
 - Need clinical information
- Graft material different but allograft seems to do just as well and better in AP group
- Pseudarthrosis ONLY occurred when STALIF implant used
 - Number of anterior screws used?
- Bias – SPL cases included

Strengths and Weaknesses

Conclusion

- Results similar to Fraser (no ant screws)
- Stand alone anterior cage screw constructs may not increase fusion rate on CT
- High non union rate in > 1 level stand alone ALIF
- Non fusion posterior instrumentation seems to improve fusion rate through the anterior cage

Conclusion

- Change in practice:
 - 2 level fusion = AP surgery
 - Allograft exclusively
 - ? Stand alone ALIFs confined to L5/S1, low body mass index and good bone density



- An indication for minimally invasive spinal surgery - Image guided percutaneous non fusion posterior supplementation to an ALIF

