Minimally invasive approaches for lumbar interbody fusion surgery in adults suffering from degenerative lumbar disease: real world data at 1-year follow-up from a global study

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Objective

Choice between anterolateral versus posterior minimally invasive (MI) lumbar interbody fusion (LIF) in degenerative lumbar disease (DLD) patients

Comparison of :

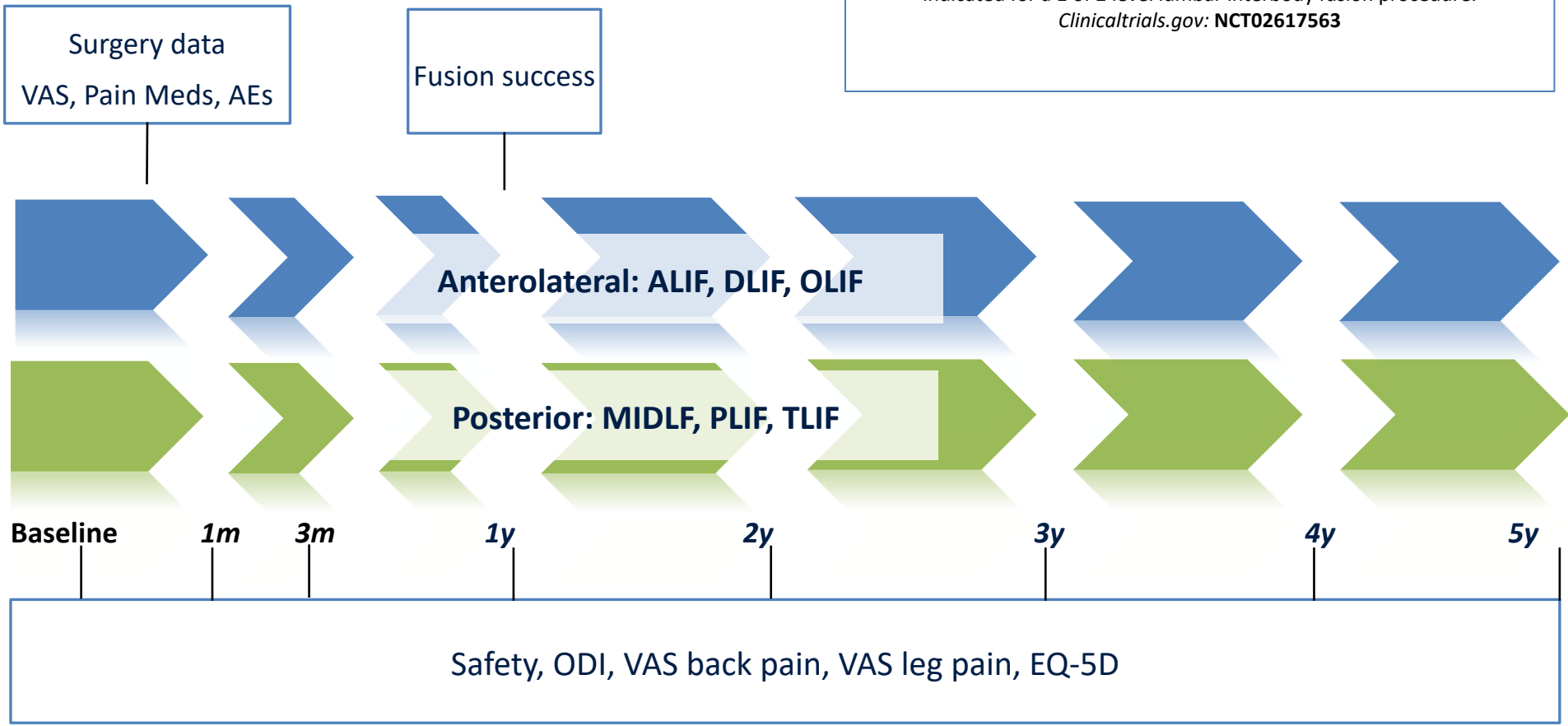
- mid-term patient reported outcomes (PROM)

- fusion rates at 1-year follow-up

for different surgical approaches using either ALIF, DLIF, OLIF, PLIF, TLIF or MIDLF.

Study design

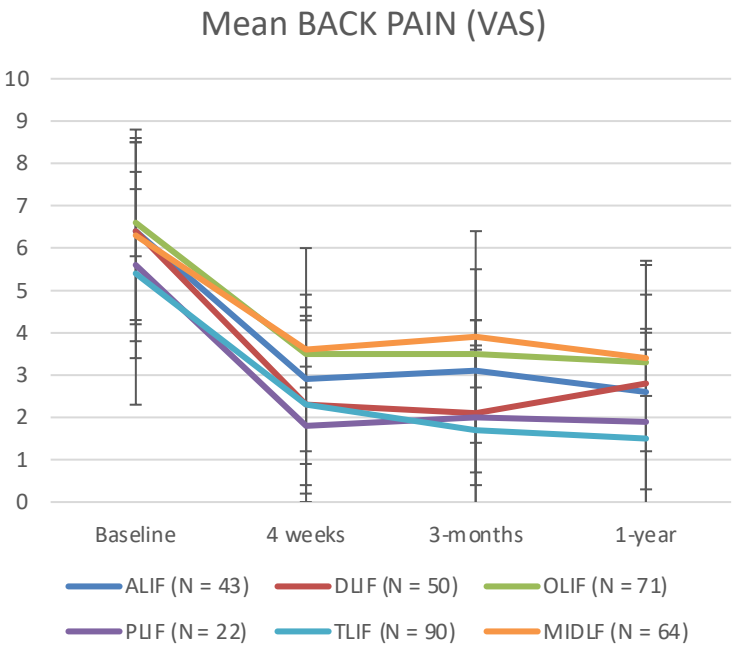
MASTERS-D 2: ongoing, prospective, global, long-term follow-up study investigating MIS/MAST technologies in adults with degenerative disc disease indicated for a 1 of 2 level lumbar interbody fusion procedure.
Clinicaltrials.gov: **NCT02617563**

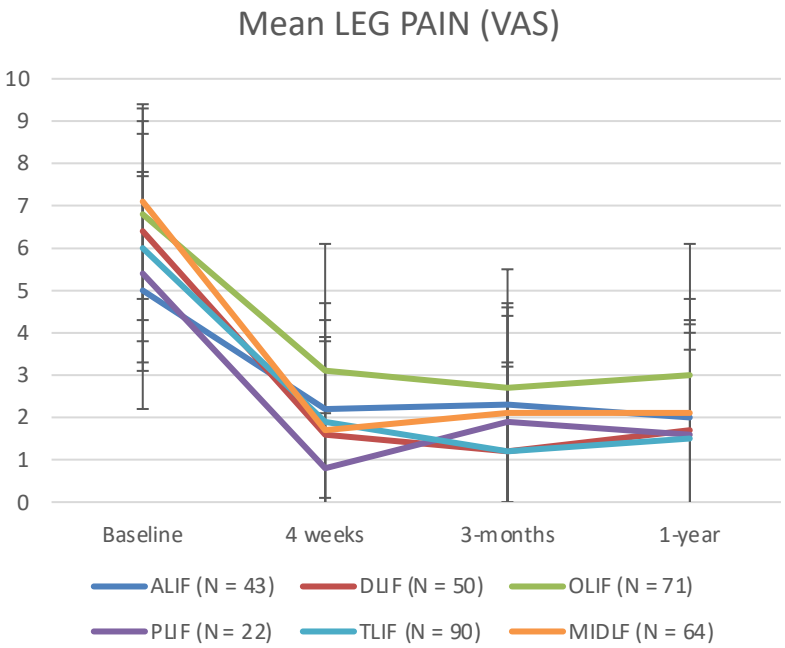


Preoperative demographics

	Surgical approach					
	Anterolateral			Posterior		
	ALIF (N = 43)	DLIF (N = 50)	OLIF (N = 71)	PLIF (N = 22)	TLIF (N = 90)	MIDLF (N = 64)
Age, years; Mean ±SD	49.4 ±9.5	59.5 ±9.0	60.5 ±9.2	54.5 ±10.8	60.3 ±11.2	61.4 ±10.6
Females %	46.5	54.0	74.6	50.0	58.9	67.2
BMI; Mean ±SD	26.8 ±4.2	29.4 ±5.6	27.0 ±4.3	28.9 ±5.0	25.5 ±3.5	27.7 ±5.1
Conservative care, months; Mean ±SD	33.1 ±33.8	21.9 ±28.4	26.1 ±23.9	10.4 ±10.4	17.8 ±23.5	26.4 ±27.0
Tobacco use %	41.9	20.0	14.3	27.3	22.2	9.4

Pain (VAS)



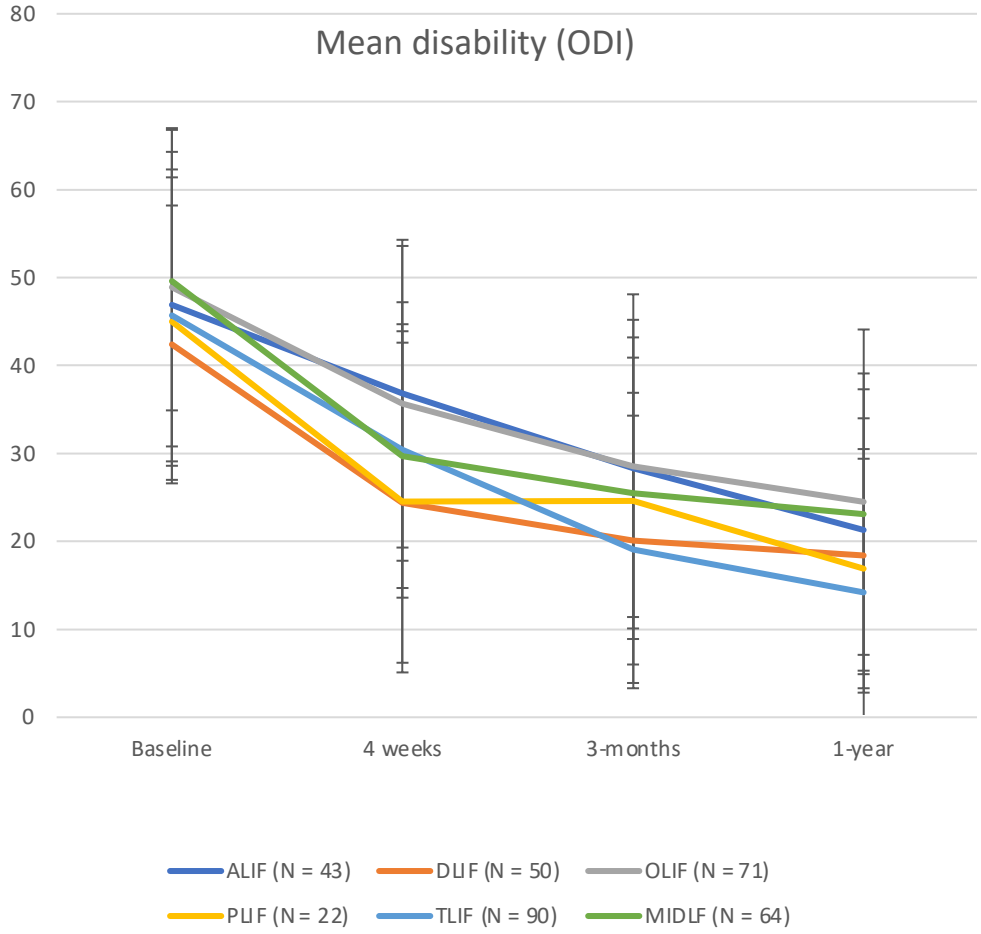


Significant improvement in all groups; 1-year compared to baseline: $p<0.001$

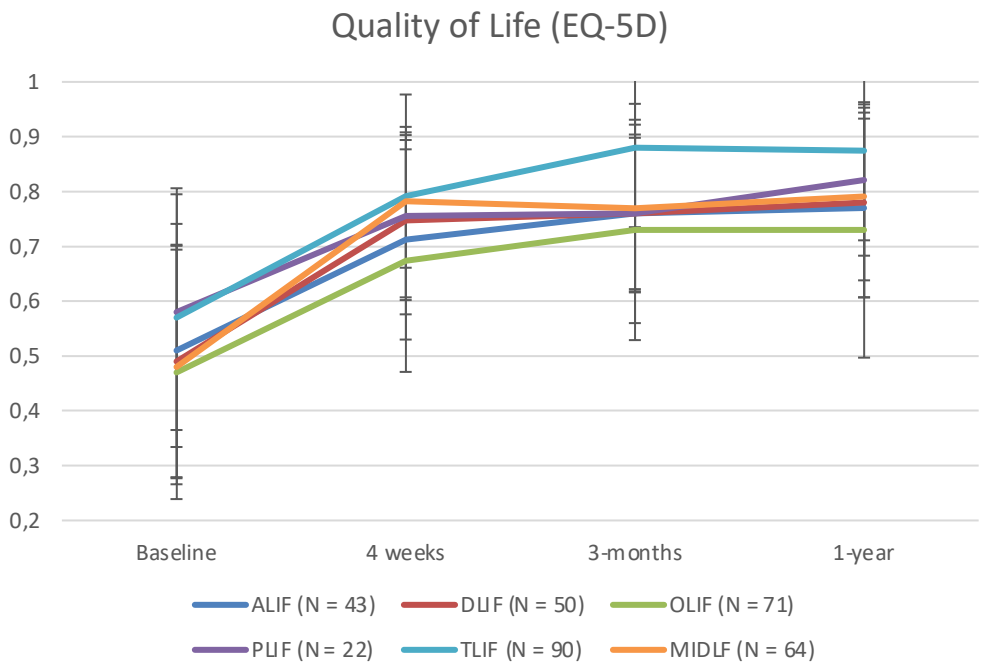
Oswestry Disability Index

Significant improvement between pre-op and 1-year FU for each technique ($p<0.001$)

Non-significant variability between groups



Health-related quality of life (EQ-5D)



Significant improvement in all groups; 1-year compared to baseline: $p<0.001$

Fusion rates at 1-year FU

	Surgical approach					
	Anterolateral			Posterior		
	ALIF (N = 43)	**DLIF (N = 50)**	**OLIF (N = 71)**	**PLIF (N = 22)**	**TLIF (N = 90)**	**MIDLF (N = 64)**
N (%)	19/24 (79.2%)	27/34 (79.4%)	50/51 (98.0%)	13/13 (100%)	29/35 (82.9%)	32/39 (82.1%)
Patients fusion status assessed; N (%)	24/43 (55.8%)	34/50 (68.0%)	50/71 (70.4%)	13/22 (59.1%)	35/90 (38.8%)	39/64 (60.9%)

Overall fusion rate >79% but limited availablity of CT assessment (effect of Covid-19)

Conclusions

Anterior and posterior MI fusion techniques ALIF, DLIF, OLIF, PLIF, TLIF or MIDLF are both effective in improving pain, disability and QoL at 1-year FU in degenerative lumbar disorders.

Slight superiority of TLIF on leg pain, ODI and EQ-5D : eventual effect of direct versus indirect decompression

Systematic assessment of fusion rates on CT at 1-year FU limited by COVID-19 pandemic