

# Comparing Cortical Trajectory TLIFs Against Pedicle Trajectory TLIFs and Posterolateral Fusions

*A Retrospective Cohort Study  
of 90 Day Outcomes*



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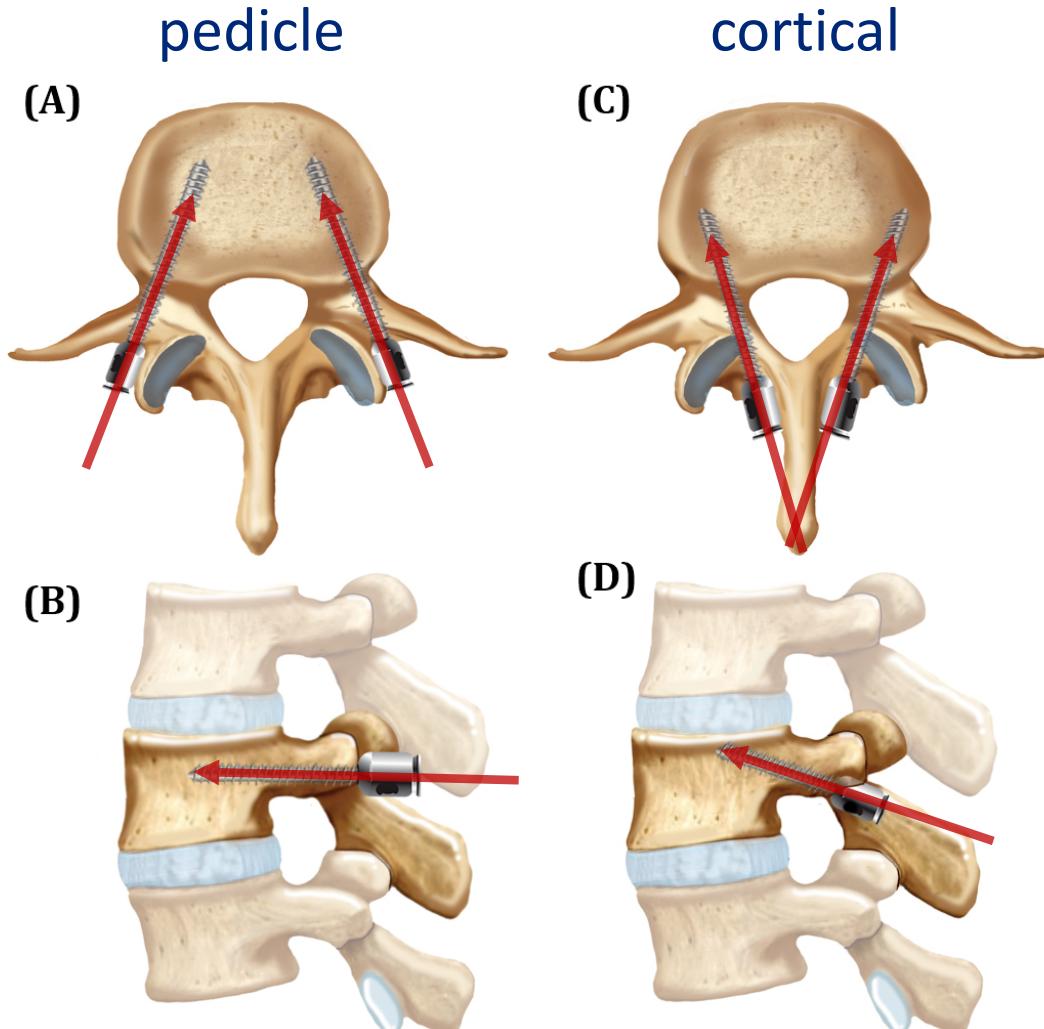
EMORY



# Disclosures

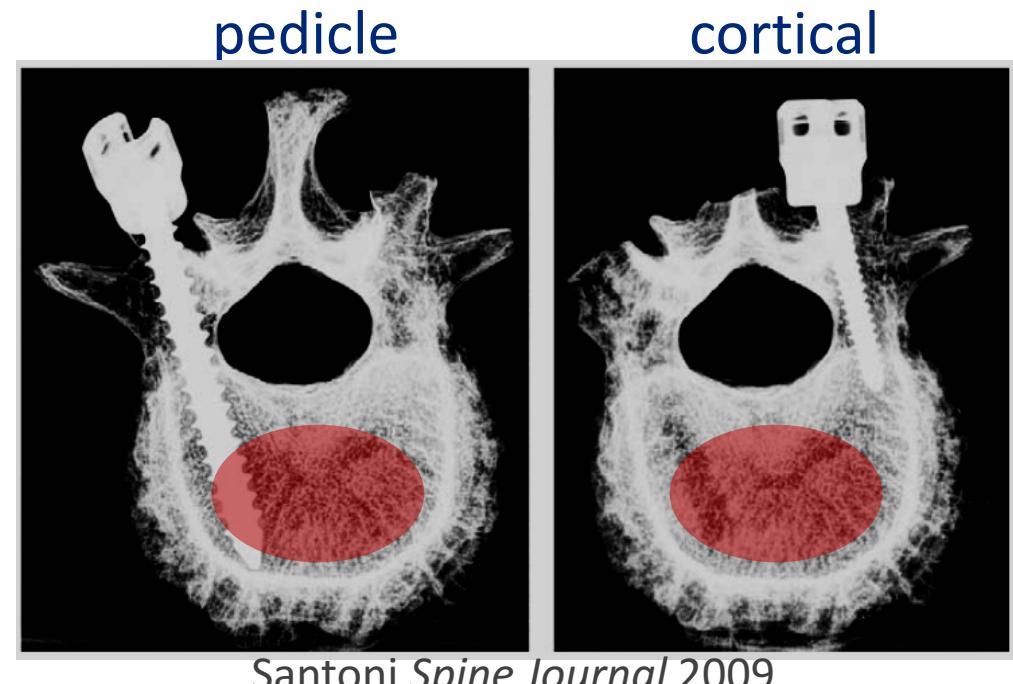
- Dan Refai – Stryker Spine, royalties
- Faiz Ahmad - DePuy-Synthes and Medtronic, consulting

# Cortical Trajectory



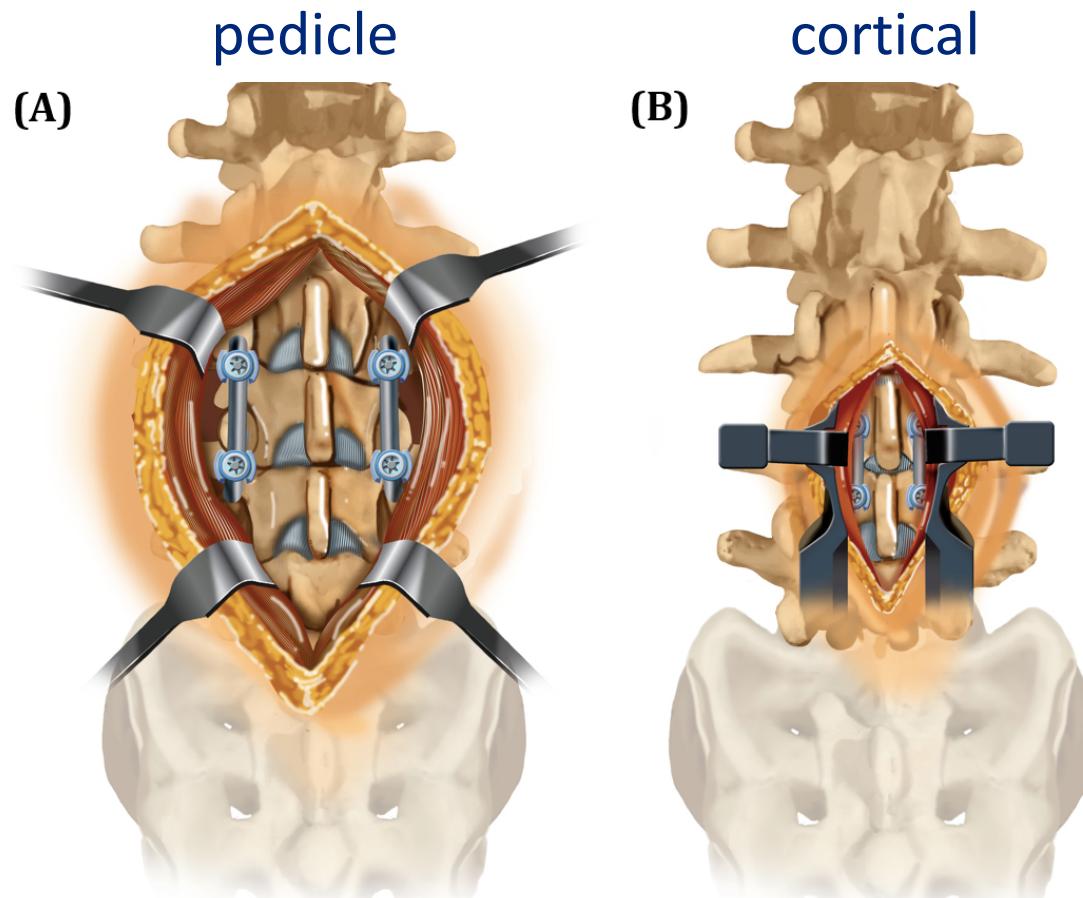
Chen Cureus 2016

- Alternate to traditional pedicle trajectory
  - Medial-to-lateral
  - More cortical bone purchase
  - Avoids trabecular bone



# Cortical Trajectory

- Less lateral dissection and retraction



Chen Cureus 2016

# Methods

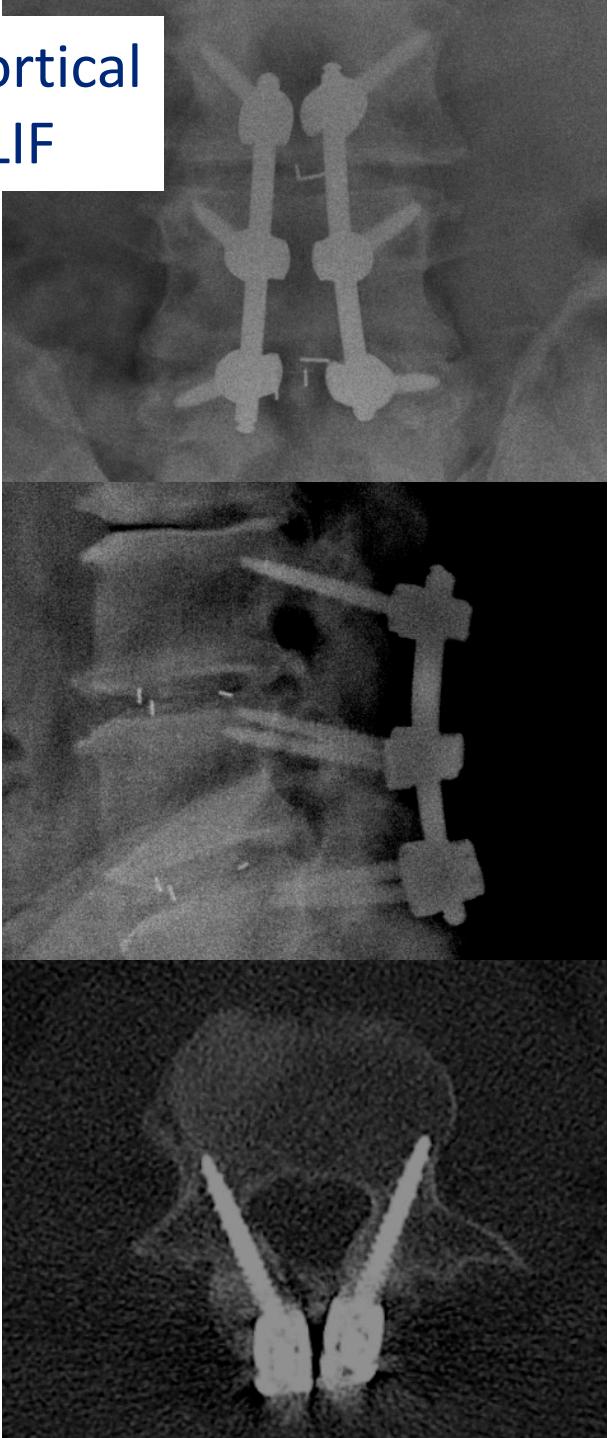
## Design

- Retrospective
- Patients of Dan Refai
  - 2010-2017
- Three cohorts:
  - Cortical trajectory TLIFs
  - Pedicle trajectory TLIFs
  - Posterolateral fusion (PLF)

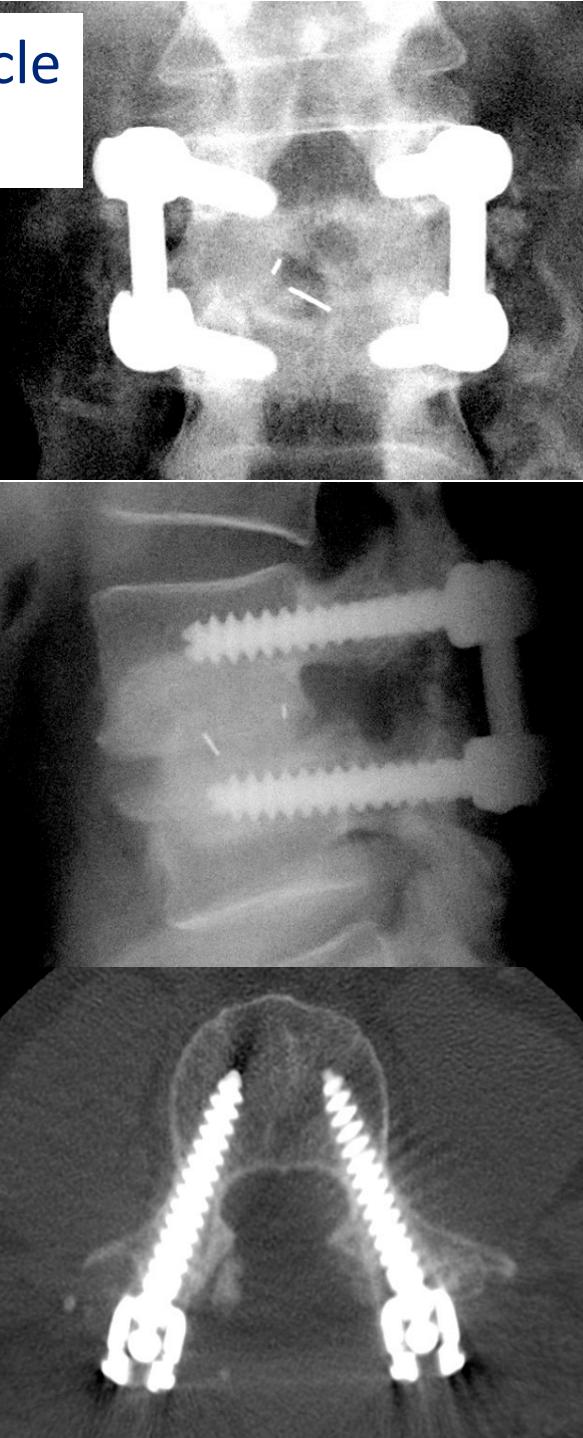
## Outcomes

- Perioperative variables
  - Estimated blood loss
  - Transfusions
  - Operative time
  - Length of stay
  - Disposition (home, rehab)
- Complications
  - Perioperative
  - 30-day
  - 90-day

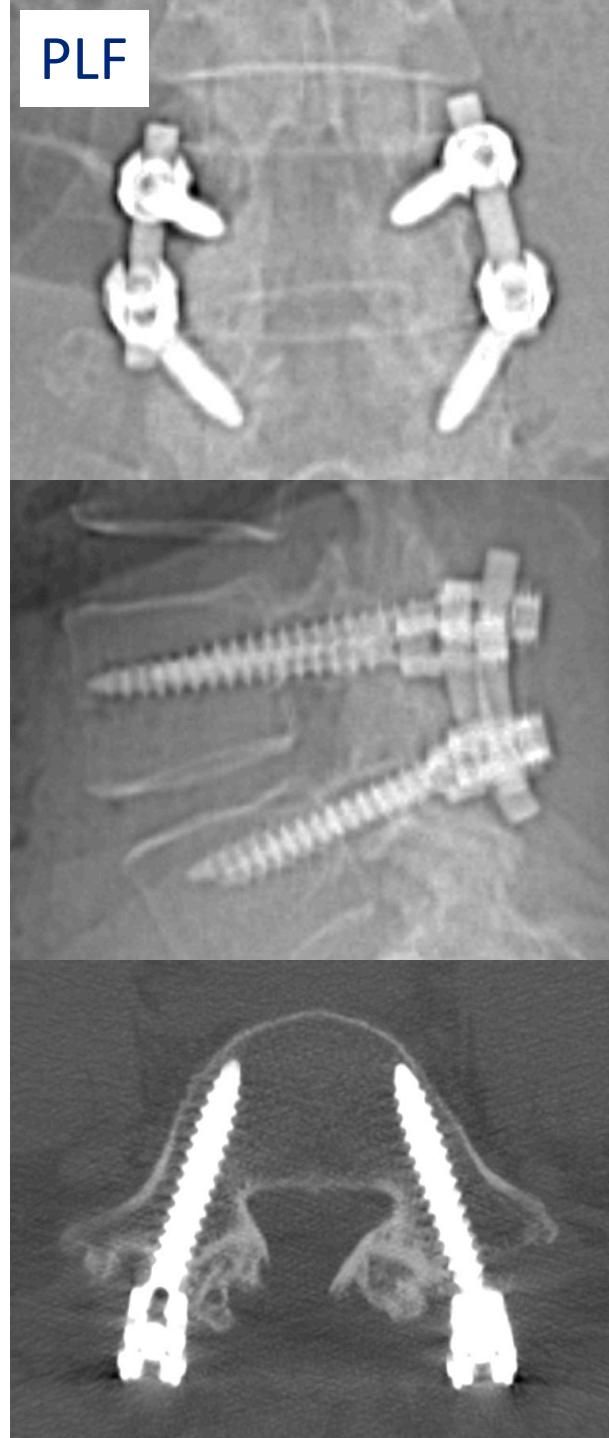
cortical  
TLIF



pedicle  
TLIF



PLF



# Demographics

	Total	Cortical	Pedicle	PLF
Patients	118	45	35	38
Female/Male	74/47	25/20	28/7	18/20
Age (years)	62 ± 10	63 ± 9	57 ± 11	64 ± 10
BMI (kg/m)	28 ± 6	28 ± 5	27 ± 4	29 ± 6
Smokers	16 (14%)	9 (20%)	3 (9%)	4 (11%)
Diabetics	14 (12)	7 (16)	1 (3)	6 (16)
Osteoporosis	12 (10)	5 (11)	3 (9)	4 (11)
Cancer	8 (7)	3 (7)	1 (3)	4 (11)

# Perioperative Variables

	Total (n=118)	Cortical (n=45)	Pedicle (n=35)	PLF (n=38)	p-value
EBL (ml)	343 ± 261	231 ± 186	424 ± 315 <sup>a</sup>	400 ± 241 <sup>b</sup>	0.0009
Transfused	22 (19%)	1 (2)	14 (39)	7 (18)	<0.0001
OR time (min)	228 ± 72	214 ± 61	262 ± 71	211 ± 77	0.0026
LOS (days)	5.1 ± 3.2	4.3 ± 1.6	4.8 ± 1.7	6.2 ± 4.9	0.0161
Home / Rehab	94 / 24	49 / 5	28 / 7	26 / 12	>0.05

Significant pairwise differences (Tukey test)

# Complications

	Total (n=118)	Cortical (n=45)	Pedicle (n=35)	PLF (n=38)	p-value
Overall	24	8	8	8	>0.05
Perioperative	20	7	7	6	>0.05
Durotomy	14	7	4	3	>0.05
Within 30 days	3	1	1	1	>0.05
Within 90 days	1	0	0	1	>0.05
Wound healing	4	1	1	2	>0.05

No differences in complication rates

# Discussion

- Only one clinical study has comparing to pedicle (Lee 2015)
  - Similar fusion, reduced OR time & EBL
  - Our findings confirm this
- Blood loss & transfusions are related
  - Reduced cost, fewer complications
- OR time
  - Cortical was not slowed down by intraop imaging
  - Significant time spent dissecting for pedicle & PLF
  - Disc space prep for both TLIF groups
- Length of stay
  - Pain from larger dissections
- Limitations
  - Spanned 2010-2017
  - Surgeon experience



# Conclusions

- Cortical screws require less dissection
  - EBL & transfusions reduced
  - OR time less than pedicle due to less dissection despite disc prep
  - LOS & rehab less likely due to reduced pain & muscle disruption
- Next steps
  - Compare fusion, subsidence, & correction at one year
  - Control for surgeon experience (time)