

# IMPRESSIVE OUTCOMES OF POSTERIOR LUMBAR INTER BODY FUSION WITH NARROW 9MM WIDTH CAGES.



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### RESEARCH OBJECTIVE

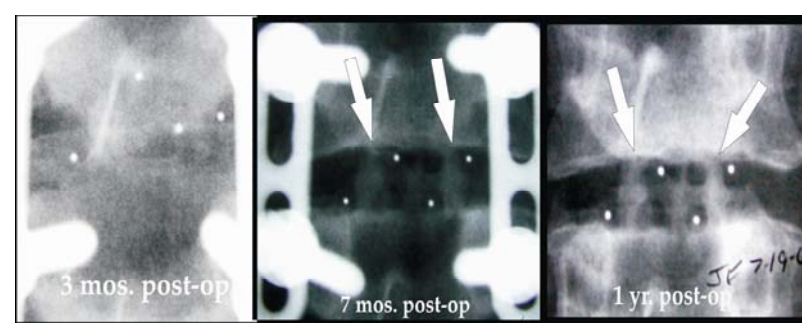
Evaluate the success of these narrow cages for possible limitations and to understand design parameters for interbody fusion devices in general.

### INTRODUCTION

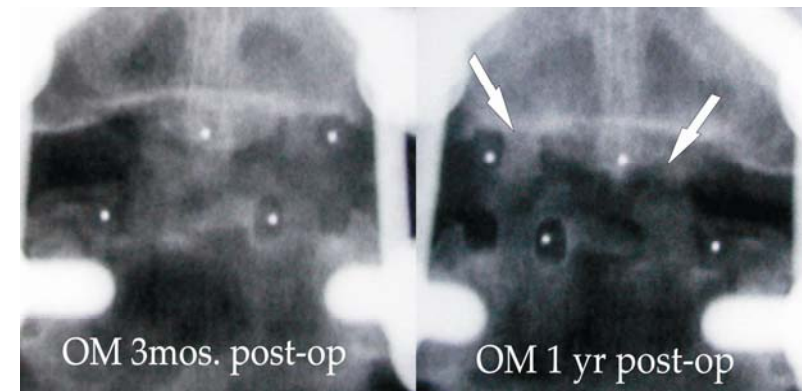
Posterior lumbar interbody fusion (PLIF) using the Lumbar I/F Cage and posterior pedicle screw fixation has increased the successful fusion rate to nearly 100% in the lumbar spine. In the design of the cage, only the surface area of the opening for bone graft contact with the endplates varied with the width of the cage. In some instances, when space is limited, the 9 mm width cages may be the largest size that can be used. With the 9 mm cages, bony healing is potentially compromised by the smaller surface area of bone graft.

### METHODS

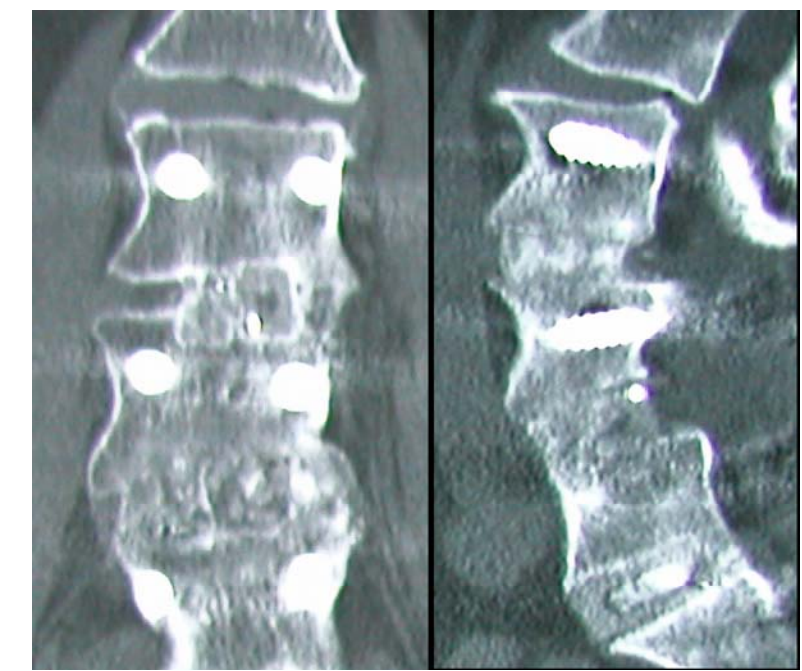
From February 1999 to October 2003, we performed PLIF using the cages and pedicle screw instrumentation on 425 patients in our practice. There were 90 consecutive patients from this larger group in whom 9 mm cages were used in at least one operative level. Follow-up was achieved in all 90 patients at a minimum of two years after surgery (mean=36 months, range 24-



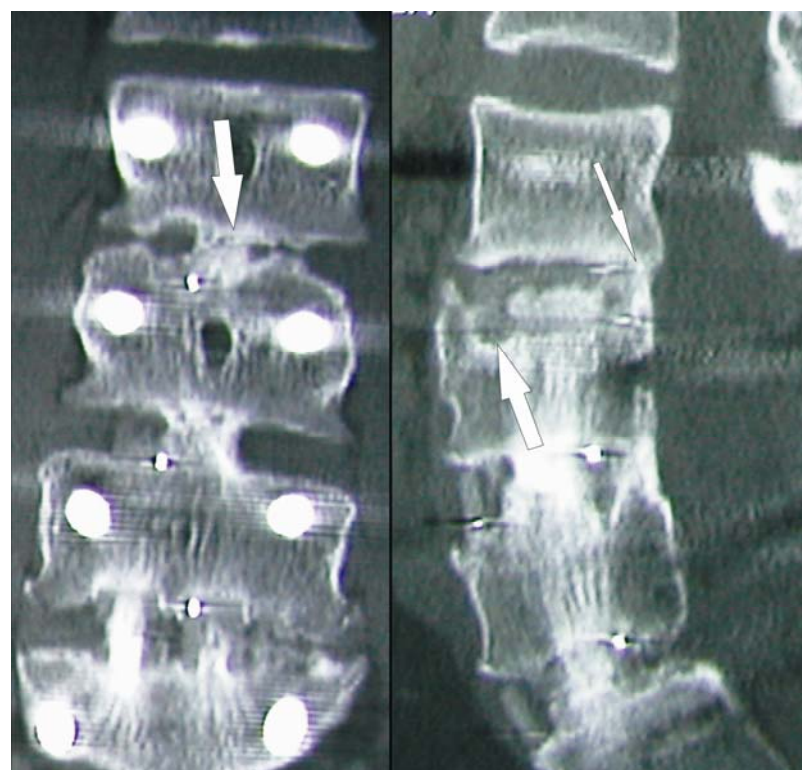
Serial Ferguson views of two 9mm cages demonstrate progression to excellent fusion at 1 year on radiographs. Arrows demonstrate bridging bone across the interspace through the cage.



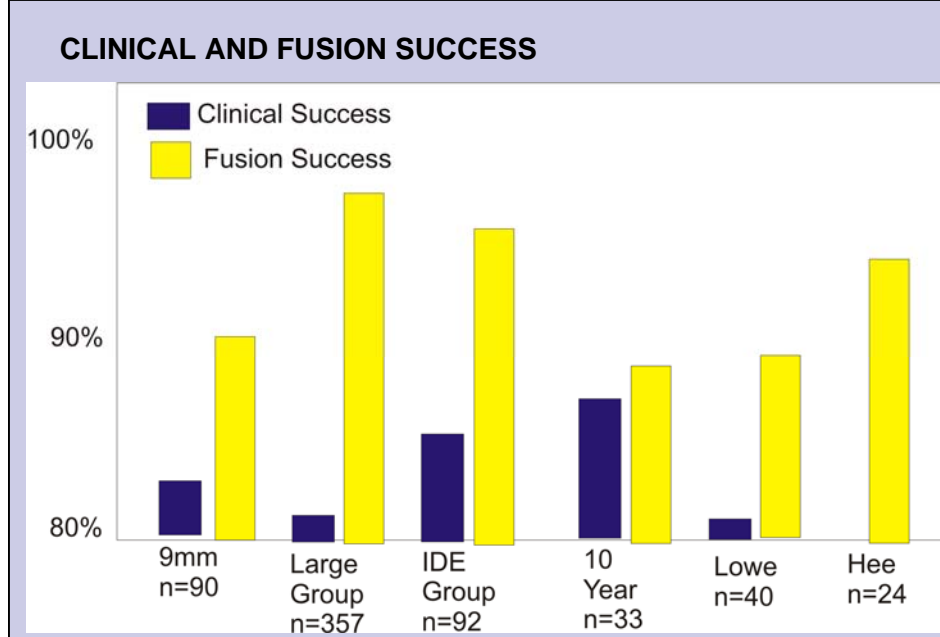
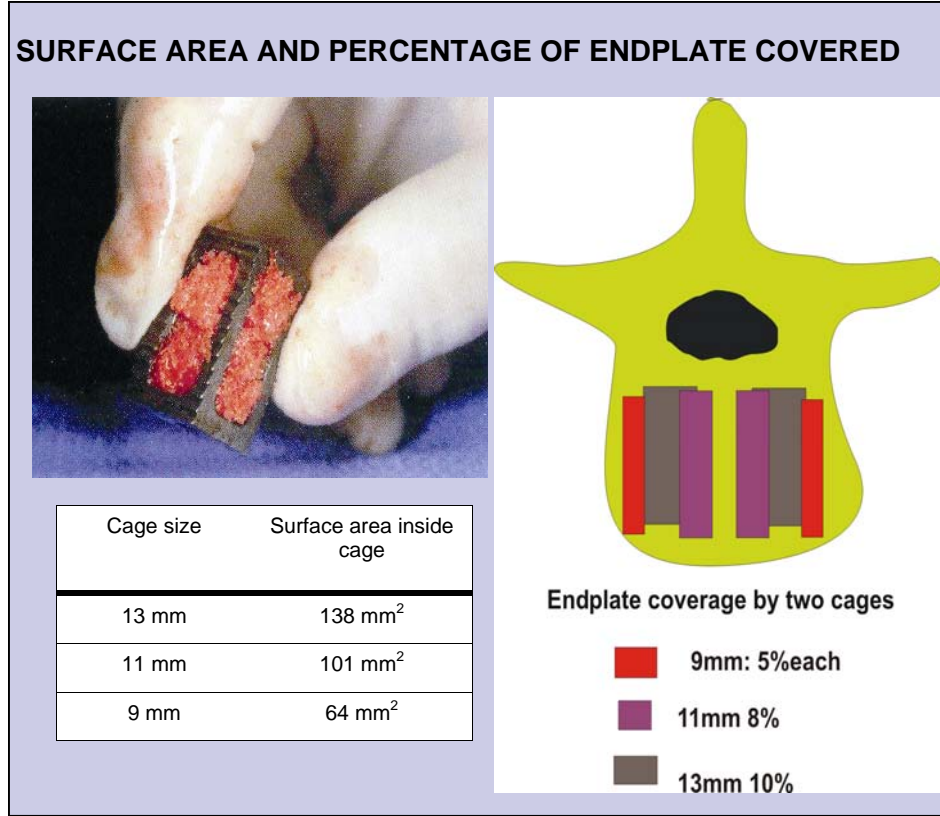
locked pseudarthrosis with lucency through mid-substance of each interbody graft. Arrows point to bridging bone interrupted by lucency at one year post-op. This was a healed fusion at exploration.



Helical CT at 9 months shows bridging bone across interbody space at L1-2 and L4-5.



Non healed fusion with subsidence into the L3 body and lucency between graft and endplate of L2-3 on lateral. AP L2-3 has bridging bone across interbody space, with a single 9mm cage.



### RESULTS

90 patients had PLIF with 9 mm Lumbar I/F cages and VSP at a fusion level. Minimum follow-up was 24 months. Seventy-five patients (83%) had clinical success, and fifteen (17%) were clinically unsuccessful. Fusion was successful in 82 patients (91.1%) treated with the 9 mm cages.

### CONCLUSIONS

- 90 patients had 9 mm cages implanted in at least one level.
- Clinical success was 82% and not statistically different from the larger group or the IDE study.
- Fusion success was 91.1%, 5% significantly lower than the larger cages (p=0.039)
- Mechanical failure did not occur with the 9 mm cages.
- The lower fusion success rate with the 9 mm cage is likely due to smaller surface area of bone graft inside the cage.
- Surgeons should routinely use bilaterally placed cages of maximal width allowable and should fill the disc space with as much autologous graft as can be placed.

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