Minimally Invasive Transforaminal Lumbar Interbody Fusion Using a Novel Autograft Bone Collector is a Cost-Saving Alternative Method for Spinal Fusion Surgery

Mick Perez-Cruet, MD, MSc1,2, Esam Elkhatib, MD1, Katie Mansour MD1, Rarnesh Mehra D.O.1

1Beaumont Health System; Royal Oak, Michigan, USA, 2OU-WB; Rochester, Michigan, USA.

• BACKGROUND

Lumbar spinal fusion surgery is performed to alleviate debilitating back pain symptoms due to a variety of spinal conditions including spondylolisthesis with or without spinal stenosis.

The sources of bone graft can include an autograft, allograft or bone substitutes.

The BoneBac Press was developed to collect drilled local bone collected during the decompression and or approach.

• OBJECTIVE

This study analyzed the cost savings and effectiveness of collecting local bone, need for additional allograft, and fusion rates while performing minimally invasive transforaminal lumbar interbody fusion (MITLIF).

• METHODS

A retrospective analysis of 93 patients who received MITLIF (using Thompson MIS TLIF system).

One level MITLIF was performed using the system in 95% of patients.

The amount of local autograft collected using the BoneBac Press was recorded and the additional allograft supplement.

The cost of each surgery was estimated based on the allograft savings.

• RESULTS

The average autograft volume collected was:

- 8.01 cc/case.

A total of 753 cc collected over the 93 patients analyzed.

The percentage of autograft to allograft used ranged from: 42% - 333%.

The vast majority of cases used 2/3 autograft to 1/3 allograft.

Post operative CT showing autologous graft material placed posterolaterally to reconstruct laminar defect and promote posterolateral arthrodesis.

Cost savings range:

- $1820.00 to $6145.50 per case.

- With an average $4965.43/case cost savings.

- The estimated total savings for this series was $342,615.00.

• CONCLUSION

A greater than 95% fusion rate was achieved at 12 month.

No patient returned to OR for revision surgery at the MITLIF level.

The use of BoneBac Press harvested morselized autografts with or without supplemental allograft to achieve MITLIF is an extremely cost effective method of achieving high rates of spinal fusion.

Further multi-center prospectively randomized trials might provide additional cost benefits and improvements in patient generated outcomes.

For additional information please contact: Mick Perez-Cruet MD, MSc
Professor of Neurosurgery
William Beaumont School of Medicine
Oakland University, USA
perezcruet@yahoo.com