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Clinical Outcome And Patients Satisfaction Level In Decompression Of Degenerative Lumbar Stenosis With Ultrasonic Bone Scalpel

[1]HL Teng; [2]Azizul Akram bin Salim,[3] Mohd Imran Yusof
[1]Hospital Universiti Sains Malaysia

INTRODUCTION:

Lumbar spinal stenosis arises from the intervertebral disc, capsule, bone, and ligament, with decompressive surgery being the gold standard treatment. The Ultrasonic Bone Scalpel (UBS) is a recent advancement that cuts bone while preserving soft tissues, by converting electrical energy to mechanical energy. This study evaluates the clinical outcomes and patient satisfaction following UBS use in lumbar decompression surgery.

METHODS:

The study retrospectively analyzed patients with degenerative lumbar spinal stenosis who underwent decompression surgery using UBS at HUSM (May 2016 – May 2021). Data on demographics, complications, surgery time, blood loss, and hospital stay were collected from medical records. Postoperative outcomes, including pain and function, were assessed using the MacNab score at a six-week follow-up.

RESULTS:

A total of 60 patients were included in this study. 41 patients were more than 60 years (68.3%), and 19 were less than 60 years (31.7%). The mean for blood loss, operation time, and length of stay in the hospital were 502mls, 199.84 minutes, and 8.58 days. The majority had no intraoperative complication, and two patients (3.3%) had dura tears. Patients' satisfaction level with MacNab score were equal for favourable and unfavourable groups.

DISCUSSIONS:

The main challenge of spine operations is intraoperative hemorrhage. Uncontrolled bleeding leads to poor visibility, potential soft tissue injury, longer surgical time, and increased hospital stay. UBS helps reduce blood loss due to its coagulation effect while cutting bone. It generates less vibration and torque, provides precision, reducing risk of neural and dural injuries. Compared to traditional tools like drills and burrs, UBS offers better control and reduces impact on soft tissues. However, it requires a learning curve and additional surgeon training. Functional outcomes were measured using the MacNab scoring system, showing no significant statistical differences between UBS and traditional tools. UBS helps reduce complications but does not significantly improve overall patient function.

CONCLUSION:

The UBS is a safe, fast, and effective tool for decompressing degenerative lumbar spinal stenosis, reducing soft tissue damage compared to traditional tools. However, caution is needed to prevent heat injury and dural tears.

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