Introduction: Same-level recurrent lumbar disc herniation complicates outcome after primary discectomy in a subset of patients, occurs in 10% of patients and is associated with substantial health care costs. Study results reveal operation induced destabilisation due to necessary resection of spinal canal structures without using minimal invasive procedures if possible. We present the clinical characteristics, the long term follow up including new X-ray and CT Scans of the lumbar spine and the neurological status of 14 consecutive patients treated with percutaneous pedicle screw and rod fixation with minimally invasive lumbar interbody fusion in recurrent lumbar disc herniation and Modic type I or II erosive osteochondrosis.

Patients and methods: We reviewed the charts, patient records, X-Ray, CT-scan and MRI of the lumbar spine, operative reports and clinical notes of our patients with recurrent lumbar disc herniations and erosive osteochondrosis between 2007 and 2010 and obtained the late follow up with a clinical questionnaire and neurological examination (VAS, Oswestry Disability Index, MacNab criteria) within the spine unit and carried out new X-Ray and or CT Scan of the lumbar spine. Data collection was completed in n=14 of 14 operated patients (median follow up: 3 months; 3 - 30 months; mean age 54 years; 44-60 y; 6 female and 8 male; at least 2nd recurrent herniation of lumbar disc). Clinical and radiographic assessment using standard scales was acquired prospectively in pre-defined time intervals (VAS, Oswestry-Score, MacNab criteria).

Results: 14 patients (6 female, 8 male) with a mean age at presentation of 54 years (range 40-60) have undergone single level percutaneous pedicle screw and rod insertion and minimally invasive lumbar interbody fusion L4/L5 or L5/S1 at our institution between 2007 and 2010. Median operation time: 190 min (150 - 230 min), with an average X-ray exposure time of 3.35 min (1.5 to 5.5 min). Blood loss was in median 150 ml (120 - 370 ml). Median postoperative resting time in hospital was 7 days (5-12). Significant postoperative pain relief and mobility improvement could be documented with the VAS (69 to 30) and the Oswestry Disability Index (68% to 24%). All patients had significant benefit from surgery at follow up. No patient had to undergo reoperation.

Conclusion: Dorsal open approaches are most often used for the fixation of the lumbar spine, even in the situation of recurrent disc herniation in combination with erosive osteochondrosis. This technique often causes significant trauma to soft tissue structures as well as to spinal ligaments and the nerves, carries a higher morbidity rate and results in bleeding and later functional disturbances. Percutaneous Pedicle Screw and Rod Fixation with minimally invasive lumbar interbody fusion is a gentle, soft tissue, nerve protecting and safe procedure for lumbar fixation with a good stabilizing effect and fusion rates comparable to conventional more invasive techniques. The invasivity of this procedure is less compared to the classic spondylodesis combined with the opportunity, to protect the scarred nerve root.