

The incidence of dural tears after complete resection of lumbar synovial cysts and the relation to the outcome



Stephan Klessinger^{a,b,*}

^a Department of Neurosurgery, Nova Clinic Biberach, Eichendorffweg 5, 88400 Biberach, Germany

^b Department of Neurosurgery, University of Ulm, Albert-Einstein-Allee 23, 89081 Ulm, Germany

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ABSTRACT

Objective: Synovial cysts in the lumbar spine are uncommon causes of radicular pain. In cases where conservative treatment fails, surgical resection is recommended. Dural adhesions are common intraoperative findings; therefore, the removal of the cyst may sometimes result in dural tears. The frequency of dural tears is greater with synovial cysts than in other lumbar surgeries. Clinical parameters and characteristics seen on magnetic resonance imaging were assessed to investigate the correlation between the outcome after surgery of lumbar synovial cysts and dural tears.

Methods: This study was designed as a retrospective practice audit. Patient data were drawn from an electronic medical record system. Included were consecutive patients after microsurgical resection of symptomatic lumbar synovial cysts between May 2013 and November 2015. The surgical report was evaluated retrospectively regarding the extent of decompression and cyst resection as well as surgery-related complications. Pre-operative magnet resonance imaging was assessed concerning the reason for compression of the neural structures, the dimension of the cyst, and the signal of the cyst content in T2 images. In a follow-up examination about four weeks after surgery, the patient satisfaction index was evaluated.

Results: Forty-four consecutive patients after resection of a lumbar synovial cyst met the inclusion criteria. The mean patient satisfaction index was 2.0 ± 1.0 . Twenty-nine patients of the 38 patients with follow-up (76.3%) with a satisfaction index of 1 or 2 were rated as favorable. One revision surgery was necessary because of a cerebrospinal fluid fistula. Furthermore, in 4 patients an incidental durotomy occurred without any symptoms after surgery. Accordingly, the rate of dural tears was 11.4%. Dural tears were significantly more common in patients with a satisfaction index of 3 or 4 ($P=0.04$). Sixty percent of the patients with dural tears were operated on in level L5/S1 compared to 3 patients without a dural tear ($P=0.008$). There was no statistically significant difference between the different patient subgroups in any other analyzed parameter.

Conclusion: Dural tears were found significantly more often in patients without a good outcome; they appear to portend a poorer prognosis. The level L5/S1 was significantly more often affected. During surgery, it should be considered whether to remove the cyst completely and risk a dural tear, or to leave residuals of the cyst wall if otherwise a good decompression is achieved.

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1. Introduction

Synovial cysts in the lumbar spine are uncommon causes of radicular pain [1,2]. However, improvements in imaging, such as magnetic resonance imaging (MRI), have resulted in increased reports of synovial cysts being identified as causative agents of radicular pain [3–5]. The first report of spinal nerve compression by

a lumbar synovial cyst was in 1950 [3,6]. Their predilection to cause nerve root compression often leads to intractable pain, neurological deficits, and spinal claudication [7]. MRI studies demonstrate large, thick, fibrous, and often calcified capsules surrounding the fluid within the synovial cysts [8]. The prevalence of spinal synovial cysts in a symptomatic population of 303 patients investigated with MRI is reported to be 2.3% [3,9]. When Bydon et al. [7] reviewed 966 patients with lumbar synovial cysts from 82 studies, nearly 70% had radicular pain. The most common location was the lumbar spine at 96.4%. Here, L4/5 is the most frequently affected level at 68.0%, followed by the L3/4 level. Only 1.6% of the synovial cysts were

* Corresponding author. Fax: +49 7351 4403 11.

E-mail addresses: klessinger@nova-clinic.de, stephan.klessinger@uni-ulm.de

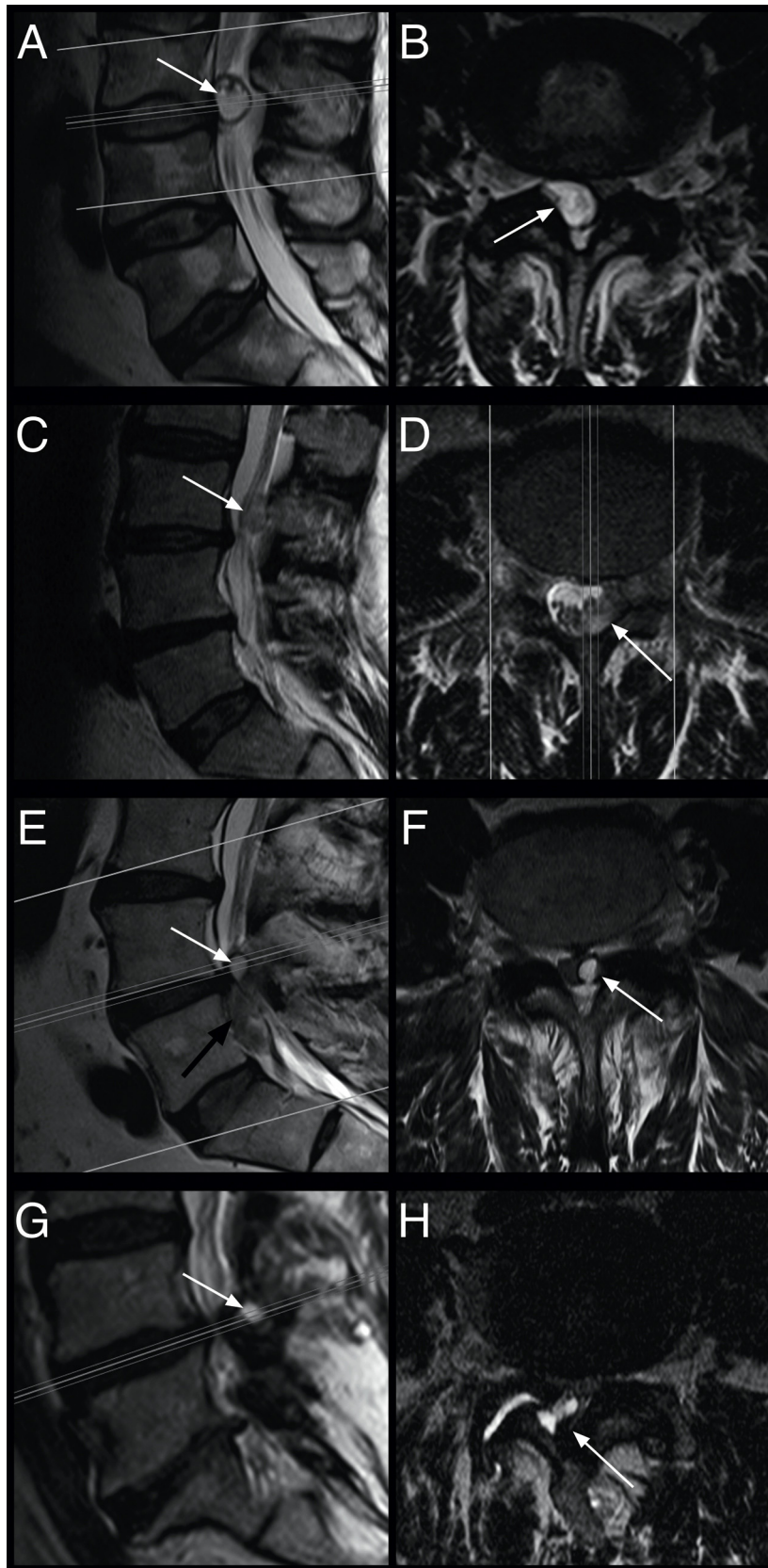


Fig. 1. Sagittal and axial T2 MRI examples from patients included in this study. White arrow: synovial cyst. A and B: 56-years-old patient with a synovial cyst with high signal intensity on the right side level L3/4. C and D: 66-years old patient with a synovial cyst with lower signal intensity on the left side level L3/4. E and F: 66-years-old patient with a smaller cyst with high signal intensity level L4/5 on the left side. A large caudally sequestered herniated disk (black arrow) is additionally compressing the spinal nerves additionally. G and H: 78-years-old patient with a synovial cyst on the right side of level L4/5 with an additional spinal canal stenosis and severe osteoarthritis with different signal intensities of the joint gap on the right and the left sides.

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