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Research Article

**TREATMENT AND OCCURRENCE OF DURAL TEARS IN
DEGENERATIVE SPINAL SURGERY**¹Dr Iqra Yasin, ²Dr Arooj Kiran, ³Dr. Saleha Abdullah¹Sheikh Zayed Rahim Yar Khan²Jinnah Hospital Lahore³Holy Family Hospital

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Abstract:

Aim: The aim of this study was to investigate the incidence, consequences and treatment of sustained dural tears during lumbar spine surgery in spinal degenerative diseases.

Study design: This is an observational descriptive study.

Material and method: The study was conducted in the Neurosurgery Unit II of Lahore General Hospital Lahore for one-year duration from February 2019 to January 2020. During this period, a total of 305 operated patients were included in the study. These patients underwent imaging and preoperative preparation.

Results: A total of 305 patients were included in the study. The male female ratio was 1:1.67% out of 305 patients' primary surgery was performed in 238 patients while revisional surgery was performed in 67 cases. Dural tears were present in 29 cases, dural tears were diagnosed preoperatively in 27 patients, 21 were repaired and 6 patients were treated conservatively. Conservative treatment was unsuccessful in these 6 patients and re-exploration and repair was performed, 2 cases after Dural tears were diagnosed due to cerebrospinal fluid leakage in 1 case, and the second case in the study was pseudo meningocele.

Conclusion: Dura tears are more common in revision surgery and all dura tears must be repaired.

Key words: dural tear, degenerative spinal surgery, dural tear repair.

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INTRODUCTION:

Dural tears are one of the most common complications of degenerative spine surgery: its incidence ranges from 1.08% to 17.7% depending on the characteristics of the patient and surgery¹⁻⁴. As reported in a European study, the incidence of dural tear in spinal stenosis surgery is 8.5%, while in revision surgery 13.2%. An unrecognized or irreversible rupture of the meninges can cause leaking fluid in the postoperative period, leading to pseudomeningocele and CSF fistula and even meningitis⁵⁻⁸. It has been reported that patients with dura mater rupture have back pain and headache more often.

Dural rupture has been treated differently at different sites with varying results, and there is no effective and clinically used management algorithm for treating dural rupture (DT)⁹⁻¹⁰. The aim of the study was to assess the incidence, treatment and outcomes of dura mater fractures in the lumbar spine at the Peripheral Training Hospital during surgery.

MATERIAL AND METHODS:

This descriptive study was held in 305 patients who underwent spinal surgery for degenerative diseases in the neurosurgery Unit II of Lahore General Hospital Lahore for one-year duration from February 2019 to January 2020. Emergency decompression surgery, cervical spine surgery and traumatic spine surgery were excluded. All patients included in this study were examined by a Neurosurgery consultant and a physician's assistant. Preoperative spine imaging was performed using computed tomography (CT) and magnetic resonance imaging (MRI). Elderly neurosurgeons operated on these patients. The type of surgery was registered and all patients were followed at the neurosurgery clinic for 12 months.

RESULTS:**Sexual occurrence**

A total of 305 patients took part in the study. Man: The woman was 114: 191 (1: 1.6).

Table 1: Sex Incidence.

Sex	No.	%
Male	114	37%
Female	191	67%
Total	305	100%

Age Incidence

The age ranges from 22 – 70 with median of 39 years.

Table 2: Type of Surgery and Dural Tears.

	Cases	Dural Tears	
		No.	%
Primary Surgery	238	16	6.7%
Revisional Surgery	67	13	19.4%
Total	305	29	100%

Type of surgery and dural tears

While 238 out of 305 patients had lumbar disc prolapse, spinal stenosis and spinal surgery, 67 patients underwent revision surgery. The ratio of men to women among 238 patients undergoing primary surgery was 84: 154, and the ratio of men to women in revision surgery was 30:37.

In 27 patients, dural rupture (DT) was surgically diagnosed in a ratio of 13:14 M: F.

Dural repair

The dural tears (DT) of these 27 patients were repaired mainly with 4/0 silk (non-absorbable threads in 21 patients). Sewing was difficult in 6 patients and treated with spongy subcutaneous drainage.

Table 3: Dural Repair.

Repair	No.	%
Primary Surgery for Repair	21	77%
Conservative trial and Surgery	8	23%
Total	29	100%

During the operation, no dural rupture (DT) was diagnosed, one of them was presented with CSF leakage, and the other with Pseudomeningocele. These patients were treated conservatively for 10 days, but they did not respond satisfactorily, so both reopened and dural tears (DT) were repaired with 4/0 silk.

DISCUSSION:

Dural tear (DT) is one of the common iatrogenic complications of spine surgery. However, in the literature, iatrogenic DT during spinal surgery is surprisingly rare. Treatment of the described potentially complex problem is described in the literature¹¹⁻¹². However, the explanations were based on a small number of studies involving relatively few patients. A total of 305 patients were included in our study. Male: female 114: 191. Out of 305 patients, 238 underwent primary surgery for spinal degenerative diseases and 67 patients underwent revision surgery. The overall incidence of DT was 9.50%.

A dural tear (DT) was observed in 16/29 with 6.72% in primary surgery. The incidence of DT in revision surgery was 13/29 19.40%. Our results showed that the incidence of dural (DT) was 8.5% in patients operated on for spinal stenosis and 13.2 during revision surgery¹³⁻¹⁴. TAFAZAL et al. Wang et al. It has been reported that the incidence of dural tears (DT) was 14%. Camissa et al. It was reported that the rate of primary procedure and revision surgery was 1.8% in the 1.8% series, the dural tear (DT) was 3.1%, and the signs and symptoms of dural tear (DT) caused permanent cerebrospinal fluid leakage¹⁵. These tears are generally a pronounced cerebrospinal fluid leakage and collapse of the bulging spinal cord contour or postoperative headache, pronounced cerebrospinal fluid secretion, Pseudomeningocele, cerebrospinal fluid fistula and meningitis.

In our study, we detected 27 (93.1%) DTs for surgery, and 2 patients had meningitis developing postoperative cerebrospinal fluid leakage in one case and pseudomeningocele in the second case¹⁶. Inoperable DT treatment fails. Various methods of surgical repair of dura mater tears have been described in the literature. These include primary repair, tissue sealants or blood patches, tissue transplantation¹⁷⁻¹⁸. In our study, all DTs identified during surgery were repaired with a 4/0 suture that could not be absorbed, and the wound was closed with layers containing vicryl and prolene. In 23 of 27 patients, the initial repair of 23/27 (85.8%) was successful. JEFFERY et al. They reported similar results in repairing dura mater tears (DT)¹⁹. Primary dural tear repair (DT) in four patients was unsuccessful and they had persistent headache, photophobia, and vomiting with a change in posture. In addition to 4 patients, all 2 of these patients experienced complications due to unrecognized DT, initially treated with bed rest, foot lift and prophylactic antibiotics, none of these patients responded satisfactorily to conservative treatment and underwent new treatment²⁰. Examination and repair of DT by means of seam, spongy and vacuum vacuum drainage.

CONCLUSION

Dural Tear (DT) is more common in revision surgery than in primary surgery. Conservative treatment may not always provide the desired response.

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