

# The Clinical Relevance Of Cement Leakage Associated With Vertebroplasty

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## INTRODUCTION

- A vertebral compression fracture (VCF) is the most common type of osteoporotic fracture in which the height of the vertebra is lowered by at least 20% in either the anterior, posterior, or central section or by at least 4mm when compared to normal height. Percutaneous Vertebroplasty and Kyphoplasty are quickly gaining popularity due to their minimal intrusion and immediate pain relief. The majority of issues with Vertebroplasty or Kyphoplasty are caused by cement leaking outside of the compressed vertebral body, which can result in pulmonary embolism, neurological deficits, paralysis, or death.

## AIM OF THE WORK

The purpose of this study is to report on the following:

- The prevalence and location of cement leakage after Vertebroplasty, as well as the clinical significance of cement leaking.

## PATIENTS AND METHODS

- Patients:** A record of 36 consecutive patients, 19 of whom are males and 17 are females, 11 of whom underwent Vertebroplasty, 2 of whom underwent balloon Kyphoplasty, and 23 of whom underwent Instrumented Vertebroplasty between January 2016 and 2021, with ages ranging from 53 to 88 years.
- Methods:** A retrospective cohort study, includes patient demographic data, physical and neurological testing, and pain intensity. Routine laboratory investigations, and radiological imaging including x-ray, computed tomography scan, and magnetic resonance images. Post-operatively, cement leakage was studied using X-ray and/or CT scan.

- Patients remained supine for two hours post-operatively, and they were checked for neurological status, wound haematoma, pain intensity and pulmonary embolism.
- Surgery:** Conducted under general anaesthesia, with a sterile approach employed in the prone position, a transpedicular approach is used for the thoracic and lumbar spine under careful fluoroscopic control, with the needle introduced to the anterior third of the vertebral body and the cement mixture injected through the needle by continuous turning motions of the reservoir, which deploy the mixture in a controlled manner.

## RESULTS

- In this investigation, cement leakage occurred in 80% of all cases, with 34.5% and 65.5% in VP and Instrumented VP, respectively, meanwhile, neurological impairment affected 10.3% of the study group with cement leakage; on the other hand, pulmonary embolism affected 6.9% of the study group with cement leakage.

Comparison between the two studied groups according to the clinical effect of leakage

	Total (n = 36)		Cement leakage (n = 29)		Non-cement leakage (n = 7)		$\chi^2$	FEp
	No.	%	No.	%	No.	%		
<b>Neurology</b>								
No	33	91.7	26	89.7	7	100.0	0.790	1.000
Yes	3	8.3	3	10.3	0	0.0		
<b>Pulmonary embolism</b>								
No	34	94.4	27	93.1	7	100.0	0.511	1.000
Yes	2	5.6	2	6.9	0	0.0		

Comparison between the two studied groups according to the type of leakage

Type of leakage	Total (n = 36)		Cement leakage (n = 29)		Non-cement leakage (n = 7)		$\chi^2$	FEp
	No.	%	No.	%	No.	%		
<b>Basivertebral veins</b>								
No	27	75.0	20	69.0	7	100.0	2.897	0.156
Yes	9	25.0	9	31.0	0	0.0		
<b>Segmental veins</b>								
No	22	61.1	15	51.7	7	100.0	5.530*	0.029*
Yes	14	38.9	14	48.3	0	0.0		
<b>Cortical defect</b>								
No	25	69.4	18	62.1	7	100.0	3.823	0.076
Yes	11	30.6	11	37.9	0	0.0		

## CONCLUSION

- Percutaneous vertebroplasty is a promising new treatment that relieves pain and stabilizes the majority of patients with spine fractures caused by trauma, osteoporosis, or metastases. According to the literature, cement leakage during Vertebroplasty is a common occurrence, and the clinical complication of such leakage is insignificant. Although severe consequences are possible, as noted in the literature, the benefit of pain reduction surpasses the risks of surgical procedures.

## Declarations

- This study got no specific funding from any government, commercial, or non-profit organisation.
- I decline any conflict of interest.