

THE ROLE OF PERCUTANEOUS VERTEBROPLASTY IN THE MANAGEMENT OF SPINAL FRACTURES.

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INTRODUCTION

Percutaneous vertebroplasty is a relatively new technique and minimal invasive procedure first performed by *Galbert and colleagues* used to treat painful vertebral compression fractures by injecting bone cement into a vertebral body.

Percutaneous vertebroplasty is commonly applied to the lumbar and thoracic vertebrae but may be applied to all vertebrae, single or multiple levels and patients regain mobility within 24 hours and are usually able to reduce, or even eliminate their pain medications within a short time.

Evaluation of patient before (PV). Complete history taking, physical examination should include a thoroughly neurologic assessment. Blood test, complete blood count (CBC), Calcium level and Vitamin D assessment also done. Radiologically includes X-ray, CT- scan, Magnetic resonance imaging (MRI), Dual-energy x-ray absorptiometry (DEXA Scan) and Visual analogue scale (VAS) for pain assessment.

Procedure. The procedure can be performed using local or general anesthesia, in prone position completely sterile technique is used. Under careful radioscopy control, transpedicular approach is used for thoracic and lumbar spine, the needle introduced up to the anterior third of the vertebral body, the cement mixture then injected through the needle by continuous turning motions of the reservoir, which deploy the mixture in a controlled manner.

Postoperative care: Patients took approximately 2 hours of bed rest after vertebroplasty, then allowed to walk when their symptoms become tolerable.

AIM OF THE WORK

The aim of this study was to assess the role of percutaneous vertebroplasty in the management of different spinal fractures, indications, limitations, efficiency and side effects.

PATIENT AND METHODS

Patient: This study carried out in 21 patients, 15 females and 6 males with the age range from 40 to 70, admitted at Alexandria Main University Hospital in a period of 1year from 1st may 2021 to 30th April 2022.

Methods: Randomized prospective study by which patient demographic data, complete history taking, both physical and neurological examinations, Visual analogue scale (VAS), were carried out.

Routine laboratory investigation including blood test, complete blood count (CBC), Calcium level and Vitamin D assessment also done. Radiological investigations including dexascan, x-ray, computer tomography scan (CT scan) and magnetic resonance image (MRI STIR) made to rule out late fracture.

Under aseptic technique and general anesthesia, using transpedicular approach the needle introduced to the anterior third of vertebral body, then a mixture of bone cement continuously injected through the needle by turning motions of reservoir, which deploy the mixture in a control manner, by which every motion delivers 0.5mls of mixture.

RESULTS

Table 1: Relation between incidence of complications and other variables.

	Complications				T Test P value
	No		Yes		
Age	51.00-70.00		45.00-62.00		1.904
Range	60.5		54.6		0.184
Mean	13.4		5.0		
SD					
Sex	No	%	No	%	0.884 0.50 N.S.
Male	0	0	6	31.6	
Female	2	100.0	13	68.4	
Fracture level					1.22 0.236 N.S.
Single level	1	50	12	63.2	
Double levels.	1	50	5	26.3	
3 or more.	0	0.0	2	10.5	
Fracture sites					0.884 0.643
Lumber alone.	2	100	13	68.4	
Thoracic alone	0	0	4	21.1	
Lumber and Thoracic	0	0	2	10.5	
Cause of spinal fracture					10.077 0.006*
Traumatic	0	0	3	15.8	
Neoplastic	1	50	0	0	
Osteoporotic	1	50	16	84.2	
Injected site.					2.66 0.103 N. S
Bipedicular	1	50.0	12	66.7	
Unipedicular	1	50.0	4	22.2	
Combined	0	0.0	2	11.1	

T= student t-test

P was significant if < 0.05

N.S. Not Significant difference

Table 2: Comparison between the preoperative and postoperative Visual Analogue score.

VAS System to grade the pain	VAS pre operative	VAS at 1week	VAS after 1month	VAS after 6 months
Range	7-10	0-3	0-2	0-2
Mean	8.5	1.5	0.95	0.75
SD	1.05	1.10	0.83	0.85
T test			6.98	
P value			0.001*	

T= student t-test

P was significant if < 0.05

** Significant at level 0.05.*

CONCLUSION

Percutaneous Vertebroplasty is an effective new technique that provides pain relief and stabilization in the majority of patients with spinal fractures due to trauma, osteoporosis and metastasis. It is effective in reducing pain and maintenance of vertebral body height, with low incidence of major complications.

It needs an expert with good experience to perform it, in order to reduce incidence of complications. Can be performed rapidly and is an alternative to open surgeries in patients with co morbidities.