

Hybrid Event

8<sup>th</sup> International Conference on

**Spine and Spinal Disorders**

8<sup>th</sup> International Conference on

**Central Nervous System Disorders  
& Therapeutics**

October 10-12, 2022

Vienna, Austria

J Spine Neurosurg 2022, Volume 11

## **C2 stentoplasty, a new technique compared to vertebroplasty in axis metastatic lesions. A case series and systematic review with meta-analysis**

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**Study Design:** Case Series and A Systematic Review and Meta-Analysis.

**Background:** Management of osteolytic metastatic spinal lesions involving the C2 is controversial. A major surgery may not be feasible in cancer patients due poor general medical status while radiotherapy may increase the risk of instability and collapse<sup>1</sup>; compromising the neural elements. Vertebroplasty has been described in literature as an effective treatment but with a risk of cement leakage associated complications. Stentoplasty is a new alternative surgical option offering pain control and stabilisation with less risk of cement leakage.

**Objective:** To describe a new surgical technique, Stentoplasty in metastatic involvement of C2 and assess its efficacy and safety. Additionally, to systematically evaluate the relevant literature regarding the clinical outcomes and complications of C2 cement augmentation in patients with metastatic disease complaining of pain or instability without any neurological deficit who have failed conservative treatment.

**Methods:** A cohort of five consecutive patients (2 men and 3 women of average age 62 years) presented with cervical instability (SINS > 6) and/or excruciating pain (VAS >6) from metastatic involvement of C2. There was no neurologic deficit and no compression of the spinal cord preoperatively in any of the cases. Stentoplasty was performed by a single surgeon via open microsurgical approach under general anesthesia and biplanar fluoroscopic control. The outcomes were evaluated regarding pain control, stability, complications and cement leak. In addition, a systematic review of the English language medical literature dating up to February 2022 was undertaken using search criteria ((C2 AND (Vertebroplasty OR Cement Augmentation)) and (Axis AND (vertebroplasty Or Cement Augmentation)) and the PRISMA guidelines.

**Results:** All patients had severe neck pain (average VAS 6.2 (range 2-10)) with or without instability (average SINS 10 (range 6-14)). Mean duration of the operative procedure was XXX and on average 2.6 mL cement was injected within the vertebra. The immediate post-operative VAS improved from 6.2 to 1.6 (P= 0.033). No complications were encountered and none required additional surgery, with an average follow-up of 10.2 Months ( 4-24 months). No cement leakage was observed intraoperatively or on follow-up x-rays.

A systematic review of 146 articles yielded 7 studies that met the inclusion criteria (1 Level II and 6 level IV evidence).

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We identified 70 patients with mean age of 59.8 (28 -83) years who had C2 cement augmentation (67 vertebroplasties and 3 kyphoplasties) for lytic metastatic disease causing pain and instability. None of the patients had neurological deficit preoperatively. 4 studies discussed the percutaneous approach ( n= 35) 2 used the transoral approach ( n= 28) and 1 used open microsurgical approach ( n= 7 ) . CT guidance was used in 5 cases, the rest were performed using fluoroscopy. Mean duration of operative procedure was 63 minutes (2 studies).

There was an overall reduction in immediate VAS following surgery from 7.6 to 2.1 ( P 0.007) ( 5 studies).

During an average follow-up of 11.2 months, four patients complained of odynophagia post operatively. Two patients required additional posterior stabilization and decompression surgeries, one for C1-C2 subluxation compressing the cord and one for persistence instability despite vertebroplasty. The incidence of cement leak was 31.4% (22/70). One cement leak led to occipital neuralgia and another lead to an acute cerebellar and occipital infarction, with cement leakage into the transverse foramen.

**Conclusion:** To our knowledge, this is the first study to describe Stentoplasty in C2 metastatic lesions offering adequate pain reduction and stability without complications and cement leakage. In comparison, a systematic review demonstrated that C2 vertebroplasty has been performed in a total of 70 patients with significant pain improvement but 7% complication rate and 31% of cement leakage rate.