

BRIEF COMMUNICATION

D3 Marker: A New Instrument for C-arm-guided Pain Procedures

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ABSTRACT

To identify the needle entry point in a C-arm-guided pain procedure a metal marker is used. D3 Marker is a new metal marker which is designed to identify the needle entry point with less number of fluoroscopic shots. In addition, it can also be used to measure distance from 1 to 18 cm approximately.

Keywords: Marker for C-arm procedure, Metal marker, Needle guidance device.

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INTRODUCTION

The demonstration marker is a new metal marker designed mainly to identify needle entry points in fluoroscopic-guided interventions – especially the spine procedures for pain. As this marker can help to identify direction, distance, and domain, hence, named as D3 marker. The main purpose of this marker is to decrease the number of shots required for identification of needle entry points, thus to reduce chances of radiation exposure – to both the patient and physician.¹ It is also helpful to clarify concepts like true anteroposterior (AP), squaring, and how angulation or oblique view can change the entry points,^{2,3} particularly during teaching or demonstration. That is why, it is Datta and Das's demonstration marker.

DESCRIPTION

The metal marker has seven 2-mm-wide plates of different length placed parallelly. All are placed 2 cm (approximate) apart (except for the seventh one placed 1 cm apart).

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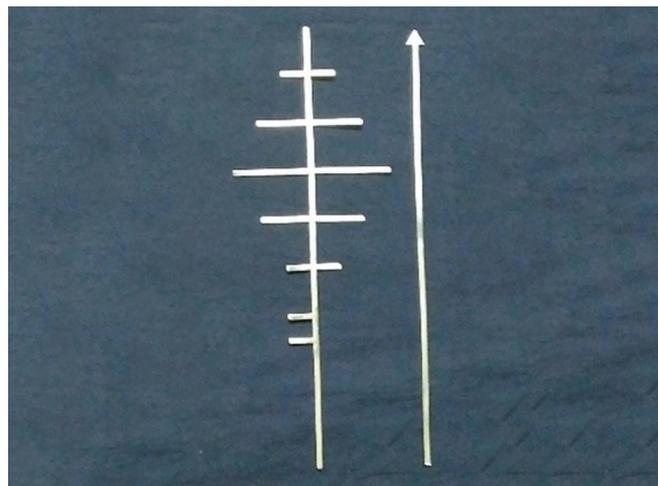


Fig. 1: Metal Marker

These parallel plates are connected by another 2-mm-wide and 18-cm-long metal plate placed at right angles with these plates. Lengths of the parallel plates are 2, 4, 6, 4, 2, 1, 1 cm respectively. The 18-cm-long vertical plate is placed in the middle of first five horizontal plates, giving the marker a diamond-shaped look. Last two 1-cm-long horizontal plates are placed on one side of the vertical plate. An 18-cm-long and 2-mm-wide metal pointer with triangular head is also provided (Fig. 1).

How to use it?

In a single shot: If the vertical rod placed in midline (suppose in lumbosacral area) of patient and an AP image taken:

- It helps to identify whether the patient and C-arm is positioned properly or not.
- The asymmetric design of the marker allows to identify the direction^{2,4} left or right.
- Helps to square vertebrae.
- Identify whether it is a true AP or not.
- No need to count vertebrae two times – from below to above and above to below as it marks all the levels differently.
- Identify the zone (domain)⁴⁻⁶ of needle insertion (Figs 2 to 6).
- It is also helpful to measure different distances. One can use it as a scale to measure 1 to 18 cm length.



Fig. 2: D3 marker placed in midline of mannequin – first 2 cm horizontal plate is on T12 and last 1 cm on lower border of L3

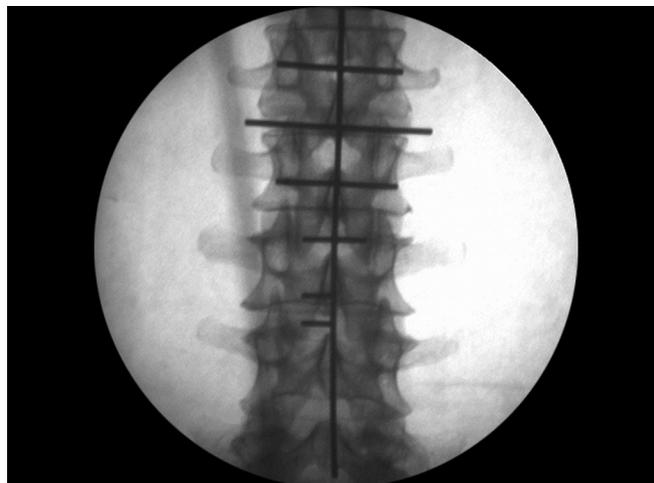


Fig. 3: C-arm moved caudally as last 1 cm plate was on L3, tip of vertical rod is on L5

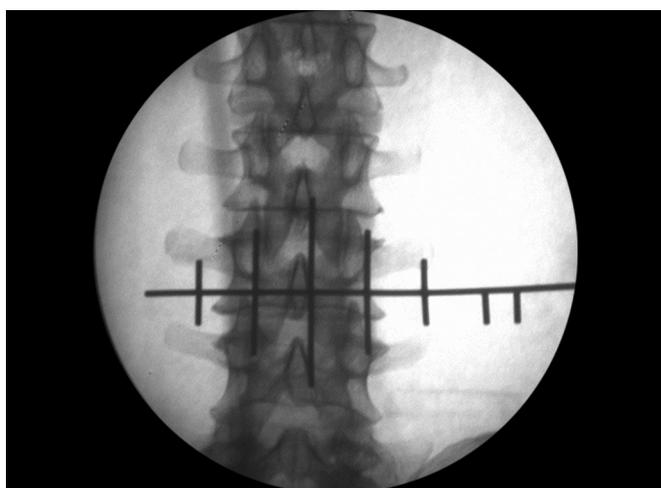


Fig. 4: Marker is placed in L3 area (assuming the area from Fig. 2) with connecting 18 cm plate placed parallel to vertebral end plate

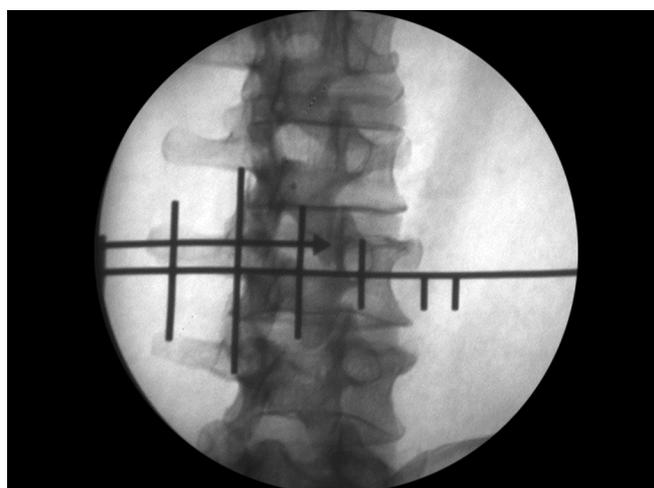


Fig. 5: Pointer is placed at interior part of inferior articular process (assuming the domain from Fig. 4)



Fig. 6: Now the marker is removed and needle insertion point for intra-articular facet injection identified

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