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## **MRI-based determination of occlusal splint thickness for temporomandibular joint disc derangement: a randomized controlled clinical trial**

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**Objective:** The current prospective study aimed to describe a method using magnetic resonance image to assess the appropriate effective occlusal splint vertical thickness.

**Study Design:** the patients were diagnosed as having internal disc displacement of the TMJ was divided into two groups. Group I (Disc Displacement with Reduction-DDR): This group was randomly subdivided into two subgroups. Subgroup IA (control group): patients treated using 3-mm-thick splints. Subgroup IB (study group): patients treated using MRI-based splint thickness. Group II (Disc Displacement without Reduction-DDNR): This group was subdivided randomly into 2 subgroups. Subgroup IIA (control group): patients treated using 3-mm-thick splints. Subgroup IIB (study group): patients treated using MRI-based splint thickness. The primary outcome variables were maximum voluntary mouth opening (MVMO) and visual analogue scale (VAS). The secondary outcome variable was joint sounds. The final sample was composed of 162 subjects (Group I=90 and Group II = 72).

**Results:** Statistical analysis showed significant improvement of the clinical outcome in subgroups IB and IIB as compared to that in subgroups IA and IIA.

**Conclusion:** On the basis of MRI measurements and clinical outcome, the current study recommended 4 mm and 6 mm vertical splint thickness for DDR and DDNR respectively for 1 year.

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