

Efficacy of Hyaluronic Acid in the Treatment of Temporomandibular Dysfunction: A 7-Year Report



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Introduction

- Temporomandibular dysfunction (TMD) has a prevalence of up to 31% for adults and 11% for children¹
- It disproportionately affects women at 40 years of age¹
- The etiology includes:
 - Intra-articular causes: degenerative joint disease or disc displacement
 - Extra-articular causes including the masticatory muscles
- May be related to other pain or autoimmune disorders and psychosocial factors
- Characterized by the presence of crepitation in the joint, localized pain, and a restriction in mandibular function¹
- May cause a range of symptoms including limitation of jaw movement, headaches, tinnitus, dizziness and ear pain.

Figures

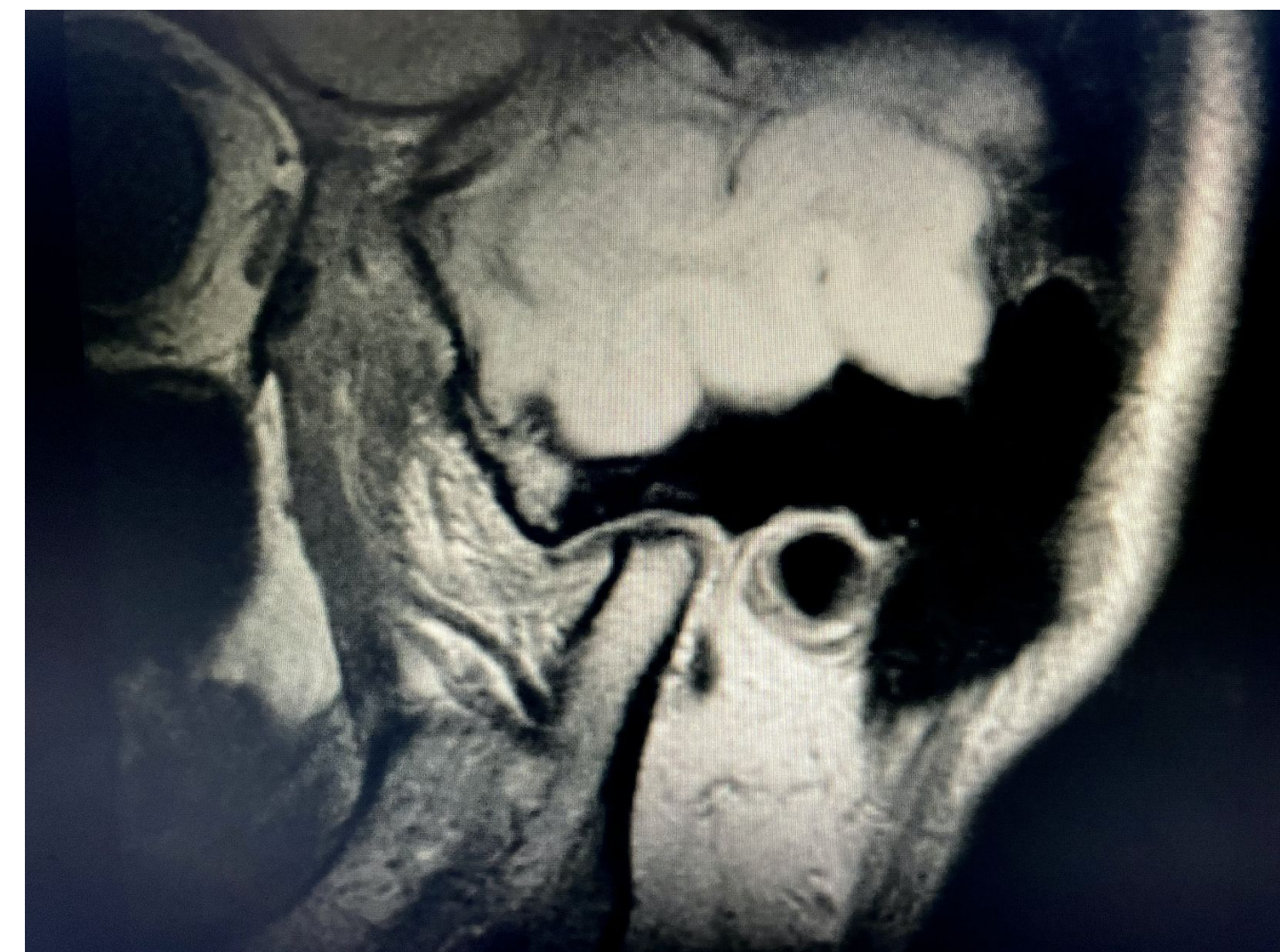
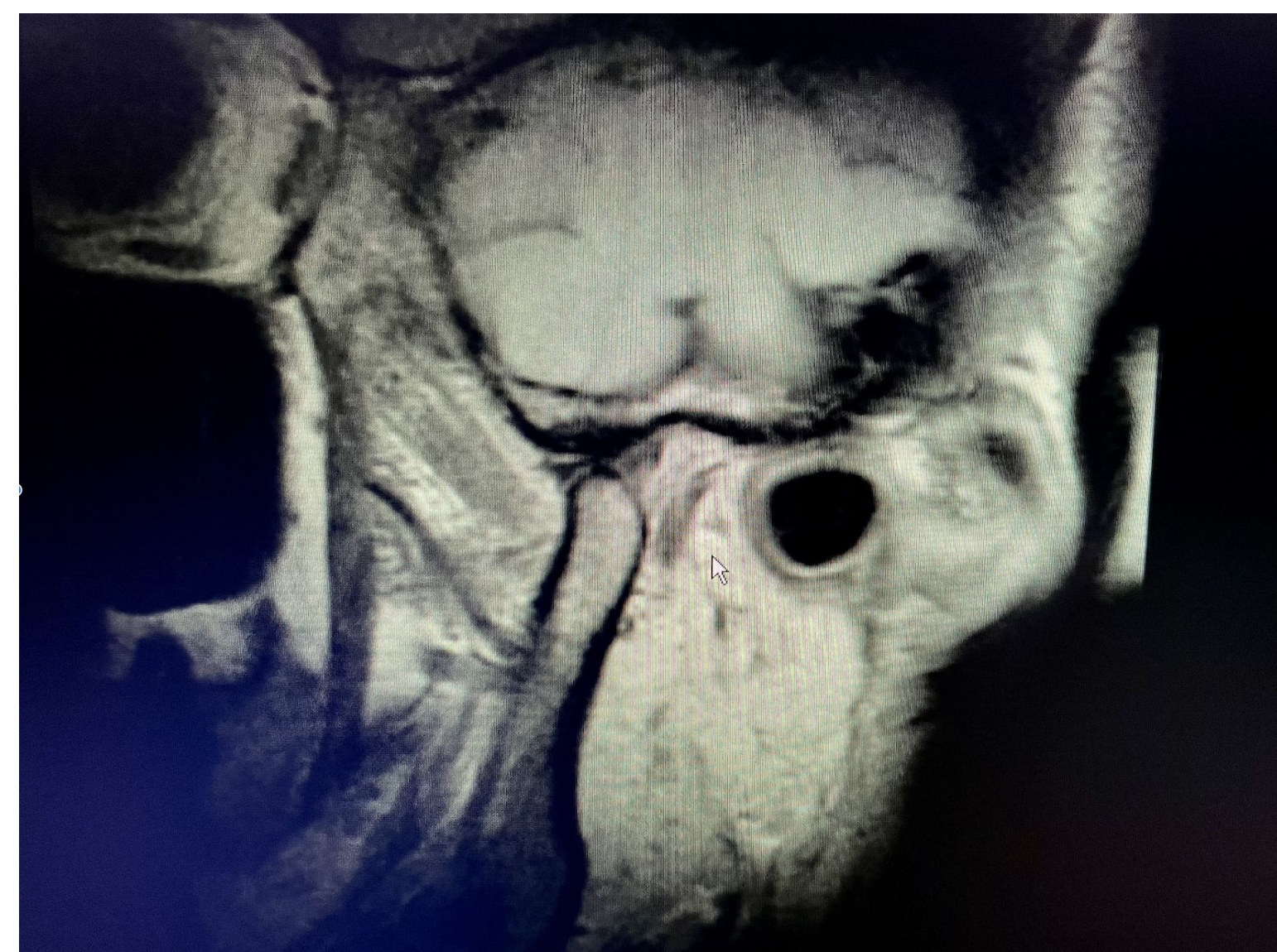


Figure 1.
Sagittal T1 MRI of L
TMJ with OA

Figure 2.
Sagittal T1 MRI of L
TMJ with limited
anterior translation with
open jaw positioning



Case Report

- 40-year-old female with a past medical history of bipolar disorder and a history of a gastric bypass in 2010
- Presented initially in 2016 for evaluation of facial pain:
 - The pain started in 1998 after a 25-foot fall from bleachers onto the left side of her face
 - The pain was described as an aching, throbbing pain located initially only on the left side of her face without radiation.
- Physical examination revealed pain to palpation over the left and right temporomandibular joint (TMJ) and limited mandibular range of motion.
- Medication included:
 - topical diclofenac 1% gel
 - oral tramadol 50 mg daily
 - hydrocodone-acetaminophen 5-325 mg once daily as needed
 - gabapentin 300 mg daily
 - duloxetine 90 mg daily
 - amitriptyline 10 mg daily at bedtime
- Additional conservative management without improvement in symptoms:
 - occlusal stabilization splint therapy
 - onabotulinum toxin A injections
 - auricular electrostimulation
- Procedure history:
 - 6/2016: a corticosteroid injection under fluoroscopic guidance with immediate pain reduction and improved mouth opening after the injection
 - 3 corticosteroid injections with 50-75% improvement in pain for four weeks after each injection
 - 10/2016: first left Hylan G-F 20 injection with 75% improvement for four weeks and ongoing
- The patient began to develop additional right-sided pain in 2017 and underwent a bilateral TMJ arthroscopy and arthrocentesis with intra-articular corticosteroid injection by a maxillofacial surgeon in 2017 with improvement in her pain for several weeks.
- The patient has had a total of 18 Hylan G-F 20 injections in the left TMJ with intermittent Hylan G-F 20 injections on the right side over the course of seven years, with improvement ranging from 50 to 80% after each injection.
- The frequency between injections was initially every 2 months and she now receives injections every 6 months

Discussion

- In current dental and orofacial pain literature, there is no standardized or highly effective approach to treatment of TMD
 - Conservative measures: intra-articular injections of steroid and hyaluronic acid, arthrocentesis, splinting, pharmacotherapy
 - More invasive surgical procedures: arthroscopy, discectomy and arthroplasty³
- Hyaluronic acid (HA):
 - Viscous mucopolysaccharide with antioxidant properties
 - Lubricating/providing nutrition to the joint cartilage
 - Stimulation of endogenous hyaluronic acid from exogenous administration³
 - Reduction in inflammatory cytokines²
- Intra-articular injection of HA was found to be more effective in improving pain related to TMD compared to intra-articular corticosteroid or saline solution injection when arthrocentesis was not performed³
- In knee joints, hyaluronic acid has been shown to be superior in the duration of pain relief in comparison to corticosteroid injections, with increased efficacy with repeat injections⁴
- More convenient treatment plan for the patient, requiring less office-visits
- The combination of hyaluronic acid and corticosteroid was found to be superior in reducing pain symptoms than corticosteroids alone, but not of hyaluronic acid alone⁵

References

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