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Technical Note
TMJ Disorders

Tethering technique using bone screws and wire for chronic mandibular dislocation: a preliminary study of refractory cases

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Abstract. A retrospective study was performed to determine the efficacy of a tethering procedure developed to achieve a more rigid fixation and more reliable outcome in patients with refractory dislocation of the temporomandibular joint. The cases of eight patients with dementia and systemic diseases who underwent this technique were reviewed. In these eight patients, the condyles of 13 joints were ligated using wire between screws placed in the eminence and condylar head. Additional screw–wire ligations were applied to reinforce the restraint of movement in five of the 13 joints with suspected uncontrolled dislocation. The procedure was performed successfully, and the patients were followed-up for an average of 25 months. In one patient, dislocation recurred 1 year postoperatively due to wire breakage. The five joints in which a double set of screw–wire tethering was applied showed no recurrence or wire disturbance. This technique may, therefore, have short-term efficacy in cases that are refractory to standard procedures, although the material used for ligation should be investigated further. This approach can contribute to the quality of life of patients, particularly those with a short life-expectancy.

Key words: bone screw; dislocation; tethering; temporomandibular joint.

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There is controversy regarding the most suitable surgical procedure for the treatment of chronic dislocation of the temporomandibular joint (TMJ). Eminectomy and the zygomatic arch down-fracture procedure are among the numerous reported procedures commonly used[1,2]. These two surgical options have shown excellent outcomes, with success rates of 95% and 91%, respectively[3]. However, some cases remain refractory to treatment, particularly those with long-term dislocation or with difficulty in maintaining the condyle in the mandibular fossa, and these cases require a more reliable

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Table 1. Patient demographic characteristics, procedures, and outcomes.

No.	Age (years) Sex	Side and type[a]	Systemic disease	Anaesthesia	Procedure	Diet	Remarks	Prognosis	Recurrence
1	69 M	Bilateral LD	CI, DM, dementia	GA	Rt tethering single-set (Lt eminectomy)	Oral	–	Died (12 months)	None
2	84 F	Bilateral HD	Alzheimer's dementia, aspiration pneumonia	GA	Lt tethering single-set (Rt eminectomy)	Oral	–	Alive (24 months)	Recurrence (12 months)
3	76 M	Bilateral LD	Parkinson's disease, schizophrenia, aspiration pneumonia, dementia	LA	Rt tethering double-set Lt tethering single-set	PEG	Recurrence 5 months after bilateral eminectomy	Died (22 months)	None
4	72 M	Bilateral HD	CI, aspiration pneumonia, dementia	LA	Rt tethering double-set Lt tethering single-set	TF	Wire detachment next day	Died (18 months)	None
5	65 M	Bilateral HD	MSA, aspiration pneumonia, dementia	GA[b]	Bilateral tethering double-set	PEG	–	Alive (32 months)	None
6	66 F	Bilateral LD	Brain tumour, CI, DM, dementia	GA	Rt tethering single-set Lt tethering double-set	Oral	–	Died (14 months)	None
7	83 F	Bilateral LD	CI, AF, dementia, epilepsy	GA	Rt tethering single-set (Lt eminectomy)	Oral	–	Died (33 months)	None
8	76 M	Bilateral LD	Schizophrenia, Alzheimer's dementia, CI	GA[b]	Bilateral tethering single-set	Oral	–	Alive (42 months)	None

AF, atrial fibrillation; CI, cerebral infarction; DM, diabetes mellitus; F, female; GA, general anaesthesia; LA, local anaesthesia; Lt, left; M, male; MSA, multiple system atrophy; PEG, percutaneous endoscopic gastrostomy; Rt, right; TF, tube feeding.

[a] LD, long-standing dislocation; HD, habitual dislocation.

[b] Tracheostoma.

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