World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:16, No:08, 2022

Open Joint Surgery for Temporomandibular Joint Internal Derangement: Wilkes Stages III-V

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Abstract : Temporomandibular joint (TMJ) dysfunction (TMD) is a condition that may affect patients via restricted mouth opening, significant pain during normal functioning, and/or reproducible joint noise. TMD includes myofascial pain, TMJ functional derangements (internal derangement, dislocation), and TMJ degenerative/inflammatory joint disease. Internal derangement (ID) is the most common cause of TMD-related clicking and locking. These patients are managed in a stepwise approach, from patient education (homecare advice and analgesia), splint therapy, physiotherapy, botulinum toxin treatment, to arthrocentesis. Arthrotomy is offered when the aforementioned treatment options fail to alleviate symptoms and improve quality of life. The aim of this prospective study was to review the outcomes of jaw joint open surgery in TMD patients. Patients who presented from 2015-2022 at the Oral and Maxillofacial Surgery Department in the Doncaster NHS Foundation Trust, UK, with a Wilkes classification of III -V were included. These patients underwent either i) discopexy with bone-anchoring suture (9); ii) intrapositional temporalis flap (ITF) with bone-anchoring suture (3); iii) eminoplasty and discopexy with suturing to the capsule (3); iii) discectomy + ITF with bone-anchoring suture (1); iv) discoplasty + bone-anchoring suture (1); v) ITF (1). Maximum incisal opening (MIO) was assessed pre-operatively and at each follow-up. Pain score, determined via the visual analogue scale (VAS, with 0 being no pain and 10 being the worst pain), was also recorded. A total of 18 eligible patients were identified with a mean age of 45 (range 22 - 79), of which 16 were female. The patients were scored by Wilkes Classification as III (14), IV (1), or V (4). Twelve patients had anterior disc displacement without reduction (66%) and six had degenerative/arthritic changes (33%) to the TMJ. The open joint procedure resulted in an increase in MIO and reduction in pain VAS and for the majority of patients, across all Wilkes Classifications. Pre-procedural MIO was 22.9 ± 7.4 mm and VAS was 7.8 ± 1.5. At three months post-procedure there was an increase in MIO to 34.4 ± 10.4 mm ($p < 0.01$) and a decrease in the VAS to 1.5 ± 2.9 ($p < 0.01$). Three patients were lost to follow-up prior to six months. Six were discharged at six month review and five patients were discharged at 12 months review as they were asymptomatic with good mouth opening. Four patients are still attending for annual botulinum toxin treatment. Two patients (Wilkes III and V) subsequently underwent TMJ replacement (11%). One of these patients (Wilkes III) had improvement initially to MIO of 40 mm, but subsequently relapsed to less than 20 mm due to lack of compliance with jaw rehabilitation device post-operatively. Clinical improvements in 89% of patients within the study group were found, with a return to near normal MIO range and reduced pain score. Intraoperatively, the operator found bone-anchoring suture used for discopexy/discoplasty more secure than the soft tissue anchoring suturing technique.

Keywords : bone anchoring suture, open temporomandibular joint surgery, temporomandibular joint, temporomandibular joint dysfunction
Conference Title : ICMOS 2022 : International Conference on Maxillofacial and Oral Surgery
Conference Location : Kuala Lumpur, Malaysia
Conference Dates : August 30-31, 2022