Presentations, Management and Outcomes of Temporomandibular Disorders (TMDs) in Port Harcourt: One-Year Prospective Analysis

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Abstract: Temporomandibular joint disorders (TMDs) constitute a spectrum of chronic orofacial pain condition for which no specific treatment modality has proven to be always effectual. Experiences and outcomes vary between patients. Management is always a dilemma for clinicians who must be skilled and knowledgeable in making diagnosis and providing holistic care for the TMD patient. Literature documenting clinical experiences with TMD patients is very sparse; in fact, none was found from the Nigerian medical literature. This article presents our experience in a Nigerian teaching hospital and a secondary state facility for oral and maxillofacial care. It is a record of management of TMD patients encountered over a one-year period during which patients were prospectively followed and their treatment profiled according to a self designed protocol adopted by our department. Here, we present our experience with fifteen patients followed up for a minimum of 6 months during the study period. Treatments were administered at various levels according to our protocol and outcome was satisfactory in over 50% of cases.

Keywords: Temporomandibular pain-dysfunction, Myofascial pain syndrome, biopsychosocial model, intraarticular cortocosterooids, chronic facial pain.

1. INTRODUCTION

Temporomandibular joint pain-dysfuction (TMPD) and Myofascial pain dysfunction (MPD) are concepts that describe two chronic pain disorders of the maxillofacial region. Often used interchangeably, TMPD and MPD significantly overlap in their aetiology, patho-mechanism and clinical presentations [1]. Hence, they have been collectively described as "Temporomandibular Disorders (TMD)" [1, 2]. By definition, TMD refers to varying degree of pain in the facial region arising from either intra-articular pathology or stress-related masticatory muscle abnormality [3]. Different theories have been proposed to explain the exact mechanism of the disease, each emphasizing different cardinal causative factors [1, 4]. Currently, the biopsychosocial model is most widely accepted; it places emphasis on the biological, psychological and social components that must be considered in the diagnosis and treatment of TMD [1].

The biopsychosocial model entails both the psychophysiologic theory [5, 6] and biomedical theory [1, 4]. The biopsychosocial theory explains that TMD arises from psychological and emotional stress which induces increased masticatory muscle tension and hyperactivity leading to involuntary clenching, teeth grinding, muscle spasm and pain. These activities place a large mechanical load on the articular apparatus resulting initially in micro-trauma induced physiologic inflammation within the temporomandibular joint. Propagating chronic inflammation of this source ultimately results in biological changes in the intraarticular apparatus. On the other hand, the biomedical theory [1, 4] supports initial biological changes in the joint possibly due to radical products of systemic metabolic processes. The changes cause disc damage and displacement as well as spreading degenerative changes involving other articular tissues with resulting loss of joint space, joint pain and referred pain to facial muscles. The resulting pain and dysfunction then create considerable psychological, emotional and social stress, thereby perpetuating the vicious cycle.

Due to the complex nature of TMDs, the diagnosis and treatment has always been challenging. Diagnosis is most often clinical [1]. It is based on comprehensive history and examination, sometimes, advanced radiological investigations may be indicated, especially when surgical intervention is warranted [7, 8]. However, there is as yet, no singular full-proof protocol of treatment for TMDs, rather, several non surgical and surgical modalities have been used with variable outcomes [3, 9-12].

We observed that reports on the management of TMDs are relatively sparse. In fact, no experience

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regarding the Nigerian population of TMD patients was found after a rigorous search through the world medical literature. Therefore, with a renewed interest in pain studies and observation of increasing number of patients with chronic non odontogenic orofacial pain at our centers, we devised a protocol for treating patients diagnosed with TMDs and hereby report our experience over a period of one year. The objective of this study is therefore to assess the effectiveness of our devised protocol and to enrich the TMDs literature with the report of an African experience.

2. METHODOLOGY

A prospective study of TMD patients was instituted at the Oral and Maxillofacial surgery clinics of the University of Port Harcourt Teaching Hospital and Dental and Maxillofacial Hospital both within the city of Port Harcourt, Rivers State, in the South-Southern part of Nigeria. The study covered a period between July 2013 and June 2014. Patients were recruited once a diagnosis of TMD was clinically established. To establish the diagnosis, the following criteria were to be met;

I. Presenting complaint of TMJ or facial muscle pain with or without features of TMJ internal derangement (e.g. crepitus, clicks, grating sound, locking and stiffness).

II. Unilateral or bilateral pain aggravated by functional movement of the mandible with or without significant trismus.

III. Pain of > 3 months duration.

IV. Facial pain not limited to a single dermatome.

V. Pain that is not of dental, sinus, otologic or orbito-occular origin.

VI. No recent history of trauma.

VII. Exclusion of any systemic disease that may account for the pain (e.g. fibromyagia, complex regional pain syndrome, collagen vascular disease etc.).

Each patient was specifically interviewed and examined by an oral and maxillofacial surgeon with a view to highlighting essential details of pain history and clinical signs. Detailed examination to assess for TMJ features (tenderness, sounds, locking, stiffness), jaw and occlusion (Range of motion, occlusal discrepancies, jaw deviation) and head and neck musculoskeletal apparatus (masticatory muscle pain) was done. Apart from characterizing the pain, attention was placed on eliciting evidence of physical/mental/ emotional stress.

A multilevel, non surgical treatment protocol was formulated (Figure **1**) based on experience and the literature addressing the management of TMDs [3, 9, 10-12]. The protocol comprises five overlapping steps beginning with establishment of diagnosis. Once

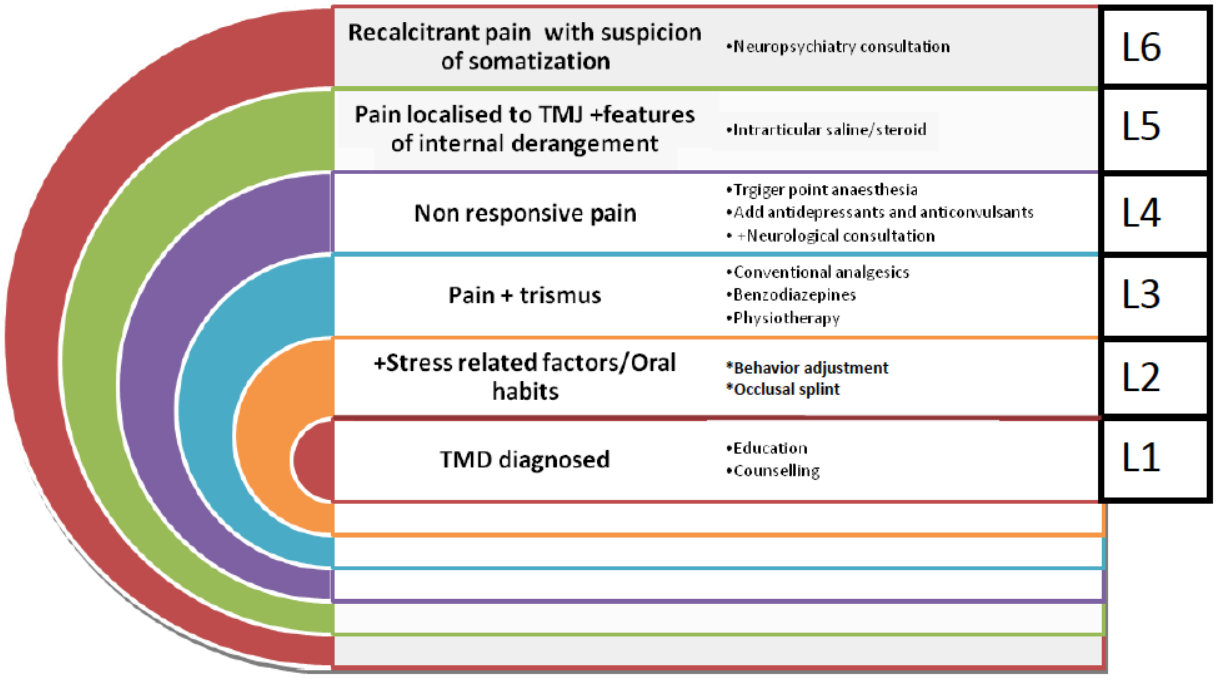

Figure 1: Schematic summary of treatment protocol.

established, patients were educated on the aetiology, predisposing factors, coping strategies and prognosis of TMDs. Counseling is provided to address specific concerns of patients and to encourage self efficacy (i.e. confidence and motivation to cope and comply [13]) and to discourage catastrophization (i.e. negative mental disposition that tends to exaggerate the perception/expression of pain [14]) – Level 1.

Where history suggestive of physical, mental or emotional stress was elicited, or contributory oral habits such as excessive gum chewing, teeth grinding, nail, pencil or pen biting were found, behaviour consciousness and adjustments was advised, intervention such as intermittent maxillomandibular fixation was applied or occlusal splint was fabricated where necessary (Level 2). In the presence of pain, with or without significant trismus and masticatory discomfort, conventional analgesics such as NSAIDs (Ibuprofen, Diclofenac, Diclofenac-Misoprostol, Celecoxibs) and moderate / highgrade opioids (Tramadol, dihydrocodein, oral morphine) were prescribed. Muscle relaxant –Benzodiazepines, were prescribed; especially in the presence of trismus. Physiotherapy consultations and referral were ensured whereby procedures such as hot massage, cryomassage, and transcutaneous electrical nerve stimulation (TENS) were performed (Level 3). Patients whose pain was not sufficiently relieved by conventional analgesics received adjunctive medications like antidepressant (Amitryptiline) and anticonvulsants (carbamazepines, phenytoin, pregabalin, baclofen). Neurological consultations were also ensured (Level 4). Once there is persistent TMJ pain aggravated by function with or without features of internal derangement (clicking/grating sound, locking and lateral jaw shift in jaw opening and closing), intraarticular injection of saline for dilution or anti-inflammatory steroid (triamcinolone acetonide) was performed (Level 5). A patient whose pain was refractory to all measures and suspicious of unremitted somatization (expression of psychosocial/emotional stress in the form of physical symptoms such as facial pain, headache, fatigue etc [15]) required referral for neuropsychiatric evaluation (Level 6). Subjective assessment of improvement was recorded at every follow up clinic. Treatments were modified at follow-up clinics if no significant improvement was observed on a current regime, in which case, patient was either moved to another level in the treatment protocol or overlapped into a new level (i.e. combined present level with another level).

3. RESULTS

During the study period, twenty seven patients presented with features of chronic orofacial pain of which sixteen fulfilled the set criteria for the diagnosis of TMDs. One of the sixteen patients did not return after the first contact and was therefore excluded from this report. The remaining fifteen patients fell within an age range of 24–71 years; mean age of 50.4 years, and male to female ratio of 1.1:1. Bilateral to unilateral presentation was also in the ratio of 1.1:1. In this presentation, patients are serialized with a Patient Identification Number (PIN) tag denoted as p.1, p.2, p.3....p.15.

Table 1: Notable Information Elicited from History Taken from Fifteen TMDs Patients at First Presentation

PIN	Social History	Risk Behaviour	Family History	Background Medical Condition
p.1	Nil	Nil	Nil	Hypertension
p.2	Nil	Nil	Nil	Hypertension
p.3	Illness Related Stress	Nil	Nil	Hypertension
p.4	Work Related Stress	Nil	Nil	Hypertension
p.5	Nil	Nil	Nil	Nil
p.6	Nil	Nil	Nil	Nil
p.7	Nil	Nil	Nil	Nil
p.8	Nil	Nil	Nil	Nil
p.9	Nil	Nil	Nil	Nil
p.10	Nil	Nil	Nil	Nil
p.11	Work Related Stress	Stress related teeth clenching	Positive family history in mother)	Nil
p.12	Illness Related Stress	Nil	Nil	? Melkersson Rosenthal Syndrome
p.13	Nil	Nil	Nil	Nil
p.14	Nil	Nil	Nil	Nil
p.15	Marriage Related Stress	Nil	Nil	? Premenopausal Syndrome

Some notable information were elicited during the process of history taking, this is summarized in Table **1**. Four patients (p.1, p.2, p.3, and p.4) were known hypertensives while patients tagged p.3 and p.12 on one hand, and p.4 and p.11 on the other hand also gave history suggestive of illness related stress and work related stress respectively. Marriage related stress was observed with patient p.15. Only one patient (p.11) admitted to a habit of conscious teeth clenching or grinding when under stress, the same patient gave a family history of similar pain problem with the mother. Syndromic presentation was suspected from the history given by patients p.12 and p.15.

As depicted in Table **2**, the most common clinical signs observed were arthralgia (joint pain and tenderness) which was present in 86.7% of cases, Reduced range of movement (RROM = Interincisal distance < 30mm ± lateral excursion < 2mm) observed in 73.3% of the patients, TMJ sounds (mostly clicks on either opening, closing or both) -53.3%; and pain and tenderness of the masticatory muscles (especially temporalis and lateral pterygoids) -53.3%. Three patients (p.11, p.12, p.15) presented with trigger points, all located in the temporal region. Only patient p.7 presented with intermittent spasmodic jaw lock or joint stiffness- a situation whereby patient suddenly found her mouth shut up and unable to open for a few minutes after which it relaxes and open. The presence of occlusal discrepancies or evidence of teeth grinding (e.g. attrition and masseter hypertrophy) was found in two patients only (p.4, p.6). Severe headache was reported by 3 (20.0%) patients (p.1, p3, p.4) all of which were localized in the fronto-temporal region. Radiological investigations were requested in 8 patients (4 plain films of TMJ, 3 CTs of TMJ and one MRI of the brain and TMJ). All radiographs were reviewed and reported by radiologists and no notable anatomical/pathological aberration was observed except in one patient (p.4) in whom the radiologists

Table 2: Clinical Features of Fifteen TMDs Patients at First Presentation

PID	Age	Sex	Uni/Bil	Temporomandibular Joints				Jaw and Occlusion			Myofascial Features			*Headache*	Radiology
				Athralgia	*Sounds*	*Locks*	*Stiffness*	*RROM*	*Jaw Deviation*	*Occlusal Features*	*MMT*	*Neck Pain*	*Trigger Point(s)*		
p.1	55	Male	Rt. Uni	✓	✓	X	X	✓	X	X	X	X	X	✓	Not done
p.2	71	Male	Lt. Uni	✓	✓	X	X	X	X	X	✓	X	X	X	Not done
p.3	68	Female	Bil	✓	✓	X	X	✓	X	X	✓	X	X	✓	Normal Plain
p.4	56	Male	Rt. Bil	✓	X	✓	X	✓	✓	✓ (Attrition)	✓	✓	X	✓	Increased Joint space
p.5	53	Male	Rt. Uni	✓	✓	X	X	✓	X	X	X	X	X	X	Not done
p.6	24	Female	Bil	X	✓	✓	X	X	✓	✓ Class III, PCB	X	X	X	X	Normal Plain
p.7	43	Female	Bil	✓	X	✓		✓	X	X	✓	X	X	X	Normal plain
p.8	53	Male	Bil	✓	X	X	X	✓	X	X		X	X	X	Not done
p.9	56	Male	Uni	✓	X	X	X	✓	X	X	X	X	X	X	Not done
p.10	58	Male	Uni	✓	X	X	X	X	X	X	X	X	X	X	Not done
p.11	28	Female	Bil	✓	✓	X	X	✓	X	X	✓	X	✓	X	Normal MRI of brain and TMJ
p.12	42	Female	Bil	X	X	X	X	✓	X	X	✓	X	✓	X	Normal CT
p.13	53	Male	Bil	✓	✓	X	X	✓	X	X	X	X	X	X	Normal Plain
p.14	47	Female	Uni	✓	✓	X	X	✓	X	X	X	X	X	X	Normal CT
p.15	49	Female	Bil	✓	X	X	X	X	X	X	✓	X	✓	X	Not done
% of Patient				86.7%	53.3%	20.0%	6.7%	73.3%	13.3%	13.3%	53.3%	6.7%	20.0%	20.0%	

✓ (Present), X (Absent), (Right [Rt], Left [Lt]); Unilateral (Uni) Bilatera (Bil)l; Reduced Range of Movement (RROM); Masticatory Muscle tenderness (MMT); Posterior Crossbite (PCB). Class III –occlusal relationship.

Figure 2A: Coronal CT of the Right TMJ of patient p.4 showing slight increase in the superior joint space laterally **B.** Sagittal CT of the same patient to demonstrate the slight increase in the superior joint space.

reported increased joint space from the CT image of the TMJ (Figure **2A** and **B**).

The spectrum of treatments adopted is summarized in Table **3**. Level 1 management modality i.e. education and counseling, was implemented for all patients (100.0%). The next most frequent was Level 3 management, which involved administration of conventional analgesics and physiotherapy (applied in 80.0% of cases). Level 4, involving trigger point anaesthesia, adjunctive co-analgesia using varieties of antidepressant and anticonvulsants, as well as consultations with neurologists was administered in 53.3% of cases. Neuropsychiatry referral and psycho-therapy was considered applicable in one patient (6.0%). Overall, treatment was considered satisfactory by 8 patients including one who experienced occasional relapse of pain but of lower intensity. Six patients were not quite satisfied, two of whom were lost to follow-up while we got no feedback from another two

Table 3: Treatment Profile of 15 TMD Patients from the Time of Presentation at Our Center to the Latest Follow up within One Year Period

PID	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Remark as of Last Visit
p.1	✓	X	✓	X	✓	X	Satisfactory improvement but occasional relapse of lower intensity
p.2	✓	X	✓	✓	✓	X	Satisfactory improvement
p.3	✓	X	✓	X	✓	X	Less satisfactory
p.4	✓		✓	X	X	X	Satisfactory
p.5	✓	X	✓	X	✓	X	Not satisfactory, Lost to follow up
p.6	✓	X	X	X	✓	X	Not satisfactory,
p.7	✓	X	X	✓	X	X	Not satisfactory
p.8	✓	X	X	✓	X	X	Satisfactory but Lost to follow up afterwards
p.9	✓	X	✓	✓	X	X	Satisfactory
p.10	✓	X	✓	✓	X	X	Satisfactory
p.11	✓		✓	✓	X	X	Not satisfactory
p.12	✓	X	✓	✓	X	✓	Not satisfactory, no feedback after referral
p.13	✓	X	✓	✓	✓	X	Satisfactory
p.14	✓	X	✓	X	X	X	Satisfactory
p.15	✓	X	✓	X	X	X	Not satisfactory, No feedback after referral
% of Patients	100.0%	13.3%	80.0%	53.3%	40%	6.0%	

✓ (Present), X (Absent).

patients referred to other specialty units for review. Loss to follow was defined if patients defaulted and could not be contacted within 2 months of initial contact when compliance and response to treatment had not been adequately assessed.

4. DISCUSSION

Temporomandibular disorders (TMD)" comprise Temporomandibular pain dysfunction (TMPD) and Myofascial pain dysfunction (MPD) [2]. While Myofascial pain may affect any part of the body, it is not unusual for symptoms to be limited to the head and neck musculature [16]. On the contrary, TMPD is exclusive to the head and neck and presents with symptoms that overlap with MPD. Hence, it is sometimes very difficult to separate the two clinical entities; in such cases therefore, the all encompassing terminology-TMD, is preferred. The prevalence of TMDs is approximately 6-12% according to reports from the western population [17]. Though any age and gender may be affected, it is said to be more common in women between early adulthood and the middle age [17, 18]. Unfortunately, there is no clear statistics on the epidemiology of TMDs within the Nigerian population.

Within a period of one year, we encountered sixteen patients diagnosed of TMDs in our practice; giving a clinical incidence rate of 1.3 cases per month. One case was excluded for lack of detailed contact while 15 cases were adequately documented and presented in this paper. These patients fell within the age bracket of 24-71 years and constituted a mean age of 50.4 years which agrees with existing literature [17, 18]. However, contrary to the existing knowledge, there appears to be a balanced gender ratio suggesting that male victims may be just as many as females, if not more, as our population of patients suggests. This observation warrants confirmation from a large scale multicenter study. Bilateral presentation is fairly more common in our experience and this is consistent with the literature [5].

Arthralgia and myalgia were prevalent at the time of presentation, hence; it was difficult to determine if cases were of primary joint problem with secondary masticatory muscle pain or primary muscle abnormality with secondary joint involvement. Considering that all the patients had been experiencing pain for over 3 months during which they had visited several medical and dental clinics before being referred to our clinic, the evolutionary path of the disease could not be determined. However, our findings tend to agree with recent evidence which de-emphasizes the role of occlusal anomalies as a major aetiological factor of TMDs.

It is generally accepted that diagnosis of TMDs is often clinical [1]. In 1992, Brooks *et al*, using radiological studies, demonstrated low prevalence of intra-articular pathology between cases and control [19]. Even, high-tech studies such as MRI have been known to give controversial results in efforts to correlate clinical symptoms to radiologic findings [20, 21]. Hence, majority of our patients were not subjected to extensive radiological investigations since the clinical features were sufficiently diagnostic. However, we obtained plain films or computerized tomography of the temporomandibular joints (TMJ) and/or brain of patients in whom we suspected major structural damage to the intra-articular tissues or to rule out any organic brain lesion. None of these revealed significant findings that could tilt treatment consideration towards surgical modalities. This is not to conclude that no structural pathology existed in any of the cases since clinical symptoms of TMJ sounds and locks observed could imply an exisiting damage to the disc. Rather, it may be that extent of damage was not yet obvious for basic radiological detection. Farina *et al*. [8], have indeed demonstrated greater sensitivity for detection of structural derangement of the TMJ using contrast-enhanced MRI, this modality was not deployed in our patients. Also, conventional TMJ arthrography and arthroscopy are often used for detection and assessment of TMJ internal derangements [22]; these techniques are not yet common place in Nigerian surgical practice.

In this study, five patients reported and exhibited convincing evidence of stress as they related their experiences with the painful condition of TMDs. Two cases were work-related stress including one male who was an entrepreneurial medical director of a busy private hospital and another lady who was a spinster and a banker who worked long hours and whose responsibility involved frequent travelling to many other branches of the bank across the country. Yet another patient gave exclusive details of family-related stress and expressed significant difficulty coping with family demands. Since TMD is of biopsychosocial aetiology, it is very important to make deliberate efforts towards eliciting physical, mental and emotional stress history because patients do not readily volunteer enough details on these facts which are very significant for optimal care of a chronic pain patient. This was made

possible in our experience by educating all the patients on the role of physical, psychological and emotional stress in the patho-mechanism of TMDs. This approach made patients willing and eager to release relevant personal and private information on their stress and stress induced behaviors. Habits such as teeth grinding and bruxism, pen biting, tongue/cheek chewing, prolonged gum chewing, repetitive lateral excursion, leaning the chin against the palm have been associated with stress expression and are known to add to the mechanical stress on the TMJ [1, 4].

Another advantage of initial education and counseling was to discourage somatization and catastrophization which is not uncommon among chronic pain patients. A patient who somatizes tends to express pain severity in the proportion of psychological and emotional disturbance. They are more likely to associate other vague symptoms such as headache, insomnia, and paraesthesia etc with their pain [13]. Four of our patients epitomized this; one could not disconnect from her mother's experience who had similar problems for many years until her demise; she confessed that the thought of the mother's experience seemed to aggravate her pain and tended to reduce her self efficacy. Significant catastrophization was noted in two patients who also somatized. These patients were extremely touchy and highly irritable. They guard their trigger points consciously and would hardly tolerate clinical examination. In these patients trigger point injection (TPI) of 2% lidocaine was done for diagnostic and therapeutic purpose. Counseling helped to improve psychosomatic symptoms in our patients except one who eventually required referral for neuropsychiatric evaluation. Hypertension which is the most common background medical problem in our series though also stress related, it is not known to have any causal relationship to TMDs.

It is a general consensus that conservative approach occupies the first line in the management TMDs. Our treatment protocol was built on this philosophy. At the level 1 was education and counseling. Although all TMD patients required education with respect to aetiology, patho-mechanism, treatment and prognosis; the extent of education varied. Some, especially the literate patients came with some level of information gained either from contacts with previous health care providers or from sources on the internet. Our approach was to build on patient's existing knowledge. Behavior adjustments such as diet modification and recognition and breaking of predisposing habits were introduced at Level 2. Intermaxillary fixation which is unconventional in TMDs management, was applied based on discretion in a patient who needed help to control his tirades at the employees in his office which events he observed, always aggravated his TMD pain. The intervention was very helpful to achieve good outcome in the index patient.

Physiotherapy techniques adopted at level 3 included home self-care such as moist heat massage, ice–pack massage, muscle stretch exercises (as tolerated) etc. Some patients were referred to the physiotherapy clinic for further assistance such as electronic massage and transcutaneous electrical nerve stimulation (TENS). Also at Level 3, medications were aimed at relief of symptoms while we sought to eliminate aggravating factors and promote healing. NSAIDs were the basic analgesics; they were usually supported with muscle relaxants (benzodiazepines) where evidence of muscle hyperactivity and spasm was present. Effect of antidepressant and anticonvulsants (Level 4) was tangible in most cases but few cases were indeed unresponsive. Patients whose pain were reduced and localized to the TMJ area and those in whom features of internal derangements were pronounced and disturbing were exposed to intra-articular steroid injection. 1ml of Triamcinolone acetonide (40mg) was injected in each joint at 3 week intervals. Maximum of 3 injections were given to a patient. No untoward side effect was noted in any of the patients. Most of the patients benefited from injection either by way of significant pain relief or reduction of TMJ sounds, although few cases of relapse were noted.

Like most corticosteroids, the anti-inflammatory effect of intra-articular Triamcinolone in the temporomandibular joint is well established. It offers relief of pain, swelling and dysfunctional symptoms such as TMJ clicks and locks [23]. While the anti-inflammatory effect of steroid is easy to comprehend, the mechanism by which symptoms of internal derangements are relieved deserves clarification. One hypothesis follows the same anti-inflammatory mechanism explaining that by reducing joint effusion, steroids increase the free joint space thereby allowing for easier and smoother translation of the condyle-disc unit [23, 24].

Internal derangement follows either a degenerative or inflammatory process leading to adhesion of the articular disc to the glenoid fossa and so displacement of the disc from the condyle during translation. Fluid

injection into the superior joint space therefore works by hydrodissection of the plane between the glenoid fossa and the adhering articular disc [22]. The resultant adhesiolysis frees the articular disc to allow better translation of the condyle-disc unit thereby relieving joint clicks and locks. This is the mechanism by which isotonic injection of normal saline also works. A further mechanism by which isotonic fluid injection relieves TMD symptoms is by hydrodilution of inflammatory mediators formed in the joint as a result of both micro/macrotrauma and inflammatory joint reactions [23, 25]. When combined with arthrocentensis, the diluted pro-inflammatory molecules are aspirated from the joint thus improving symptoms [26]. This technique was recently adopted in our practice where we now perform a blind, single needle, single puncture saline lavage and arthrocentensis of the superior joint space. Six patients in this series benefited from this technique and reported significant relief.

Other products being used for intra-articular injection and said to improve TMD symptoms are hyaluronic acid and platelets-rich plasma (PRP) [27, 28, 29]. Hyaluronic acid is a natural lubricant within the joint which is usually destroyed by oxygen radicals generated during inflammatory joint diseases [11, 30, 31]. Injection of this product therefore tends to reduce friction and adhesion of the articular disc to the glenoid fossa [31]. The product is not readily available in the Nigerian markets. Similarly, the clinical use of PRP is not yet commonplace in Nigerian hospitals. This is probably because of low demand and poor resource as the product does not tolerate prolonged storage. PRP can be easily produced for immediate use in the side laboratory but the laboratory has to be set up with facilities for that purpose. This is yet to happen in our practice. The basis for PRP in chronic joint diseases is in its ability to provide a wide variety of growth factors such as PDGF, TGFβ and other cytokines which help in promoting healing of a chronically damaged tissue [27, 28].

There is a wide spectrum of conservative treatment modalities for TMDs, the problem is that most of these techniques have not become common place in Nigeria. The dearth of literature, including case series documenting local experiences in the management of TMDs is suggestive of lack of enthusiasm in the subject among local clinicians. Procedures such as neuroreflexotherapy [32], various cognitive behavioural therapies [13, 33], ultrasonic waves and low level laser therapy [34, 35], have given desirable results. Although there is a consensus to consider surgery as the panacea of last resort, when all conservative treatments have failed, the specific timeframe or pain severity to determine failure of conservative treatment is not defined. Therefore, it is the clinician's responsibility to decide when surgical intervention becomes imperative. Unfortunately, arthroscopic and open temporomandibular joint surgery for internal derangements is not yet a common skill in Nigeria.

CONCLUSION

TMD has remained a clinical enigma over the decades, no single or combination of therapies can guarantee cure, and hence prolonged follow up is required. Clinicians must be willing to dedicate time and interest to the plight of individual patients. They must think out of the box to devise innovative means of relieving patient symptoms. This prospective study of TMDs in Port Harcourt showed that the burden of disease within the local population is considerable. Patients still shop around for trusted destinations where they might get adequate and appropriate care. The protocol adopted by our team has been fairly effective as over 50% yielded satisfactory outcome. However, a lot more is required in terms of options in conservative management as well as skills in internal derangement surgeries. The percentage of unsatisfied patients is still very considerable; hence, the coalition of a multidisciplinary pain management team is imperative. Currently in our institutions across the country, chronic pain management is suboptimal; it is being spearheaded by individual specialties. In fact, from our experience, the system of referral have not been very effective as sometimes communications between referring and referral clinician is not sustained and so feedback is lost and follow up is compromised. It is high time oral and maxillofacial surgeons and oral physicians in the developing countries of the world confronted chronic orofacial pain conditions by spearheading the constitution of multidisciplinary pain team with a focused interest in chronic orofacial pain. Such a team must include otorhinolaryngologists, neurologists, neurosurgeons, anaesthesiologists, neuropsychiatrists, clinical psychologists, pain nurses and medical social workers. Based on this study, we recommend a multilevel conservative treatment protocol such as the one we have proposed. We also support the advocacy for effective multidisciplinary approach or conscientious interdisciplinary communication with close patient follow-ups among experts involved in the management of TMDs.

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