



MANAGEMENT OF DENTAL DEFORMITY, PILOT STUDY

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ABSTRACT

Introduction: Dentofacial deformity means deviations from normal facial proportions and dental relationships that are severe enough to be hand capping

Aim of the study : The aim of this study was to disclose abnormal findings in a series of patients with dentofacial deformities with different etiology and different methods of management .

Subjects and methods: At the department of oral and maxillofacial surgery faculty of oral and dental medicine south valley university from january2015 to December 2017 all the patients presented with dentofacial deformity was investigated ,diagnosed and managed all the data collected and analyzed and presented through this study the results 12 patients 8 females and 4 males presented with dentofacial deformities of variable causes were managed by different means ranged from functionsl appliances to maxillary osteotomies the conclusion dentofacial deformity has different etiologic factors and treatment must be adapted to the case limits

INTRODUCTION

The expression dentofacial deformity is used to describe disproportios of the jaws in association with malocclusion, it may affect single jaw or extend to include multiple craniofacial structures dentofacial deformity patients have variable disturbances as regards chewing, swallowing, speech,breathing lip closure, facial appearance, temporomandibular joints disorders and negative impact on psychological health²

Knowledge of the etiology of dentofacial deformity can be effective to understand and manage this problems in the optimum time 1-3 % of

populations have dentofacial deformity in need for orthognathic surgery³.

So that the aim of this study is to describe some etiological factors and procedures to manage patients having dento facial deformities and this may help maxillofacial surgens to manage such cases

PATIENTS AND METHODS

At the department of oral and maxillofacial surgery, faculty of oral and dental medicine south valley university from january2015 to December 2017 all the patients presented with differents

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dentofacial deformities were managed through taking medical and dental history clinical evaluation, and determination of the chief complaint, also models for upper and lower jaws were recorded, different radiological examinations was fulfilled including panorama x ray film., lateral cephalometric views, computerized tomography also routine lab work including complete blood pictures, liver function tests , renal function tests, along with prothrombine time ,and also referral to physician was done to evaluate patient fitness, and treatment plans were designed according to the individual need of each case, the consents were obtained from each patients, and the required surgery managed under general anaesthesia, post operative care were provided to manage pain odema and provide nutritions, then postoperative results were evaluated clinically and through radiological examinations

RESULTS

12 cases presented with dentofacial deformity were managed they were 8 female and 4 males with range of age 13-40 years and average 18 years, the type if facial deformity and the procedures for their management were summarized in table 1.

Case (1) 13 years old female presented with skeletal class 2 with retruded mandible, was unsatisfied of her appeatrance due to protrusion of her upper jaw, after analysis of cephalometric view and stydy of the dentak model and due to presence of potential growth liability, remodeling of growth was chosen for management of this patient through using twin block appliance as a functional mean for growth remodeling follow up period was 2 years. ther was no extraction of any permanent teeth and good resuls was obtained. Figure 1.2



Fig. (1) Showing mandibular deficiency with lip incompetence and over increased overjet



Fig. (2) Improved facial appearance with good lip competence and normal overjet

Case (2)

Case of facial of facial deformity with malaligned teeth enlarged maxilla and mandible with class 2 malocclusion, the patient has thalassemia which thought to be the cause of facial deformity, the anaemia, was continuously controlled by blood transfusion and calcium supplement, only reduction of the enlarged bone was done, then followed by orthodontic treatment, then he refused further surgical figure 3,4.



Fig. (3) Anterior and lateral view showing dentofacial deformity due to thalassemia

Case (3)

17 years old female patient with history of facial trauma complicated with left site temporomandibular joint ankyloses where operation was done to manage this problem and the patient presented in our department with facial asymmetry where the mandible deviated toward the affected site (left site), and disturbed occlusion. after clinical examination and radiological study, left site mandibular distraction osteogenesis was decided and the operation was done and the result was good for the patient figure 5,6



Fig. (4) Showing improved facial appearance after bone reduction

Case (4)

15 years old male patient presented with hemifacial microsomia with rudimentary external ear atrophied right zygoma, and atrophied right site of the mandible the chief complain of the patient was due to his abnormal appearance, after clinical and radiological study, distraction osteogenesis for the right site of the mandible was decided, and satisfied results was obtained figure 7,8.

Case (5)

25 years old female patient presented with protruded maxilla, dental show appearance, and mandibular deficiency with deviation toward the right site, this case managed by anterior maxillary osteotomy for set up and back of anterior maxillary segment also genioplasty was done to manage deviated mandible figure 9,10

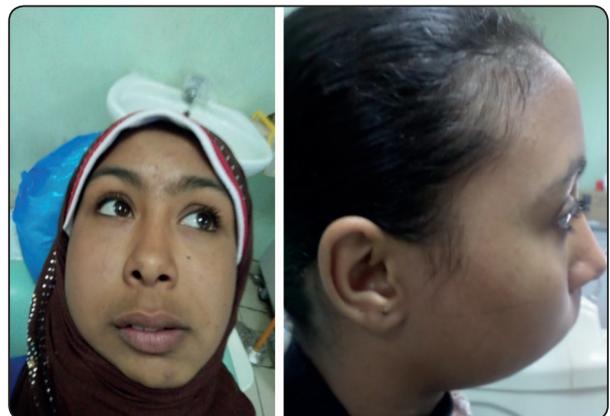


Fig. (5) Showing facial asymmetry & mandibular deficiency



Fig. (6) Showing improved facial appearance in anterior and lateral view and panorama showing distracted left site of the mandible

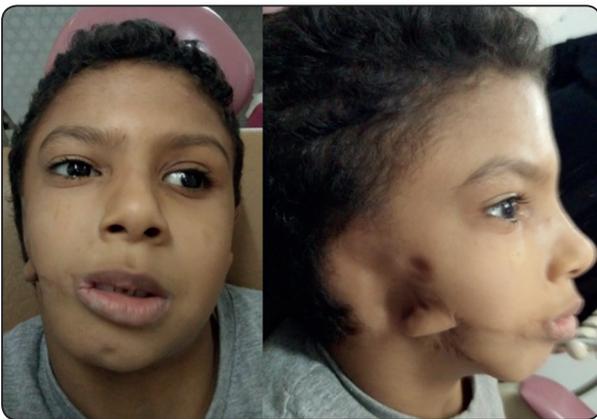


Fig. (7) Anterior facial asymmetry. And , short right site of the mandible with rudimentary ear

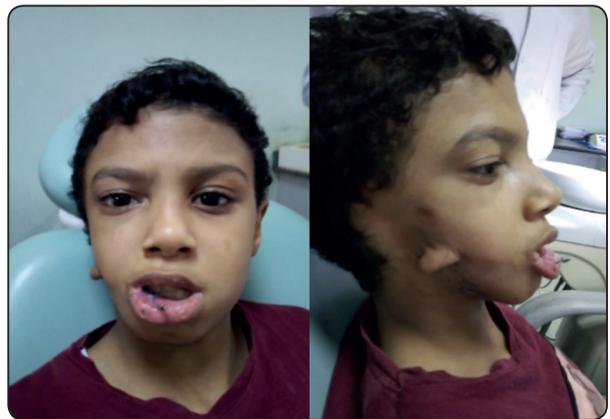


Fig. (8) Showing improved facial asymmetry and good lengthening of right site



Fig. (9) Showing facial asymmetry short right site and increased overjet

Case (6)

18 years old male patient presented with open bite with inability of biting food by anterior teeth. The patient gave positive history of tongue thrust habit with failure of orthodontic treatment, this case managed by anterior mandibular and anterior maxillary osteotomy figure 11,12.

Case (7)

20 years old female patient presented with developmental protruded maxilla with severe overjet and gum showing, and everted lower lip, this case managed with anterior maxillary osteotomy figure 13,14.

Case (8)

18 years old female patient presented with anterior mandibular and maxillary dento-alveolar

protrusion with subsequent protrusion of upper and lower lips with lip incompetence, and gum show smile, the case was managed with anterior mandibular osteotomy for set back and anterior maxillary osteotomy for set up and back of this segment, good results obtained figure 15,16.

Case (9)

22 years old female patient presented with long face with open bite high arched palate with gum smile and lip incompetence. LeFort 1 osteotomy and surgically assisted palatal expansion was done to manage this case. figure 17,18

Case 10

25 years old female patient presented with long face with gum smile treated with set up of maxilla using LeFort 1 and anterior mandibular osteotomy figure 19,20.



Fig. (10) Showing improved facial appearance and with normal overjet, panorama showing fixation of anterior maxillary osteotomy and sliding genioplasty



Fig. (11) Patient showing open bite



Fig. (12) Showing normal bite obtained by using anterior maxillary and mandibular osteoma



Fig. (13) Showing dentoalveolar bimaxillary protrusion



Fig. (14) Decreased bimaxillary protrusion with good dental relation



Fig. (15) Maxillary excess with sever overjet



Fig. (16) Improved maxillary excess and normal overjet



Fig. (17) Long face with open bite and gummy smile

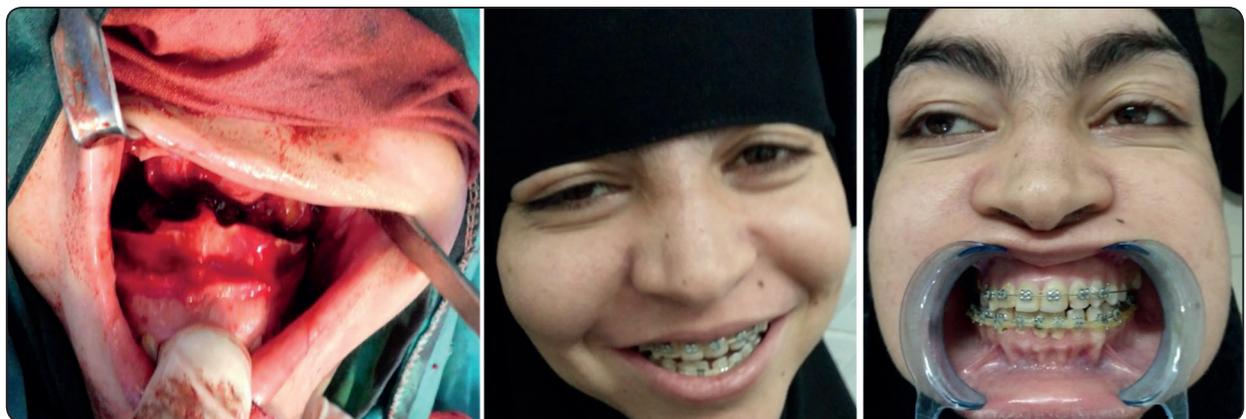


Fig. (18) Showing lefort1 osteotomy for maxillary impaction with no gummy smile and normal occlusion



Fig. (19) Showing loong face with lip incompetence and ope bite



Fig. (20) Showing improved facial appearance with good lip competence and good occlusion with panoram showing fixation of lefortI osteotomy and anterior mandibular osteotomy

Case 11

13 years old female patient presented with facial deformity duto slowly growing left site mandibular tumour extending from lower premolar region toward rd the angle of the mandible. measuring 8*6*4 cm with buccolingual expansion, with respiratory distress, final pathological report was showanoma, the lesion was exsized and the mandible reconstructed with rip graft which secured by reconstruction plate figure21,22



Fig. (21) Showing facial deformity due to mandibular showanoma

Case (12)

40 years old male patient presented with facial deformity due to left site mandibular osteoma that has enlarged gradually since 6 years , the osteoma was excised under general anaesthesia with good improvement of facial appearance figure23,24

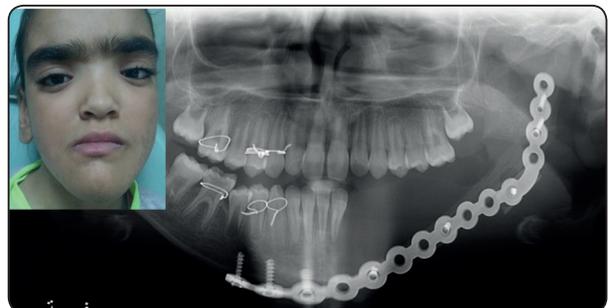


Fig. (22) Showing improved facial appearance after excision and reconstruction



Fig. (23) Right view showing facial deformity due to osteoma,

Fig. (24) The left site view show improved facial appearance

TABLE (1) Showing ages, sex, cause and management of the facial deformity

N	Age	Sex	Deformity etiology	management
1	13	female	developmental	Growth remodelling
2	16	male	thalassemia	Bone shaving and orthodontic treatment
3	18	female	trauma	Distraction osteogenesis
4	14	male	Congenital	Distraction osteogenesis
5	25	female	developmental	Anterior maxillary osteotomy and genioplasty
6	20	male	developmental	Anterior maxillary and mandibulay osteotomy
7	19	female	developmental	Anterior maxillary osteotomy
8	18	female	developmental	Anterior maxillary and mandibulay osteotom
9	22	female	developmental	Lefort 1 maxillary osteotomywith midline osteotomy
10	23	female	developmental	Lefort1 osteotomy with anterior mandibular osteotomy
11	13	female	tumor	Surgical excsion with rib graft reconstruction
12	40	male	tumor	Surgical excision

DISCUSSION

According to current knowledge ,factors that are implemented to cause dentofacial deformities can be sub divided to include known syndromes, hereditary tendencies, environmental effects, effects of trauma and effect of tumors ⁴

The first case of our study was young female patient 9 years old age, presented with short face,deep bite and excessive overjet, and due to presence of growth potential for this patient functional appliance was designed as TWIN BLOCK, the patient was cooperative and after 2 years good result was obtained,, the appliance depends on holding the mandible forward so that the condyles are out of the fossae and this results in acceleration of mandibular growth and this is in accordance to the study of proffit et al 2003 who stated that functional appliance offers excellent control of eruption of teeth in addition to its growth modifying effect and appears to be the best choice for early treatment, however in case of severe deformity the chance for long term success is not known ⁵

The second case through this study was facial deformity due to thalassemia, although the management of this case was not complete but this case was mentioned to recognize rare cause of facial deformity, there is expansion of facial bones, depressed nasal bridge, protruded maxillary dentition, thinning of cortical bone , all these findings are in accordance to the study of according to the study of Badri et al ⁶

This case of thalassemia was managed by blood transefusion, calcium substitute, as regard dentofacial deformity, the expanded bone was shaved and the malaligned teeth was managed by orthodontic treatment, then patient refused further interference and planed osteotomies

According to Severt and Proffi facial asymmetry can be defined as different size or relationship of two sides of the face. and frequencies of facial asymmetry are 5%, 36% and 74% in the upper, middle, and lower thirds of the face⁷

Through this study three cases of facial asymmetry were managed, the first case was acquired facial asymmetry due to previous history of facial trauma during childhood followed by ankylosis at left site, the second case of facial asymmetry was congenital hemifacial microsomia, the third case was idiopathic developmental facial asymmetry, and these etiologies of facial asymmetry were in accordance to the study of Maheshwari et al⁸ which classified the major causes of facial asymmetry into congenital. Developmental and acquired facial asymmetries

Developmental facial asymmetry is more common throughout the population and it may be idiopathic or due to habitual chewing on one side or persistent sleep on one side⁹ the first two the first two cases of facial asymmetry managed by unilateral distraction osteogenesis, this because the old ages of the two patients and liability of costochondral graft for growth is not sure, distraction osteogenesis is a process of lengthening a bone by making linear corticotomy through it, and fix distraction device, complete the corticotomy into osteotomy, then allow the osteotomy to heal in a latency phase for seven days, and then activate the device to stretch the newly formed tissue 1 mm per day during the activation phase. After overcorrection of the deformity, retention period must be elapsed to permit consolidation of the distracted bone, then the device removed. Distraction provides greater long-term stability in large advancements¹⁰ it has proven that distraction of the mandibular body is also accompanied with increase in the related soft tissues and this may improve facial asymmetry in patients with hemifacial microsomia¹¹. The third case of facial asymmetry in our study was managed by genioplasty for camouflaging of the facial appearance, and maxillary protrusion was managed by anterior maxillary osteotomy, sliding horizontal genioplasty is an effective method to manage some cases of facial asymmetry according to the study of Cheong, Y and Jou Lo L¹⁰ as regards case number 6 open bite case, managed by anterior maxillary

and mandibular segmental osteotomy to close the open bite, while case number 7 with only protruded maxilla managed by anterior maxillary segment to set it up and back, also case number 8 with bimaxillary dentoalveolar protrusion was managed by anterior maxillary and mandibular segmental osteotomy, where the anterior mandibular segment was set down and back to correct curve of Spee and creating space for the maxillary segment to be set back, also the anterior maxillary osteotomy was used to set up and back of the segment.

Anterior segmental osteotomy provides improvement of occlusion and facial aesthetics which is difficult to be approached by orthodontic treatment alone¹²

Anterior segmental osteotomy Versatility and reliability help correcting various dentoalveolar defects also Complications associated with this procedure are rare¹³

There are two case of long face deformity. The first case managed by LeFort one osteotomy with set up of maxilla and midpalatal osteotomy for maxillary expansion, the second case managed by LeFort one osteotomy for set up of the maxilla and anterior mandibular subapical osteotomy to manage gum smile and excessive overjet,

According to Posnick,⁴ long face deformity may be environmental or hereditary. It can be managed by LeFort one osteotomy, with or without mandibular osteotomy according to the case

Through this study, two cases presented with facial deformity due to tumors, the first case was child presented with expansile left site mandibular tumor which was diagnosed as squamous cell carcinoma, it was including the mandible from first premolar to the last molar it was affecting the mandible bicortically. so it was excised and the mandible was reconstructed using rib graft

The second case presented with facial deformity due to osteoma at the left site of the mandible which was excised under general anaesthesia, according

to Posnick maxillofacial tumors are implemented to be great etiologic factor leading to dentofacial deformity and interfering with normal facial growth⁴

Through this study it is concluded that dentofacial deformity has different etiologic factors, and each case has its speciality and there are different means of management so that each case must be studied well and treatment must be adapted specially according to each case.

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