Sudipta Kar’s Modification of Guide Flange Prosthesis for Mandibular Repositioning

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ABSTRACT

The unilateral surgical removal condyle due to irreparable traumatic injury may result in mandibular deviation towards the surgical side and ultimately causes unstable occlusion. Unilateral condylectomy may also result in impaired speech articulation, and facial disfigurement. A corrective device known as ‘guide flange prosthesis’ is used to limit this manifestation. Restoration of acceptable functional occlusion is one of the goals of our treatment modality. Dentition can be used to confirm proper realignment of the mandibular deviation. This can be achieved by the use of guide flange prosthesis. This case report delineates the rehabilitation of a paediatric patient having deviation of the mandible following condylectomy using maxillary guide flange prostheses. Guide flange prosthesis can be considered as a training device. It guides the patient to reposition the mandible into the proper intercuspal position.

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**Introduction**

Discontinuity of the mandible after unilateral surgical resection of condyle destroys the balance and symmetry of mandibular function, ultimately leading to loss of occlusion at the unresected extremity. This deviation of mandible is mainly due to uncompensated functional effect of contralateral musculature specially the internal pterygoid muscle.[1,2] Guide flange prosthesis may be helpful in reducing the unavoidable consequence resulting from surgical resection of mandible like contraction of muscle, occlusal plane mutilation, scar contracture etc.[3] A well designed vertical extension from the buccal and or lingual aspect of a maxillary prosthesis extends to contact the buccal and or lingual surface of the opposing mandibular teeth. This necessary extension maintains the mandible in the proper position even though it makes the appliance little heavier. The GFP may often be discontinued if the patient can successfully maintain the position for acceptable period of time. Some patients may continue with a guide flange for indefinite period of time so for them periodic monitoring is needed. It may be designed and incorporated immediately after operative procedure or 7-10 days after resection for restoring mandibular function.[4,5] Delay in the initiation of treatment may results in tight wound closure causing delayed success rate. This modification of GFP can provide more accurate and predictable result.

**Case Report**

A 12 years old male pediatric patient reported to our Department of Pediatric and preventive dentistry with chief complaint of difficulty in mouth opening, mastication and speech [Figure 1 and 2]. He had a history of road traffic accident. Orthopantomogram revealed fractured left condyle [Figure 3]. Condylectomy was performed by retromandibular approach resulting in mandibular deviation [Figure 4 and 5]. Extraoral examination showed facial asymmetry. Clinical examination revealed deviation of mandible towards the left side of face with lack of proper contact between both maxillary and mandibular teeth. Intra oral examination showed no missing teeth [Figure 6]. The patient was evaluated for fabrication of duel guide flange prosthesis. It was observed that the child’s mandible could be manually manipulated into the centric occlusion without applying excessive external force. Palatal based guide flange prosthesis was fabricated as a training appliance on the non-defect (right) side and another guide flange was fabricated in the defected side (left) buccally. The retention in the appliance was provided by adams and c clasps. The size and shape of the flange was dependent upon the degree of mandibular deviation the guide flange extended inferiortly and labiolinguadly on the lingual surface of the mandibular molars and the premolars [Figure 7 and 8]. Care was taken to protect mandibular teeth and gingiva from trauma during opening and closing of mandible. Finished and polished prosthesis was then evaluated and inserted intraorally [Figure 9]. and periodic check up was done for any inconvenience. The patient was instructed to use the guide flange prosthesis throughout the day, except at night and during meals. He was also advised to practice simple physiotherapy exercises which were started 2 weeks after the surgery. It consists of simple opening and closure of mandible with and without the appliance and patient was advised to grasp the chin and shift the mandible away from the surgical site.[6,7] These exercises tend to reduce scar contracture, and trismus as well as improve inter maxillary relationships [Figure 10]. The patient was recalled every 4 weeks for periodic check up. The aim of treatment through GFP was to re-educate the muscles of mandible to re-establish a comfortable, acceptable and hermonic interocclusal relationship for the residual mandible, so that the treated individual can govern the closing and opening of the mandibular movements repeatedly and correctly lifelong. This dual flange helps to maintain occlusal relationship more firmly.

![Fig. 1: Pre-operative photograph](http://www.pacificejournals.com/aabs)
Fig. 2: Pre-operative photograph

Fig. 3: Orthopantomogram of the patient

Fig. 4: Surgical site through retromandibular approach

Fig. 5: Fractured condyle

Fig. 6: Deviation of mandible

Fig. 7: Unpolished guide flange prosthesis
of guide flange prostheses.\cite{8-14} There are various types of cast metal guide flange prostheses but they are complex, technique sensitive and costly and they require a number of appointments. The acrylic guide flange prosthesis is a simple and cost effective method. The advantage of it is, ease of adjustment and require fewer appointments. Robinson et al. (1964) \cite{8} suggested that for correcting lacking mandibular motor control a cast mandibular resection restoration is appropriate. They also indicated that fabrication of a provisional guide plane facilitates the fabrication of a definitive restoration. Moore DJ et al. (1976) \cite{15} described a combined technique with crowns and maxillary prosthesis to guide the mandible into a functional occlusion. Hasanreisoglu et al. (1992) \cite{9} suggested that palatal guide flange or mandibular guide flange prostheses are indicated for dentate patients. Beumer et al. (1996) \cite{10} suggested that if the mandible can be manipulated comfortably into an acceptable occlusion a cast metal guidance ramp would be treatment of choice. If some resistance is encountered in acceptable positioning the mandible, a guide flange of acrylic resin was suggested because of its adjustability. Nasrin Sahin et al. (2005) \cite{16} described the fabrication of a cast metal guidance prosthesis with supporting flanges and retentive flanges. Joshi P et al (2008) \cite{17} suggested that the fabrication of a removable mandibular guide flange prosthesis was an effective alternative for most of the patients with mandibular defects and considering economic feasibility. Prencipe MA et al (2009) \cite{18} described a technique by which only 1 mandibular prosthesis can be used both for physiotherapy and eating, by simply inserting and removing the guide flange. This clinical report illustrates the prosthetic management of a patient who had undergone condylectomy after traumatic injury. The acrylic guide flange prosthesis presented here was a simple and cost effective method for managing the deviation of mandible in a pediatric patient. This was less time consuming and can be easily adjusted and relined according to the need of the patient. This prosthesis also helped the pediatric patient to maintain chewing efficacy from both sides equally and effectively. So this guide flange prosthesis can be regarded as a training appliance. If the patient can successfully repeat the proper, acceptable, and comfortable intermaxillary occlusion the prosthesis can be discontinued. Some patients may continue guide flange for an indefinite period of time but a periodic monitoring is required in every case. An optimum result is achieved when the patient can comfortably and repeatedly occlude maxillary and mandibular teeth without using guide flange prosthesis.\cite{19} Advantages of guide flange prosthesis is it improves masticatory efficacy, reduce the scar contracture and decrease trismus, effectively realigns the residual

Discussion

Loss of continuity of the mandible due to surgical intervention leads to deviation of the residual affected segment towards the surgical site and alteration in muscle function. Guide flange prosthesis is indicated to limit clinical manifestation of mandibular deviation and restores mandibular function. The literature describes various types
mandible to proper intercuspation, ease of fabrication, good patient compliance, reprogram the remaining musculature and improve the maxillo-mandibular relationship, and economical.

Conclusion
A well fabricated dual guide flange prosthesis and an appropriate mandibular exercise regimen is an important adjunct for achieving proper function of the masticatory apparatus. Child’s physiological, psychological and perpetual well being is truly restored in this way. This modification can also restrict aberrant muscle forces and redirect mandible to maintain its proper position in an easier way.

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