A Case History: Protecting the Head and Face

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INTRODUCTION

Individual and specialized needs of patients subjected to facial and head injuries secondary to a fall, have prompted the design and manufacture of various styles of protective headgear. These commercially available helmets utilize modern materials in order to make them both safer and more acceptable to the patient. Polycarbonate, for example, is a clear and lightweight plastic that is sometimes used for fabricating the face-guard section. In addition, some companies will "customize" the headgear to further accommodate individual problems. However, it is not reasonable to think that a pre-fabricated design can satisfy all the needs of every patient. Custom fabrication is necessary for select cases in order to yield the most functional and acceptable device possible.[1]

PATIENT BACKGROUND

This patient is a ten year old female who has a medical history that includes a serious seizure disorder and poor balance. This condition has caused her to fall (face-forward) on numerous occasions, sustaining several maxillofacial injuries.

The patient's mother contacted this office after unsuccessful trials with pre-fabricated headgear. She stated that they were all too heavy and contributed to the child's poor posture and balance. Her head was actually drooping from the excessive weight of the "off-the-shelf" helmets. Custom fabrication was clearly indicated.

FITTING AND FABRICATION

It was decided that a pre-fabricated "boxing-type" helmet would be most suitable to serve as a skull protector as well as the foundation for the face guard. This design is commercially available and is both lightweight and well padded

Basically, the face guard is comprised of three strips of Orthoplast approximately two inches in width. The total length of each strip depends upon the individual patient requirements. First, the forehead section is molded. It extends just posterior to the midline on both sides. In this case, the overall length is approximately eighteen inches.

Five copper rivets are used to secure the forehead strip to the helmet after the entire face guard is completed. The inferior crossbar is molded next, and extends downward at a slight forward angle to protect the chin. It is folded in the middle in order to achieve sufficient rigidity for protection and is attached at the midlines

of the helmet with four speed rivets. The superior crossbar is then formed and also folded in the middle. It is attached with two speed rivets on both sides, and placed in such a position so as not to interfere with vision or eating. The Orthoplast is folded in a direction away from the face with the rounded surface towards the face (Figure 1).

RETENTION STRAP

The original chin strap had to be removed as it was not secure enough and could easily be opened by the patient. The mother feared that her daughter would remove it whenever left unattended.

A strap was devised that utilized an inside "D" ring and an outside buckle arrangement (Figure 2). The strap first passes under the chin and through the ¾" "D" ring. It is then brought back under the chin and follows around the right lateral side of the neck. Finally, it secures into the buckle which is distal and inferior to the left ear. A soft tongue is sandwiched between the "D" ring and the buckle to prevent discomfort to the back of the neck. The "D" ring and the buckle are attached to the earflap with elastic so that a sudden jolt to the helmet is partially absorbed in the strap. These simple modifications to the original chin strap accomplished two goals: the helmet is held on more securely, and it cannot be easily opened by the patient.

SUMMARY

A one-pound protective helmet with a face guard was fabricated for a patient who was subject to maxillofacial injuries as a result of falling. The positive results achieved justified the fabrication and fitting time required.

REFERENCES

[1]E. Hartwig; F. Wenzel; C. Hintz, "Maxillofacial Protective Headgear," *Orthotics and Prosthetics*, Vol. 31, No. 1, pp. 25–28, March, 1977.

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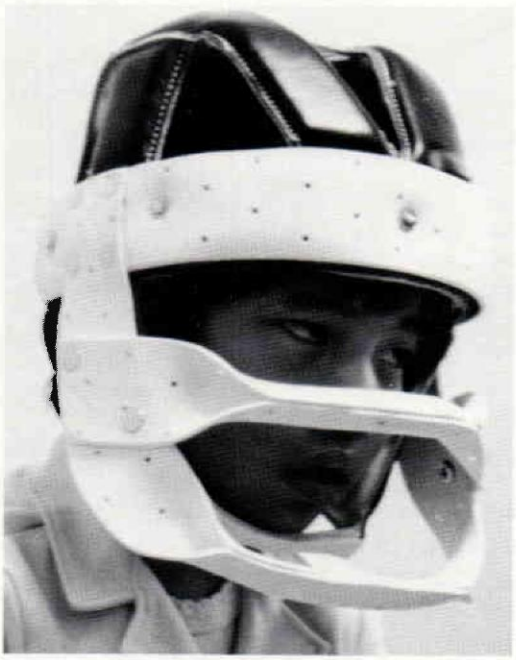

Fig. 1. Protective headgear worn by the patient with a seizure disorder. Prefabricated headgear did not work with this patient due to its weight.

Fig. 2. The orthoplast frame attached to the boxing headgear. Seizures cause the patient to fall face forward and the impact must be absorbed by the headgear without breakage. The strap extends from the chin piece around the back of the neck to hold the helmet on more securely and to prevent the patient from removing it.