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Review Article

### BASIC PROTECTIVE EQUIPMENT IN SPORT RELATED OROFACIAL INJURIES: MOUTH GUARD- A REVIEW

Rastogi Jyoti<sup>1</sup>, Rastogi Saurabh<sup>2</sup>, Tambe Varsha H<sup>3</sup>, Prasant MC<sup>4</sup>, Fareedi Mukram Ali<sup>5\*</sup>

Reader, Dept of Prosthodontics, Awadh Dental College & Hospital, Jamshedpur, India

Senior Lecturer, Dept of Orthodontics, Awadh Dental College & Hospital, Jamshedpur, India

Senior Lecturer, Dept of Conservative Dentistry & Endodontics, SMBT Dental College & Hospital, Sangamner, India

HOD, Dept of Oral & Maxillofacial Surgery, RKDF Dental College & Hospital, Bhopal, India

Reader, Dept of Oral & Maxillofacial Surgery, SMBT Dental College & Hospital, Sangamner, India

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\*Corresponding Author: **Dr. Fareedi Mukram Ali**

Reader, Dept of Oral & Maxillofacial Surgery, SMBT Dental College & Hospital, Sangamner, India

### ABSTRACT

Sports dentistry, which mainly includes the prevention and management of sports related orofacial injuries, is one of the recent and an upcoming field of dentistry. The most important component of the sports related traumatic injuries is wearing of basic protective devices, which mainly includes mouth guards. Many of the sport players are not aware of the importance, use and precautions of the use of the mouth guards. The dentists can play an important role in creating awareness about the use of mouth guards. The present paper summarizes the awareness and orientation towards the use of mouth guards in sports players and sports dentistry.

**Keywords:** Dental injury, Mouth guards, Sports, Trauma.

### INTRODUCTION

Sports in today's highly stressful life, means "to carry away from work". Participation in sports is a frequent cause of traumatic injuries, which mainly includes orofacial injuries. These injuries can occur in children as well as in adults. Sports dentistry had its origins in the 1980s<sup>1,2</sup>. The sports dentistry and other dental specialties, mainly advocate prevention of the traumatic injuries. Most of the orofacial injuries can be reduced or prevented by the use of mouth guards<sup>3</sup>.

Mouth guard is defined as a resilient device or appliance placed inside the mouth to reduce oral injuries, particularly to teeth and surrounding structures<sup>4</sup>. Upper arch is usually more susceptible area to trauma. Mouth guards are removable intra-oral devices, if used correctly, make the protection of the teeth and soft tissues such as gums, lips and cheeks during an impact.<sup>2,3,5</sup> The mouth guards are mainly made from a thermoplastic copolymer, silicone or ethylene vinyl acetate (EVA)<sup>3,5,6</sup>.

#### History:

Although the exact origins of the mouth guard are unclear, most evidence indicates that the concept of a mouth guard was initiated in the sport of boxing. The British dentists began to fabricate mouthpieces for boxers in 1892<sup>7</sup>.

A major breakthrough was made by the use of transparent acrylic resin to form an "acrylic splint", by a Los Angeles dentist in 1947. In 1960, the American dental association (ADA) recommended the use of latex mouth guards in all contact sports<sup>7</sup>.

#### Importance:

The orofacial area is the most vulnerable area for the sport related traumatic injuries. Dental injury lead not only to physical trauma, but also psychological trauma, as it mainly involves the more visible anterior teeth<sup>1,8</sup>.

According to the American Academy of Sports Dentistry, there is 80% reduction in the risk of dental trauma with the use of mouth guards. Sport players in contact sports have a 10% chance of having orofacial injury during sports and without the use of customized mouthguard, the risk of dental trauma increases more than 60 times<sup>3</sup>.

The mouth guard protects teeth, alveolar bone, oral and para-oral soft tissues; and also the important temporomandibular joint, by providing a resilient and protective surface to distribute and dissipate transmitted forces on impact<sup>9</sup>. Although, it is believed that mouthguards can decrease the incidence of concussion or brain injury, there is no empirical evidence for the support of this claim<sup>9,10</sup>.

**Indications:**

- Should be used in all contact sports, where there are chances of fall or collision.<sup>3</sup>
- Any sport where the potential for dental trauma can exist like basketball, soccer, or wrestling.<sup>2,3</sup>
- Should be worn when there is a possibility of body-to-body or body to equipment contact.<sup>2,3</sup>

**Classification:**

The American Society for Testing and Materials (ASTM) classifies mouthguards into three categories<sup>1,2</sup>:

Type I or Custom-fabricated mouthguards:- These are produced on a dental model of the patient’s teeth by either the vacuum-forming or heat-pressure lamination technique.

Type II or Mouth-formed or Boil-and-bite, mouthguards:- are made from a thermoplastic material adapted to the teeth by finger, tongue, and biting pressure after immersing the appliance in hot water.

Type III or Stock mouthguards:- are purchased over-the-counter.

**Precautions while using:**

With the use of scanning electron microscopy (SEM), it was found that the mouth guard matrices were equally porous as it is in dentures. Therefore as indicated by recent studies, mouth guard can harbor varieties of opportunistic or pathogenic bacteria, as well as yeasts and molds. Mouthguards also normally have sharp and jagged edges capable of lacerating the oral tissues. This means that the mouthguard microorganisms can have direct access to the rich vascular system of the oral cavity.<sup>11</sup>

Therefore following care should be taken while using the mouth guards<sup>3,7,11,12</sup>:-

- Clean the mouth guard with soap and warm water after each use.
- Disinfect the mouth guard from time to time with a mouthwash.
- Keep it in a well-ventilated plastic storage box when not in use. The box should have several holes in it.
- Do not leave the mouth guard in direct sunlight, in a closed car or in the car’s glove box, as heat can damage it.
- Ensure your mouth guard is in good condition before each use.
- Ask your dentist to inspect your mouth guard at every dental check-up. Replace the mouth guard if it is damaged.
- Wear the mouth guard at all times, including games and training sessions.
- It is highly recommend that, discard mouthguards on at least a weekly basis.

**CONCLUSION**

It is clear from this review that, a wide number of sports have chances of orofacial injuries and mouth guards are effective in reducing these injuries. Therefore awareness regarding the use

of basic protective measures, like the use of mouth guards, should be increased to have less impact on the patient’s future quality of life.

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