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DENTAL INJURIES AND THE ATTITUDES OF RUGBY PLAYERS TO MOUTHGUARDS

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ABSTRACT

A survey of dental and facial injuries of 100 rugby union players are recorded, and the attitudes of the players to the wearing of different types of mouthguards are examined.

INTRODUCTION

Information in the dental literature on the type of mouthguards for rugby players is limited, as is the information about the damage that could be sustained through not wearing guards. Authors of books on sports injuries have paid little attention to the damage to teeth and the means of avoiding such damage.

J. H. C. Colson and W. J. Armour in their book "Sports Injuries and their Treatment" (2nd Impression 1968) suggest that pain beneath the front part of the head may be due to septic foci, i.e. infection of teeth and tonsils.

W. E. Tucker and Molly Castle in "Sportsmen and their Injuries" (1978) suggest in respect to ice hockey players "that broken teeth should be kept as the dentist may use them to cap roots".

R. G. Jagger and D. A. Clarke in their article "Mouthguards for Contact Sports" describe three main types of guards:—

- a Stock or factory type "ST". These have the disadvantage that they cannot be modified to improve fit.
- b Mouth-fitted type "MFT". These come in two varieties which can be modified and fitted at the chairside. One is a thermoplastic shell which can be softened in hot water and moulded to the teeth. The other is a plastic shell into which a soft material is poured and then moulded to the teeth and allowed to set.

- c Laboratory made type "LMT". These are constructed from thermoplastic sheets over stone models obtained from alginate impressions of the mouth.

Mouthguards afford protection to both hard and soft tissues. Damage to cusps and restorations of posterior teeth, and fractures of anterior teeth can be reduced, whilst the loss of anterior teeth can be avoided. Tongue biting and damage to lips and cheeks could also be reduced, and in turn pain, reduced masticatory function and unsightly aesthetics prevented.

It has also been suggested that they produce a cushioning effect against a blow to the mandible, and act similarly against blows to the head.

Jagger and Clarke state that 'various materials have been used in the past for the construction of guards. These have included velum rubber, silicone elastomers and resilient acrylic polymers, but these have gone out of use because of their unpleasant taste, rigidity and distortion. The application of latex involved a lengthy manufacturing process and the final product could easily be torn. The use of thermoplastic sheets moulded to models by means of a vacuum or compressed air has gained popularity'.

The thermoplastic sheets come in different thicknesses: the 3 mm size is adequate for players at school-boy level whilst sizes between 5 mm and 6 mm should be sufficient at club level. They should be horse-shoe in shape (Fig. 1) and cover all surfaces of the upper arch for about 0.5 cm to 1 cm (Fig. 2). They should extend

Fig. 1

Fig. 2

over the palatal soft tissue to no more than 1 cm. Where there is a complete upper dentition it is not necessary to extend the guard beyond the distal of the first permanent molars. Maxillary mouthguards with lower extensions into which the lower teeth bite are not recommended as they may cause problems if the jaws are locked.

METHOD

A survey was carried out of 100 rugby players from four clubs to obtain an assessment of the attitudes of players to the wearing of mouthguards and the types of mouthguards that are worn, using a standard form. The interviews were conducted on a one to one basis by the author, and took place either following a training session or a team fixture. The results are shown in Table I. For ease of simplicity the types of mouthguards are a modification of the types described by Jagger and Clarke.

The stock type (ST) of mouthguards bought from sports shops are softened in hot water, and are then

TABLE I

1. Age Group	12-16		
	16-18		9
	over 18		91
3. Have you sustained any of the following during a game of rugby?			
Fractured tooth			27
Lost tooth			6
Broken jaw			—
Concussion			17
Soft tissue damage			63
6. If yes, what type of mouthguard do you wear:—			
Stock type			16
Mouth-fitted			12
Laboratory made			10
7. If answer to 5 is NO, what type did you wear:—			
Stock			24
Mouth-fitted			1
Laboratory made			3
9. If the answers to 4 and 5 are NO, what is the reason for not wearing a mouthguard?			
2. Full-time education			12
Employment			88
4. Have you ever had a mouthguard	Yes	66	No 34
5. Do you wear a mouthguard now?	Yes	38	No 28
8. Have you had any of the following problems when wearing your mouthguard:—			
Inadequate retention			10
Nausea			17
Dryness of mouth			11
Speech			21
Breathing			17

moulded and fitted by the individual. The mouth-fitted type (MFT) is the plastic shell into which soft material is poured, moulded to the teeth and is then trimmed by the dentist. The laboratory made type (LMT) is constructed in the laboratory from impressions taken by the dentist, using thermoplastic sheets.

RESULTS

1 Age Group

The age groups selected were to represent those players who had left school. The numbers in the 16-18 age group all came from clubs rather than schools and in consequence were too small to be significant. Of the

players in the 16-18 group 7 had had mouthguards, but only two were still wearing them. Further research on the under 18 age group is obviously needed.

3 Types of injuries sustained

When asked what injuries had been sustained when mouthguards had not been worn, 24 had reported suffering no injuries. Twenty-seven players had damaged their teeth, involving fractures of at least one tooth. Six of the same group had lost at least one tooth as well as fracturing others. Concussion was defined as a player being knocked out and following attention not allowed to continue in the game. Seventeen players had reported having had concussion.

Soft tissue damage can occur to the lips and cheeks from jagged teeth and to the tongue from the individual biting his own tongue, and sixty-three players had such soft tissue and other injuries. It would be difficult to assess whether damage to the soft tissues only would have been avoided if mouthguards had been worn as the splitting of lips could occur due to contact with other players.

4 Have you ever worn a mouthguard?

Sixty-six players had at some time worn a mouthguard.

5 Do you wear a mouthguard now?

Although 66 of the 100 players interviewed had at some time worn a mouthguard only 38 were still wearing them.

TABLE II

Type worn	Players wearing mouthguards		Players no longer wearing mouthguards		Total
	No.	%	No.	%	
ST	16	42%	24	86%	40
MFT	12	31%	1	4%	13
LMT	10	26%	3	11%	13
Total	38	57%	28	42%	66

6 Type of Mouthguard worn

Thus, of the players who had at some time worn mouthguards, the majority had worn the stock type, with 16 still wearing them and 24 having given up wearing them.

The number of players wearing the mouth-fitted and laboratory types were 12 and 10 respectively where only 1 and 3 players had given up wearing guards in the corresponding groups.

8 Problems associated with the wearing of mouthguards

Of the 38 players who were still wearing mouthguards 19 had no complaints, whilst only four players who had given up wearing mouthguards had no complaints.

Of the 19 players still wearing mouthguards, five of the 16 wore the stock type, seven out of 12 the mouth-fitted type and seven out of 10 the laboratory made type. The four players who had given up wearing their mouthguards had no complaints and had all worn the stock type.

TABLE III

PROBLEM	ST (worn by 31 players)		MFT (worn by 6 players)		LMT (worn by 6 players)		TOTAL (43 players)	
	No.	%	No.	%	No.	%	No.	%
Retention	10	32	—	—	—	—	10	23
Nausea	11	35	5	83	1	6	17	39.5
Dryness	8	25	1	16	2	33	11	25.5
Speech	14	42	3	50	4	66	21	49.5
Breathing	13	42	1	16	3	50	17	39

The problems are listed below. Some of the remaining 43 players who complained had more than one problem.

Retention was no problem amongst players wearing the mouth-fitted and laboratory made types, whilst speech was a major problem in all three types.

Nausea was the main problem in the mouth-fitted type and this could be due to insufficient posterior trimming.

Dryness was one of the least complaints in the stock type and mouth-fitted type, but presented a problem for those players wearing the laboratory made type.

When asked for comments about mouthguards it was generally felt amongst the players that mouthguards were necessary but were uncomfortable to wear for the reasons specified. Some admitted that they could not be bothered to wear them as they had not had an injury, even though they were aware of the problems. The four players who had no complaints about their mouthguards but were not wearing them had either lost them or could not be bothered to wear them. The reasons for the large numbers of stock types were that they were easier to obtain and cheap to purchase.

SUMMARY

Although damage to teeth occurred in only 27% of players, the consequences as outlined are greater. The value of mouthguards in reducing concussion and soft tissue damage is difficult to prove.

Further research is necessary, but in the meantime as a preventive measure players should be encouraged to wear mouthguards.

The dental profession should take a lead and encourage players to wear mouthguards and perhaps they could arrange to visit clubs and take impressions of players on the club premises.

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BOOK REVIEW

Title: INJURIES IN SPORT (2nd EDITION)
Author: David Sutherland Muckle
Publishers: Wright PSG, Bristol
Price £9

There has been a vast upsurge in interest and participation in sport at all levels and as a result the injured athlete is looking to doctors who have a specific interest and expertise in the field of sports medicine.

This book, first published in 1978, is intended as a guide to all doctors but particularly those working in casualty, orthopaedic and rehabilitation departments, as well as in general practice. Sports Medicine is a wide field and the book deals specifically with the injury problems occurring in the athlete.

It contains 149 pages of text and five pages of references for further reading. There are several diagrams, photographs and X-rays of good quality. The text is well set out dealing methodically with diagnosis, treatment and rehabilitation making it easy to use as a quick reference.

The first chapter deals with the relative frequency and site of various injuries in different sports and moves on to deal with the first aid and immediate care of major injuries and soft tissue injuries. The chapters are divided into dealing with specific injuries according to their anatomical sites. It concludes with a short but useful chapter on the care of skin injuries.

My two criticisms of the book are firstly, that it is quite naturally, very much contact sport orientated in the view of the author's own involvement and the nature of the problems. Secondly, as a General Practitioner I found there to be too many operation details and not enough time spent on specific exercises and rehabilitation routines for the injured athlete. The book however, is a useful addition to the surgery library as a quick and easy guide to read.

Peter Thomas